CITY OF MONTEREY PARK, AND THE CITY COUNCIL ACTING ON BEHALF OF THE SUCCESSOR AGENCY OF THE FORMER REDEVELOPMENT AGENCY AGENDA

REGULAR MEETING

Monterey Park City Hall Council Chambers
320 West Newmark Avenue
Monterey Park, CA 91754

WEDNESDAY
August 20, 2014
7:00 PM

MISSION STATEMENT
The mission of the City of Monterey Park is to provide excellent services to enhance the quality of life for our entire community.

Communication by the Public is an important part of the Local Government Process. Staff reports, writings, or other materials related to an item on this Agenda, which are distributed to the City Council/Agency Board less than 72 hours before this scheduled meeting are available for public inspection in the City Clerk's Office located at 320 West Newmark Avenue, Monterey Park, CA 91754, during normal business hours. Such staff reports, writings, or other materials are also on the City's website subject to staff's ability to post the materials before the meeting. The City's website is located at **www.montereypark.ca.gov.** Copies of staff reports and/or written documents pertaining to any item on the Agenda are on file in the Office of the City Clerk and are available for public inspection during regular business hours.

PUBLIC COMMENTS ON AGENDA ITEMS

For members of the public wishing to address the City Council regarding any item on this Agenda including the Consent Calendar or Oral Communications, please fill out a speaker card and return it to the City Clerk before the announcement of the Agenda Item.

Speakers are provided five (5) minutes per individual on each published agenda item. Individual speakers may consolidate time with another speaker's time; the total consolidated time cannot exceed two (2) minutes per speaker giving up time. However in the interest of ensuring that all members of the Public have an equal opportunity to participate, a single speaker cannot speak for more than ten (10) minutes on an individual Agenda item. If there are a large number of speakers on a particular agenda item, the Mayor, as confirmed by the City Council may reduce the amount of time allotted to each speaker or limit the total amount time allowed for speakers to address the agenda item. At the conclusion of that period of time, the speaker will be asked to please conclude their remarks so that the next speaker may begin their comments.

In accordance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please call City Hall, (626) 307-1359. Please notify the City Clerk's Office twenty-four hours prior to the meeting so that reasonable arrangements can be made to ensure availability of audio equipment for the hearing impaired. Council Chambers are wheelchair accessible.

PLEASE NOTE that this Agenda includes items considered by the City Council acting on behalf of the Successor Agency of the former Monterey Park Redevelopment Agency, which dissolved February 1, 2012. Successor Agency matters will include the notation of "SA" next to the Agenda Item Number.

CALL TO ORDER **Mayor**
FLAG SALUTE **The Monterey Park Police Explorers**
ROLL CALL **Peter Chan, Mitchell Ing, Hans Liang, Teresa Real Sebastian, and Anthony Wong**

AGENDA ADDITIONS, DELETIONS, CHANGES AND ADOPTIONS

[1.] PRESENTATIONS: None.

ORAL AND WRITTEN COMMUNICATIONS

CONSENT CALENDAR -- ORAL AND WRITTEN COMMUNICATIONS

Items on the Consent Calendar are considered to be routine, ongoing business and will be enacted by one motion. There is no separate discussion on consent items unless a Council Member/Agency Member or citizen so requests, in which event the item is removed from the Consent Calendar and considered separately. The City Clerk will not accept cards after the item has been taken up.

Consent Calendar – Approval By Minute Motion

[2.] SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA) CONSENT CALENDAR ITEMS 2A-2C

2-A. WARRANT REGISTER FOR SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY OF AUGUST 6, AND 20, 2014

It is recommended that the City Council (acting on behalf of the Successor Agency)

(1) approve payment of warrants and adopt Resolution No. _____of the Successor Agency to the former Monterey Park Redevelopment Agency allowing certain claims and demands per warrant register dated **August 6, 2014 and August 20, 2014 totaling $4,796.07** and specifying the funds out of which the same are to be paid; and

(2) take such additional, related, action that may be desirable.

2-B. SUCCESSOR AGENCY MONTHLY INVESTMENT REPORT AS OF JULY 2014

It is recommended that the City Council

(1) Receive and file the investment report as of July 2014; and

(2) take such additional, related, action that may be desirable.

2-C. SUCCESSOR AGENCY MINUTES

It is recommended that the City Council (acting on behalf of the Successor Agency)

(1) approve the minutes from the regular meeting of July 2, 2014 and July 16, 2014 and the Special Joint Meeting of July 24, 2014; and

(2) take such additional, related, action that may be desirable.

[3.] CITY OF MONTEREY PARK

CONSENT CALENDAR ITEMS 3A - 3L

3-A. WARRANT REGISTER FOR THE CITY OF MONTEREY PARK OF AUGUST 6, 2014 AND AUGUST 20, 2014

It is recommended that the City Council

(1) Approve payment of warrants and adopt Resolution No. _____ allowing certain claims and demands per Warrant Register dated **August 6, 2014 and August 20, 2014 Totaling $3,377,080.94** and specifying the funds out of which the same are to be paid; and

(2) take such additional, related, action that may be desirable.

3-B. MONTHLY INVESTMENT REPORT AS OF JULY 2014

It is recommended that the City Council

(1) Receive and file the investment report as of July 2014; and

(2) take such additional, related, action that may be desirable.

3-C. CITY COUNCIL MINUTES

It is recommended that the City Council

(1) approve the minutes from the regular meetings of July 2, 2014, July 16, 2014 and the Special Meetings of July 2, 2014, July 7, 2014, July 16, 2014 and the special joint meeting of July 24, 2014; and

(2) take such additional, related, action that may be desirable.

3-D. 2013-2014 ANNUAL INVESTMENT REPORT

It is recommended that the City Council

(1) Receive and file the 2013-14 Annual Investment Report; and

(2) take such additional, related, action that may be desirable.

3-E. IRRIGATION SYSTEM IMPROVEMENTS AT SUNNYSLOPES AND GEORGE ELDER PARKS -- AWARD OF CONTRACT

It is recommended that the City Council

(1) Award the contract for the Irrigation System Improvements at Sunnyslopes and George Elder Parks to the lowest responsible bidder, Martinez Landscape Company of Sylmar, in the amount of $463,651.00;

(2) Authorize the Public Works Director to approve construction change orders up to $46,365.00 (up to ten percent of construction contract amount) for this project;

(3) Authorize the City Manager to execute a contract, in a form approved by the City Attorney; and

(4) take such additional, related, action that may be desirable.

3-F. IRRIGATION SYSTEM IMPROVEMENTS AT CASCADES AND HIGHLANDS PARKS -- AWARD OF CONTRACT

It is recommended that the City Council

(1) Award the contract for the Irrigation System Improvements at Cascades and Highlands Parks to the lowest responsible bidder, Green Giant Landscapes Inc. of La Habra, in the amount of $385,826.24;

(2) Authorize the Public Works Director to approve construction change orders up to $38,583.00 (up to ten percent of construction contract amount) for this project;

(3) Authorize the City Manager to execute a contract, in a form approved by the City Attorney; and

(4) take such additional, related, action that may be desirable.

3-G. AWARD THE USED OIL ASIAN MARKETING CAMPAIGN CONTRACT TO JOHN L. HUNTER AND ASSOCIATES

It is recommended that the City Council

(1) Award the Used Oil Asian Marketing Campaign contract to John L. Hunter and Associates;

(2) Authorize the City Manager to execute an agreement, in a form approved by the City Attorney, with John L. Hunter and Associates; and

(3) take such additional, related, action that may be desirable.

3-H. ANNUAL LIBRARY REPORT TO COUNCIL FROM THE LIBRARY BOARD OF TRUSTEES

It is recommended that the City Council

(1) Receive and file report; and

(2) take such additional, related, action that may be desirable.

3-I. AWARD OF CONTRACT WITH MUNICIPAL AUDITING SERVICES FOR BUSINESS LICENSE AUDIT SERVICES AND ADOPT A RESOLUTION DESIGNATING THE MUNICIPAL AUDITING SERVICES AS AN AUTHORIZED REPRESENTATIVE TO EXAMINE SALES AND USE TAX RECORDS FOR THE CITY

It is recommended that the City Council

(1) Authorize the City Manager to execute an agreement, in a form approved by the City Attorney, with Municipal Auditing Services for Business License Auditing Services;

(2) Adopt Resolution establishing the Business Tax Amnesty Program; and

(3) take such additional, related, action that may be desirable.

3-J. MOBILE VISION IN CAR CAMERA SYSTEM TECHNOLOGY UPGRADE

It is recommended that the City Council

(1) Authorize the City Manage, or designee, to execute an agreement, in a form approved by the City Attorney, to purchase a Mobile Vision In-Car Camera Flashback 3 System Technology upgrade in the amount of $191,121 from L3 Communications Mobile Vision, Inc. Funding was approved in the 2014-15 Fiscal Year Budget, Account No. 0010-801-5002-99321; and

(2) take such additional, related, action that may be desirable.

3-K. ADOPT A RESOLUTION DECLARING SEPTEMBER INTERNATIONAL LITERACY MONTH

It is recommended that the City Council

(1) Adopt the resolution recognizing the 30th California State Library Literacy Services Anniversary and the Annual Celebration of International Literacy Day on September 8, 2014; and

(2) take such additional, related, action that may be desirable.

3-L. APPROVAL OF PURCHASE -- FIRE DEPARTMENT DEFIBRILLATOR

It is recommended that the City Council

(1) Waive bidding requirements pursuant to Monterey Park Municipal Code § 3.20.050(2) and award the bid to Zoll Medical Corp. Funds in the amount of $36,695 were budgeted in Fiscal Year 2013-2014; Account Number 0010-801-5002-99724;

(2) Authorize the City Manager to execute an agreement in a form approved by the City Attorney; and

(3) take such additional, related, action that may be desirable.

[4.] PUBLIC HEARING

None.

[5.] UNFINISHED BUSINESS

None.

[6.] NEW BUSINESS

6-A. GARVEY RESERVOIR -- AMENDMENT TO THE SEPTEMBER 1993 SETTLEMENT AGREEMENT (“SETTLEMENT AGREEMENT”) AND THE 1983 LEASE AGREEMENT (LEASE) BETWEEN THE CITY OF MONTEREY PARK (“CITY”) AND METROPOLITAN WATER DISTRICT (“MWD”) CONCERNING THE GARVEY RESERVOIR. MWD IS PLANNING TO RAISE THE ELEVATION STORAGE OF THE GARVEY RESERVOIR FROM 561 TO 573 FEET PURSUANT TO THE 1989 SETTLEMENT AGREEMENT.

It is recommended that the City Council consider

(1) Approve Amendments to the Settlement Agreement and Lease Agreement;

(2) Authorize the Mayor to execute such amendments on the City's behalf; and

(3) take such additional, related, action that may be desirable.

6-B. AN ORDINANCE AMENDING MONTEREY PARK MUNICIPAL CODE § 6.20.020 AND § 9.100.020 TO INCLUDE "ELECTRONIC CIGARETTES" AS PART OF THE PROHIBITION ON SMOKING IN OUTDOOR PUBLIC AREAS AND TOBACCO RETAILER LICENSING

It is recommended that the City Council consider

(1) Introducing and waiving the first reading of an ordinance amending Monterey Park Municipal Code ("MPMC") §§ 6.20.020 and 9.100.020; and

(2) take such additional, related, action that may be desirable.

6-C. INTRODUCTION OF AN ORDINANCE AMENDING TITLE 8 OF THE MONTEREY PARK MUNICIPAL CODE IN ITS ENTIRETY REGARDING THE REGULATION OF ANIMALS WITHIN THE CITY'S JURISDICTION AND INCORPORATION OF TITLE 10 OF THE LOS ANGELES COUNTY CODE

It is recommended that the City Council consider

(1) Introduce and waive first reading of an ordinance amending Title 8 of the Monterey Park Municipal Code;

(2) Set the second reading and Public Hearing for September 17, 2014; and

(3) take such additional, related, action that may be desirable.

[7.] COUNCIL COMMUNICATIONS AND MAYOR/COUNCIL AND AGENCY MATTERS

Discussion on water conservation measure related to landscaping. (Requested by Council Member Real Sebastian)

[8.] CLOSED SESSION

None.

ADJOURN

ORAL AND WRITTEN COMMUNICATIONS

City Council Staff Report

DATE: **August 20, 2014**

AGENDA ITEM NO: **(SA) Consent Calendar Agenda Item 2-A.**

TO: The Honorable Mayor and City Council

FROM: Chu Thai, Director of Management Services
Annie Yaung, CPFO, Controller

SUBJECT: Warrant Register for Successor Agency to the Former Community Redevelopment Agency of
August 6 & 20, 2014

RECOMMENDATION:

It is recommended that the City Council:

(1) Approve payment of warrants and adopt Resolution No. _____of the Successor Agency to the former Monterey Park Redevelopment Agency allowing certain claims and demands per warrant register dated **August 6 & 20, 2014 totaling $4,796.07** and specifying the funds out of which the same are to be paid; and

(2) take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

Disbursements will be made from the funds referenced in the attached Resolution in Warrants numbered **243-246.**

BACKGROUND:

The claims and demands on the attached warrant register have been duly audited. I certify that the said claims and demands are accurate, are proper charges against the City of Monterey Park, Acting as the Successor Agency to the Former Community Redevelopment Agency (SA). I also certify that there are monies available for the payments thereof. Please note that amounts being paid by the SA funds in this warrant register represented expenditures incurred, which are pending for approval by the Oversight Board.

FISCAL IMPACT:

Disbursements from all funds total **$4,796.07.**

Respectfully submitted:

Chu Thai
Director of Management Services

Prepared by:

Annie Yaung, CPFO
Controller

Approved By:

Paul L. Talbot
City Manager

Attachments: Warrant Register

RESOLUTION NO. SA-_____

**A RESOLUTION OF THE
SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA)
ALLOWING CERTAIN CLAIMS AND DEMANDS
PER WARRANT REGISTER DATED
6TH & 20TH DAY OF AUGUST 2014
TOTALING $4,796.07 AND SPECIFYING THE FUNDS OUT
OF WHICH THE SAME ARE TO BE PAID**

THE SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY DOSE RESOLVE AS FOLLOWS:

SECTION 1. That the following claims and demands have been audited and that the same are hereby allowed from various funds in the following amounts:

Atlantic/Garvey Projects	$	1,156.07
Merged Project Projects		3,640.00
Total	$	4,796.07

PASSED, APPROVED AND ADOPTED THE 20TH DAY OF AUGUST 2014.

Anthony Wong, Mayor
City of Monterey Park, California

ATTEST:

Vincent D. Chang, City Clerk
City of Monterey Park, California

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) ss.
SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY)
OF CITY OF MONTEREY PARK)

I hereby certify that this resolution was duly adopted by the
Successor Agency to the Former Community Redevelopment Agency,
at a regular meeting held on the 20th day of August 2014 by the following vote.

AYES:
NOES:
ABSTAIN:
ABSENT:

Vincent D. Chang, City Clerk
City of Monterey Park, California

ATTACHMENT 1
Warrant Register

FY 1415

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
NATIONAL CONSTRUCTION RENTALS	0860-801-1203-31100	66.06	FENCE RENTAL		243	
						66.06
	TOTAL FOR PRINTED WARRANTS					66.06

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

TOTAL FOR PREPAID WARRANTS	0.00
TOTAL FOR PRINTED WARRANTS	66.06
TOTAL WARRANTS	66.06
TOTAL VOID CHECKS	0
TOTAL PREPAID CHECKS	0
TOTAL CHECKS PRINTED	1
TOTAL CHECKS ISSUED	1

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014
FUND SUMMARY

FUND	DESCRIPTION	PREPAID	PRINTED	TOTAL
0860	ATLANTIC/GARVEY CAP PROJECTS	0.00	66.06	66.06
	TOTAL	0.00	66.06	66.06

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/20/2014

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
AT&T	0860-801-1203-32050	15.01	INTERNET/PHONE SERVICE		244	
						15.01
HENSLEY LAW GROUP	0860-801-1203-31600	1,075.00	LEGAL-SA		245	
	0870-801-1203-31600	1,075.00	LEGAL-SA		245	
						2,150.00
	TOTAL FOR PREPAID WARRANTS					2,165.01

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/20/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
LA CORP CENTER OWNERS ASSO	0870-801-1203-31100	2,565.00	CORPORATE CENTER ASSO. DUES		246	
						2,565.00
	TOTAL FOR PRINTED WARRANTS					2,565.00

TOTAL FOR PREPAID WARRANTS	2,165.01
TOTAL FOR PRINTED WARRANTS	2,565.00
TOTAL WARRANTS	4,730.01
TOTAL VOID CHECKS	0
TOTAL PREPAID CHECKS	2
TOTAL CHECKS PRINTED	1
TOTAL CHECKS ISSUED	3

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/20/2014
FUND SUMMARY

FUND	DESCRIPTION	PREPAID	PRINTED	TOTAL
0860	ATLANTIC/GARVEY CAP PROJECTS	1,090.01	0.00	1,090.01
0870	MERGED CAPITAL PROJECTS	1,075.00	2,565.00	3,640.00
	TOTAL	2,165.01	2,565.00	4,730.01

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **(SA) Consent Calendar Agenda Item 2-B.**

TO: The Honorable Mayor and City Council

FROM: Annie Yaung, CPFO, Controller

SUBJECT: Successor Agency Monthly Investment Report – July 2014

RECOMMENDATION: It is recommended that the City Council:

(1) Receive and file the monthly investment report; and

(2) Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

As of July 31, 2014 invested funds for the Successor Agency of the City of Monterey Park is as follows:

• Successor Agency (SA) Savings	$ 5,622,464.76
• Successor Agency (SA) Checking	262,356.03
• Successor Agency (SA) RORF	1,058,969.79
Total	$ 6,943,790.58

BACKGROUND:

In accordance with the City's Investment Policy, a monthly investment report is presented to the City Council showing the types of investments, dates of maturities, amounts of deposits, rates of interest, and the current market values for securities with maturity more than 12 months.

Respectfully submitted and prepared by:

Annie Yaung, CPFO
Controller

Approved by:

Paul L. Talbot
City Manager

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **(SA) Consent Calendar Agenda Item 2-C.**

TO: The Honorable Mayor and City Council

FROM: Vincent D. Chang, City Clerk

SUBJECT: Successor Agency (SA) Minutes

RECOMMENDATION:

It is recommended that the City Council (acting on behalf of the Successor Agency)

(1) Approve the minutes from the regular meeting of July 2, 2014 and July 16, 2014 and the special joint meeting of July 24, 2014 and;

(2) Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

None.

BACKGROUND:

None.

FISCAL IMPACT:

None.

Respectfully submitted,

Vincent D. Chang
City Clerk

Prepared by:

Michelle Chen
Minutes Clerk

Approved By:

Paul L. Talbot
City Manager

Attachments: July 2, 2014 (Regular), July 16, 2014 (Regular), July 24, 2014 (Special Joint)

MINUTES
MONTEREY PARK CITY COUNCIL
SUCCESSOR AGENCY (SA)
REGULAR MEETING
JULY 2, 2014

The City Council of the City of Monterey Park held a Regular Meeting of the Council in the Council Chamber, located at 320 West Newmark Avenue in the City of Monterey Park, Wednesday, July 2, 2014 at 7:00 p.m.

The minutes include items considered by the City Council acting on behalf of the Successor Agency of the former Monterey Park Redevelopment Agency, which dissolved February 1, 2012. Successor Agency matters will include the notation of "SA" next to the Agenda Item Number.

CALL TO ORDER:
Mayor Wong called the meeting to order at 7:00 p.m.

FLAG SALUTE:
The Monterey Park Fire Explorers led the flag salute.

ROLL CALL:
City Clerk Chang called the roll:
Council Members Present: Real Sebastian, Ing, Chan, Liang, Wong
Council Members Absent: None

ALSO PRESENT: City Manager Talbot, City Attorney Hensley, City Treasurer Leon, Public Works Director/Assistant City Manager Bow, Police Chief Smith, Human Resources Director Cody, Community and Economic Development Director Huntley, Management Services Director Thai, Recreation and Community Services Director Costley, City Librarian Arvizu, Controller Yaung, Support Services Manager Shay

AGENDA ADDITIONS, DELETIONS, CHANGES AND ADOPTIONS

Discussion: City Manager Talbot reported corrections to Agenda Item No. 3C stating that the City Council is approving the minutes for the regular meeting of May 21, 2014 and June 4, 2014 and the special meeting of May 27, 2014 and the adjourned special meeting of May 28, 2014.

1. PRESENTATIONS:
None.

ORAL AND WRITTEN COMMUNICATIONS

- Rita Miller invited the residents to attend the city's Annual National Night Out on August 5, 2014 from 6:00 p.m. – 8:00 p.m. at City Hall and stated that refreshments and hot dogs will be served by the Monterey Park Police Department.

- Delario Robinson spoke of his concerns on comments expressed by public speakers at the last council meeting and thanked Public Works Director Bow and the city staff for their continued hard work and dedication to the residents and community. He also recommended the city invest in new media equipment to improve the visual quality of reports for the visually impaired and encourage city transparency.

2. SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA) CONSENT CALENDAR ITEM NOS. 2A - 2B

Matters listed under consent calendar are considered to be routine, ongoing business and are enacted by one motion unless specified.

Action Taken: The City Council acting on behalf of the Successor Agency of the former Monterey Park Redevelopment Agency approved and adopted Item Nos. 2A - 2B and reading resolutions and ordinances by title only and waiving further reading thereof.

Motion: Moved by Council Member Chan and seconded by Council Member Real Sebastian, motion carried by the following vote:

Ayes: Council Members: Real Sebastian, Ing, Chan, Liang, Wong
Noes: Council Members: None
Absent: Council Members: None
Abstain: Council Members: None

2A. WARRANT REGISTER FOR SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY OF JULY 2, 2014

It is required that the City Council (acting on behalf of the Successor Agency) approve all disbursements.

Action Taken: The City Council approved the payment of warrants and adopted **Resolution No. SA – 74** of the Successor Agency (SA) to the former Monterey Park Redevelopment Agency allowing certain claims and demands per warrant register dated **July 2, 2014 totaling $14.97** and specifying the funds out of which the same are to be paid on Consent Calendar.

Resolution No. SA – 74, entitled:
A RESOLUTION OF THE SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA) ALLOWING CERTAIN CLAIMS AND DEMANDS PER WARRANT REGISTER DATED **July 2, 2014 totaling $14.97** AND SPECIFYING THE FUNDS OUT OF WHICH THE SAME ARE TO BE PAID

2B. SUCCESSOR AGENCY MINUTES

Approval of Minutes from the regular meeting of May 21, 2014 and June 4, 2014 of the Successor Agency to the former Monterey Park Redevelopment Agency.

Action Taken: The City Council approved the minutes from the Successor Agency to the former Monterey Park Redevelopment Agency regular meeting of May 21, 2014 and June 4, 2014 on Consent Calendar.

This is the end of Successor Agency (SA) items.

MINUTES
MONTEREY PARK CITY COUNCIL
SUCCESSOR AGENCY (SA)
REGULAR MEETING
JULY 16, 2014

The City Council of the City of Monterey Park held a Regular Meeting of the Council in the Council Chamber, located at 320 West Newmark Avenue in the City of Monterey Park, Wednesday, July 16, 2014 at 7:00 p.m.

The minutes include items considered by the City Council acting on behalf of the Successor Agency of the former Monterey Park Redevelopment Agency, which dissolved February 1, 2012. Successor Agency matters will include the notation of "SA" next to the Agenda Item Number.

CALL TO ORDER:
Mayor Wong called the meeting to order at 7:01 p.m.

FLAG SALUTE:
The Monterey Park Police Explorers led the flag salute.

ROLL CALL:
City Clerk Chang called the roll:
Council Members Present: Real Sebastian, Ing, Chan, Liang, Wong
Council Members Absent: None

ALSO PRESENT: City Manager Talbot, City Attorney Hensley, City Treasurer Leon, Public Works Director/Assistant City Manager Bow, Police Chief Smith, Fire Chief Haberle, Human Resources Director Cody, Community and Economic Development Director Huntley, Management Services Director Thai, Recreation and Community Services Director Costley, City Librarian Arvizu, Controller Yaung

AGENDA ADDITIONS, DELETIONS, CHANGES AND ADOPTIONS

Discussion: City Attorney Hensley informed the council to a clarification on Agenda Item No. 4B specifying on Section 2.B. of both the proposed Water Ordinance and Wastewater Ordinance setting the Amount of Rates and Charges provision to state, "The rates set forth on Exhibit A include an annual fifteen percent (15%) increase for the next five years commencing on September 1, 2014. The rates shall be as set forth on Exhibit A except that the Council is hereby suspending the rate increase for the second through fifth year of the rate schedule from fifteen percent (15%) annual increases to ten percent (10%) annual increases but reserves the right to increase the rate back up to the fifteen percent (15%) levels set forth on Exhibit A by amending this Ordinance. Additionally, as of September 1, 2019, the rate shall automatically revert back to the rate in existence as of August 31, 2017." In addition, City Attorney Hensley clarified Section 2.C of both the proposed Water Ordinance and Wastewater Ordinance setting the Amount of Rates and Charges provision to state, "The Council shall meet at least thirty days in advance of each annual rate increase to receive a detailed presentation

from staff regarding the expenditures made from the fund for the prior year and the projected expenditures for the next twelve month period. The Council shall discuss whether the rates should be increases, remain the same or decreased during this annual meeting."

1. PRESENTATIONS:
None.

ORAL AND WRITTEN COMMUNICATIONS

- Nancy Arcuri spoke of her concerns on the recent approved Measure A, allowing 80 residential housing developments at 2015 Portero Grande. She addressed the council recommending the City encourage developers to pay additional impact fees to collect additional funding revenue sources to support the city's library and parks and recreation services on behalf of the residents' and our "hometown."

- Emerald Tse introduced herself as a board member of Mark Keppel High School's Promoting Youth Advocacy (PYA) Club. She informed the council that PYA is continuing this year to further study and research environmental justice and the impact of air quality control and pollution.

- Amber Ho, President of Mark Keppel High School Promoting Youth Advocacy Club, informed the council stating PYA is continuing their dedication to further research the impact of ultrafine particles and the health and safety risks of the students and faculty at Mark Keppel High School.

- Timothy Tran spoke on behalf of Mark Keppel High School Promoting Youth Advocacy Club informing the council of recent community events and research that members of PYA have conducted with South Coast Air Quality Management District to study the impact of ultrafine particles and air quality and environmental health. He also spoke of PYA's dedication to educate the public with Bike San Gabriel Valley to organize public events to encourage bike usage and promote bike infrastructure improvements.

- Brian Yeo, Historian for Mark Keppel High School Promoting Youth Advocacy Club, addressed the council stating members of PYA are continuing this year to further research and explore possible solutions to protecting the health and safety risks of the students and faculty members at Mark Keppel High School. He spoke of his recommendations on behalf of PYA to: (1) install air filters in classrooms and hallways to reduce the health risks associated with ultrafine particles; (2) promote awareness and public outreach with Bike SGV to encourage bike usage and public transportation and (3) invest in the city's infrastructure to build bike-friendly lanes to improve the city's environmental impact and air quality control.

- Jim Smith, Police Chief of Monterey Park Police Department invited the council and the residents' to attend the city's Annual National Night Out Event on Tuesday, August 5, 2014 from 6:00 p.m. - 8:00 p.m. The Monterey Park Police Department will be serving free hot dogs and refreshments at the City Hall front lawn.

- Rainbow Yeung spoke on behalf of the South Coast Air Quality Management District (SQAMD) updating the council and residents of SCAQMD's new app features and encouraged the council and residents' to visit their website to receive daily updates and news alerts.

- Sarkis Antonian made brief comments to the previous speaker's recommendations and expressed his support to the Mark Keppel High School Promoting Youth Advocacy Club students and their outreach to improve air quality.

- Damian Orozco addressed the council as the newly elected President of the Monterey Park Charnber of Commerce and thanked the council and city staff for their continued support and looks forward to building a stronger relationship with the community and its members. He also informed the council and residents' of upcoming calendar events: (1) Multi-Chamber Dinner and Mixer on July 23, 2014 from 6:00 p.m. - 8:00 p.m. at Mr. M's Hot Wings and Things located at 886 North Garfield Avenue in Montebello; (2) Chamber Installation and Awards Dinner on July 30, 2014 from 6:00 p.m. - 9:00 p.m. at the Chamber of Commerce; and (3) Multi-Chamber Breakfast on August 13, 2014 from 7:30 a.m. - 9:30 a.m. at Double Tree Hotel located at 5757 East Telegraph Road in Commerce.

- Rafael G. Salazar from the Monterey Park Chamber of Commerce invited the council and residents' to attend the First Monterey Park Night Market on Friday, July 25, 2014 from 5:30 p.m. - 10:30 p.m. at Barnes Park. He encouraged the community to enjoy the food trucks/food booths, art exhibit and free entertainment featuring a "Tribute to the Beatles."

2. SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA) CONSENT CALENDAR ITEM NOS. 2A - 2C

Matters listed under consent calendar are considered to be routine, ongoing business and are enacted by one motion unless specified.

Action Taken: The City Council acting on behalf of the Successor Agency of the former Monterey Park Redevelopment Agency approved and adopted Item Nos. 2A - 2C and reading resolutions and ordinances by title only and waiving further reading thereof.

Motion: Moved by Council Member Real Sebastian and seconded by Council Member Chan, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

2A. WARRANT REGISTER FOR SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY OF JULY 16, 2014

It is required that the City Council (acting on behalf of the Successor Agency) approve all disbursements.

Action Taken: The City Council approved the payment of warrants and adopted **Resolution No. SA – 75** of the Successor Agency (SA) to the former Monterey Park Redevelopment Agency allowing certain claims and demands per warrant register dated **July 16, 2014 totaling $3,331.06** and specifying the funds out of which the same are to be paid on Consent Calendar.

Resolution No. SA – 75, entitled:
A RESOLUTION OF THE SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA) ALLOWING CERTAIN CLAIMS AND DEMANDS PER WARRANT REGISTER DATED **July 16, 2014 totaling $3,331.06** AND SPECIFYING THE FUNDS OUT OF WHICH THE SAME ARE TO BE PAID

2B. SUCCESSOR AGENCY INVESTMENT REPORT AS OF JUNE 2014

In accordance with the City's Investment Policy, a monthly investment report is presented to the City Council showing the types of investments, dates of maturities, amounts of deposits, rates of interest, and the current market values for securities with maturity more than 12 months.

Action Taken: The City Council received and filed the investment report as of June 2014 on Consent Calendar.

2C.SUCCESSOR AGENCY MINUTES

Approval of Minutes from the regular meeting of June 18, 2014 of the Successor Agency to the former Monterey Park Redevelopment Agency.

Action Taken: The City Council approved the minutes from the Successor Agency to the former Monterey Park Redevelopment Agency regular meeting of June 18, 2014 on Consent Calendar.

NEW BUSINESS

2D.REQUEST BY THE MONTEREY PARK CHAMBER OF COMMERCE TO FORGIVE DEFERRED RENTAL MONIES OWED TO THE FORMER REDEVELOPMENT AGENCY FOR RENT

The Monterey Park Chamber of Commerce is requesting that past due deferred rent money in the amount of $29,400, be forgiven. (Exhibit A - Letter dated May 12, 2014). The deferred monies are owed to the Successor Agency through the former redevelopment agency. Funds received from repayment would be distributed to the County of Los Angeles for distribution to the various taxing entities.

Recommendation:

(1) None.
(2) Take such additional, related, action that may be desirable.

Action Taken: None. The City Council approved to continue this item to a Regular Council Meeting in September 2014 and directed staff to present additional information from the Monterey Park Chamber of Commerce detailing current financial statements, budget projections for this fiscal year, and a revenue statement for the Monterey Park Night Market for further review and discussion.

Motion: Moved by Council Member Real Sebastian and seconded by Mayor Wong, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

This is the end of Successor Agency (SA) items.

MINUTES
CITY COUNCIL ACTING ON BEHALF OF THE SUCCESSOR AGENCY OF THE FORMER MONTEREY PARK REDEVELOPMENT AGENCY, OVERSIGHT BOARD TO THE CITY OF MONTEREY PARK SUCCESSOR AGENCY ACTING ON BEHALF OF THE FORMER REDEVELOPMENT AGENCY AND MONTEREY PARK CITY COUNCIL
SPECIAL JOINT MEETING
JULY 24, 2014

The City Council Acting on Behalf of the Successor Agency of the former Monterey Park Redevelopment Agency, Oversight Board to the City of Monterey Park Successor Agency Acting on Behalf of the former Redevelopment Agency and The City Council of the City of Monterey Park held a Special Joint Meeting of the Council/Board Members in Room 266, Second Floor of the City Hall, located at 320 West Newmark Avenue in the City of Monterey Park, Thursday, July 24, 2014 at 9:00 a.m.

CALL TO ORDER:
Mayor Anthony Wong called the meeting to order at 9:05 a.m.

ROLL CALL:
City Clerk Chang called the roll:
Council Members Present: Chan, Liang, Wong
Council Members Absent: Real Sebastian, Ing
Oversight Board Members Present: Robert Lee Gin, Michael D. Hamner, Cheryl Plotkin, Annie Yaung, John Leung
Oversight Board Members Absent: Paul Talbot, Katherine Hennigan
Also Present: City Attorney Hensley (via conference call), Public Works Director/Assistant City Manager Bow, Community and Economic Development Director Huntley, Economic Development Specialist Ramirez

AGENDA ADDITIONS, DELETIONS, CHANGES AND ADOPTIONS
None.

ORAL & WRITTEN COMMUNICATIONS
None.

SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA)

NEW BUSINESS

1. **A REVISED RESOLUTION APPROVING ENTERING INTO A PURCHASE AND SALES AGREEMENT BY AND BETWEEN JOINT WIN DEVELOPMENT LLC FOR THE PURCHASE OF REAL PROPERTY LOCATED AT 700 CORPORATE CENTER DRIVE (APN 5237-022-902)**

   Staff submitted the Purchase and Sale Agreement (PSA) and resolution approving the Oversight Board action taken on May 21, 2014 to the Department of Finance, as directed. The Department of Finance reviewed the documents and directed staff to revise the resolution to include the parcel number of the property referenced. Note that

the Department of Finance did not provide any legal reason for the requested change; it appears that this was simply an arbitrary decision.

Action Taken: The City Council acting on behalf of the Successor Agency of the former Monterey Park Redevelopment Agency (SA) (1) approved and adopted **Resolution No. SA - 76** confirming the decision to authorize the City Manager to execute all agreements and related documents, in a form approved by the City Attorney, to convey real property at 700 Corporate Center Drive and (2) directed staff to transmit the revised **Resolution No. SA - 76** and the Purchase and Sales Agreement to the Department of Finance and other appropriate public agencies.

Resolution No. SA - 76, entitled:
A REVISED RESOLUTION CONFIRMING THE ACTION OF THE MONTEREY PARK SUCESSORY AGENCY IN ACCORDANCE WITH APPLICABLE LAW

Motion: Moved by Council Member Chan and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes:	Council Members:	Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	Real Sebastian, Ing
Abstain:	Council Members:	None

2. AN AMENDMENT TO THE PURCHASE AND SALES AGREEMENT BETWEEN THE SUCCESSOR AGENCY AND JOINT WIN DEVELOPMENT LLC

The buyer, Joint Win Development LLC, has submitted a request to extend the closing date of escrow related to Buyer's acquisition of the Successor Agency property at 700 Corporate Center Drive (APN5237-022-902). Such a request requires review and approval by the Successor Agency first, followed by the review and approval by the Oversight Board.

Action Taken: The City Council acting on behalf of the Successor Agency of the former Monterey Park Redevelopment Agency (SA) (1) authorized the City Manager to execute an amended agreement in a form approved by the City Attorney to extend the closing date of escrow to September 18, 2014 and (2) authorized the City Manager and City Attorney to make an amendment to the second offer to extend the closing date past September 18, 2014 contingent upon the receipt of an non-refundable deposit to the Successor Agency.

Motion: Moved by Council Member Chan and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes:	Council Members:	Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	Real Sebastian, Ing
Abstain:	Council Members:	None

This is the end of Successor Agency (SA) items.

City Council Staff Report

DATE: **August 20, 2014**

AGENDA ITEM NO: **Consent Calendar**
Agenda Item 3-A.

TO: The Honorable Mayor and City Council

FROM: Chu Thai, Director of Management Services
Annie Yaung, CPFO, Controller

SUBJECT: Warrant Register for the City of Monterey Park of
August 6 & 20, 2014

RECOMMENDATION:

It is recommended that the City Council:

(1) Approve payment of warrants and adopt Resolution No. _____ allowing certain claims and demands per Warrant Register dated **August 6 & 20, 2014 totaling $3,377,080.94** and specifying the funds out of which the same are to be paid; and

(2) take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

Disbursements will be made from the funds referenced in the attached Resolution in Warrants numbered **299700-300224**

.

BACKGROUND:

The claims and demands on the attached warrant register have been duly audited. I certify that the said claims and demands are accurate, are proper charges against the City of Monterey Park. I also certify that there are monies available for the payments thereof.

FISCAL IMPACT:

Disbursements from all funds total **$3,377,080.94.**

Respectfully submitted:

Chu Thai
Director of Management Services

Prepared by:

Annie Yaung, CPFO
Controller

Approved By:

Paul L. Talbot
City Manager

Attachments: Warrant Register

RESOLUTION NO.
A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MONTEREY PARK, CALIFORNIA ALLOWING CERTAIN CLAIMS AND DEMANDS PER WARRANT REGISTER DATED
6TH & 20TH DAY OF AUGUST 2014
TOTALING $3,377,080.94 AND SPECIFYING THE FUNDS OUT OF WHICH THE SAME ARE TO BE PAID

THE CITY COUNCIL OF THE CITY OF MONTEREY PARK DOES RESOLVE:

SECTION 1. That the following claims and demands have been audited and that the same are hereby allowed from various funds in the following amounts:

General Fund	$	948,276.58
Retirement Fund		4,733.50
State Gas Tax Fund		4,772.24
Sewer Fund		703.46
Refuse Fund		454,475.10
City Shop Fund		78,247.42
General Liability Fund		694,222.91
Technology Internal Service Fund		68,339.38
Payroll Clearing Account		17,230.39
Public Safety Impact Fee		439.18
Special Deposits Fund		55,696.96
Business Improvement Area #1		5,512.87
Workers Comp. Fund		309,267.67
Water Fund		193,154.89
Water Treatment Fund		295,585.89
OPA Proposition A		21,027.99
Measure R Fund		8,352.74
Library Tax Fund		1,031.09
POST		4,037.94
Recreation Fund		26,188.37
Asset Forfeiture		51,704.20
Cal Library Literacy Svc Grant		1,499.94
Prop C		102,343.54
CDBG Fund		7,024.90
Maintenance District 93-1		783.35
Prop A - Per Parcel Grant		263.00
SR Pedestrian & Bicycle Safety		633.59
SAFETEA-LU Grant		12,925.00
ELAC Instructional Serv Prog		8,301.55
Target Grant (2010)		305.30
TOTAL	$	3,377,080.94

PASSED, APPROVED AND ADOPTED THE 20TH DAY OF AUGUST 2014.

Anthony Wong, Mayor
City of Monterey Park, California

ATTEST

Vincent D. Chang, City Clerk
City of Monterey Park, California

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS.
CITY COUNCIL OF THE)
CITY OF MONTEREY PARK)

I hereby certify that the foregoing Resolution was adopted by the City Council of the City of Monterey Park at a regular meeting held on the 20th day of August 2014 by the following vote of the Council:

AYES:	COUNCIL MEMBERS:
NOES:	COUNCIL MEMBERS:
ABSTAINED:	COUNCIL MEMBERS:
ABSENT:	COUNCIL MEMBERS:

Vincent D. Chang, City Clerk
City of Monterey Park, California

ATTACHMENT 1
Warrant Register

FY 1314

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
10-8 RETROFIT, INC	0160-850-4211-54050	80.35	FLEET PARTS		299727	
						80.35
3M LIBRARY SYSTEMS CONTRACT	0010-801-6005-38400	1,816.75	LIBRARY SELFCHECK SYSTEM		299728	
						1,816.75
A & J PORTABLE RESTROOM INC	0075-450-0075-08915	1,000.00	FARMERS MARKET RESTROOM(TRUST)	80382	299729	
	0075-450-0075-08915	800.00	FARMERS MARKET RESTROOM(TRUST)	80382	299729	
						1,800.00
A V BINGO	0010-801-6505-38400	177.65	LANGLEY-BINGO GAME SERVICE		299730	
						177.65
ACCELA INC	0010-450-1703-02520	32,216.40	BUILDING SYSTEM MANAGEMENT	80295	299731	
						32,216.40
ADLERHORST INTERNATIONAL INC.	0075-450-0075-08440	2,000.00	POLICE TRAINING (TRUST)	80611	299732	
	0160-801-3103-22800	2,200.00	POLICE TRAINING	80611	299732	
	0160-801-3103-22800	10,368.00	POLICE TRAINING	80611	299732	
						14,568.00
ADVANCE PEST TERMITE CONTROL	0010-801-3104-22750	39.00	PEST CONTROL		299733	
	0010-801-3104-22750	30.00	PEST CONTROL		299733	
	0010-801-3113-38100	39.00	PEST CONTROL		299733	
	0010-801-6502-22150	30.00	PEST CONTROL		299733	
	0010-801-6502-22150	42.00	PEST CONTROL		299733	
	0010-801-6502-22150	38.00	PEST CONTROL		299733	
	0010-801-6502-22150	42.00	PEST CONTROL		299733	
	0010-801-6502-22150	53.00	PEST CONTROL		299733	
	0010-801-6502-22150	47.00	PEST CONTROL		299733	
	0010-801-6502-38250	28.00	PEST CONTROL	80327	299733	
	0010-801-6502-38250	14.00	PEST CONTROL	80327	299733	
	0010-801-6505-38250	21.00	PEST CONTROL	80327	299733	
	0010-801-6505-38250	39.00	PEST CONTROL	80327	299733	
	0010-801-6505-38250	44.00	PEST CONTROL	80327	299733	

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
ADVANCE PEST TERMITE CONTROL	0010-801-6517-38100	39.00	PEST CONTROL	80327	299733	
	0010-801-6505-38250	50.00	PEST CONTROL	80327	299733	
						595.00
ADVANCED BATTERY SYSTEMS, INC.	0160-850-4211-54050	647.66	FLEET PARTS		299734	
						647.66
ALLSTAR FIRE EQUIPMENT INC.	0010-801-3210-38400	784.80	FIRE SUPPLIES		299735	
						784.80
ANIMAL PEST MANAGEMENT SVCS	0010-801-3111-31950	3,000.00	TRAPPING SERVICE	80584	299736	
						3,000.00
ARAMARK UNIFORM & CAREER APPAREL, I	0010-801-3210-39050	2.41	FIRE UNIFORM SERVICES	80437	299737	
	0010-801-3210-39050	11.77	FIRE UNIFORM SERVICES	80437	299737	
	0010-801-3210-39050	35.31	FIRE UNIFORM SERVICES	80437	299737	
	0010-801-3210-39050	18.73	FIRE UNIFORM SERVICES	80437	299737	
	0010-801-3210-39050	8.29	FIRE UNIFORM SERVICES	80437	299737	
	0010-801-3210-39050	17.66	FIRE UNIFORM SERVICES	80437	299737	
	0010-801-3210-39050	18.73	FIRE UNIFORM SERVICES	80437	299737	
	0010-801-3210-39050	35.31	FIRE UNIFORM SERVICES	80437	299737	
						148.21
ASTRO PLUMBING SUPPLY CO (DBA)	0010-801-4210-38100	219.78	PLUMBING SUPPLIES		299738	
						219.78
ATHENS SERVICES	0043-801-4208-41200	407,417.32	REFUSE COLLECTION SERVICES		299739	
						407,417.32
ATLANTIC SQUARE	0010-701-0010-02010	135.20	REFUND-BUSINESS LICENSE FEE		299740	
						135.20
AUTOZONE WEST, INC	0060-801-4211-23500	43.58	FLEET SUPPLIES		299741	
	0060-801-4211-23500	75.32	FLEET SUPPLIES		299741	
	0060-801-4211-23500	66.69	FLEET SUPPLIES		299741	
	0060-801-4211-23500	553.92	FLEET SUPPLIES		299741	
	0060-801-4211-23500	119.88	FLEET SUPPLIES		299741	

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
AUTOZONE WEST, INC	0060-801-4211-23500	98.10	FLEET SUPPLIES		299741	
	0060-801-4211-23500	17.43	FLEET SUPPLIES		299741	
	0060-801-4211-23500	44.93	FLEET SUPPLIES		299741	
	0060-801-4211-23500	60.64	FLEET SUPPLIES		299741	
	0060-801-4211-23500	189.66	FLEET SUPPLIES		299741	
						1,270.15
B W GRAPHICS	0010-801-3114-39250	2,254.12	POLICE CITATIONS		299742	
						2,254.12
BARRIO PLANNERS, INC	0342-801-5003-91750	12,925.00	TRANSIT CTR LANDSCAPE DESIGN	80574	299743	
						12,925.00
BEST WESTERN MARKLAND HOTEL	0062-801-5101-35650	1,269.94	HOUSING-S RAMIREZ		299744	
						1,269.94
BG PETROSPECS	0060-801-4211-22250	1,117.55	FLEET SUPPLIES		299745	
						1,117.55
BISHOP COMPANY	0176-801-6516-24100	338.55	PARKS SUPPLIES	80062	299746	
						338.55
BOB BARKER CO., INC.	0010-801-3113-22600	354.51	POLICE SUPPLIES	80105	299747	
	0010-801-3113-22600	31.20	POLICE SUPPLIES	80105	299747	
	0010-801-3113-22600	676.89	POLICE SUPPLIES	80105	299747	
	0010-801-3113-22600	21.96	POLICE SUPPLIES	80105	299747	
						1,084.56
BOLLINI'S PIZZERIA NAPOLITANA	0010-701-0010-02010	62.10	REFUND-BUSINESS LICENSE FEE		299748	
						62.10
CAAD LLC	0092-801-4221-32200	676.32	WATER BILL MAILING SERVICE		299749	
						676.32
CALGON CARBON CORPORATION	0093-801-4229-23300	34,880.00	WATER TREATMENT	80598	299750	
	0093-801-4229-23300	17,440.00	WATER TREATMENT	80598	299750	
	0093-801-4230-23300	5,400.00	WATER TREATMENT	80596	299750	
						57,720.00

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
CALIFORNIA BUILDING STANDARDS COMMI	0010-701-0010-09202	394.20	BUILDING PERMIT SURCHARGE FEE		299751	394.20
CALIFORNIA CONTRACTORS SUPPLIE	0092-801-4222-38420	444.00	WATER SUPPLIES		299752	444.00
CALIFORNIA PARK & RECREATION	0010-801-6505-39250	185.00	RECREATION MEMBERSHIP		299753	185.00
CALOX, INC	0010-801-3210-22750	29.75	FIRE MEDICAL SUPPLIES	80226	299754	
	0010-801-3210-22750	21.25	FIRE MEDICAL SUPPLIES	80226	299754	51.00
CAMINO REAL CHEVROLET	0060-801-4211-38400	640.00	FLEET REPAIR/PARTS-UNIT 929		299755	
	0060-801-4211-38400	700.00	FLEET REPAIR/PARTS-UNIT 013		299755	1,340.00
CANON FINANCIAL SERVICES, INC.	0010-801-1701-37500	832.46	COPIER MACHINE RENTAL		299756	
	0010-801-3205-37500	832.46	COPIER MACHINE RENTAL		299756	
	0010-801-3205-39250	618.98	COPIER MACHINE RENTAL		299756	
	0010-801-3205-38400	213.48	COPIER MACHINE RENTAL		299756	2,497.38
CANON SOLUTIONS AMERICA, INC	0010-801-1403-38400	258.25	COPIER MAINTENANCE		299757	
	0010-801-1403-37500	762.52	COPIER MAINTENANCE		299757	
	0010-801-1408-38400	340.26	COPIER MAINTENANCE	80273	299757	
	0010-801-1801-38400	340.25	COPIER MAINTENANCE	80273	299757	
	0010-801-6502-38400	340.25	COPIER MAINTENANCE	80273	299757	
	0010-801-1301-39250	25.24	COPIER MAINTENANCE		299757	
	0010-801-1301-39250	5.43	COPIER MAINTENANCE		299757	
	0010-801-1408-38400	255.72	COPIER MAINTENANCE	80273	299757	
	0010-801-1801-38400	255.72	COPIER MAINTENANCE	80273	299757	
	0010-801-6502-38400	255.72	COPIER MAINTENANCE	80273	299757	
	0010-801-1701-37500	367.46	COPIER MAINTENANCE	80210	299757	
	0010-801-3205-37500	127.50	COPIER MAINTENANCE	80210	299757	

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
CANON SOLUTIONS AMERICA, INC	0010-801-3205-24100	239.95	COPIER MAINTENANCE	80210	299757	
	0010-801-1701-37500	367.46	COPIER MAINTENANCE	80210	299757	
						3,941.73
CARL WARREN & COMPANY	0062-801-5101-35600	63.84	LIABILITY CLAIMS-LA COUNTY		299758	
	0062-801-5101-35600	63.84	LIABILITY CLAIMS-AUTO CLUB		299758	
	0062-801-5101-35600	79.80	LIABILITY CLAIMS-E. DURAN		299758	
	0062-801-5101-35600	71.82	LIABILITY CLAIMS-P. MONTOYA		299758	
	0062-801-5101-35600	103.74	LIABILITY CLAIMS-Z.Y. XU		299758	
	0062-801-5101-35600	63.84	LIABILITY CLAIMS-N. NG		299758	
	0062-801-5101-35600	63.84	LIABILITY CLAIMS-CYD INVEST.		299758	
	0062-801-5101-35600	63.84	LIABILITY CLAIMS-J. RECIO		299758	
	0062-801-5101-35600	127.68	LIABILITY CLAIMS-M. TSE		299758	
	0062-801-5101-35600	79.80	LIABILITY CLAIMS-P. SHAO		299758	
	0062-801-5101-35600	287.63	LIABILITY CLAIMS-P. OSUNA		299758	
	0062-801-5101-35600	103.74	LIABILITY CLAIMS-L. MEJIA, JR.		299758	
	0062-801-5101-35600	63.84	LIABILITY CLAIMS-P. LOZANO		299758	
	0062-801-5101-35600	127.68	LIABILITY CLAIMS-X.Y. DONG		299758	
	0062-801-5101-35600	127.68	LIABILITY CLAIMS-A. RAMIREZ		299758	
	0062-801-5101-35600	151.62	LIABILITY CLAIMS-R. LOPEZ		299758	
	0062-801-5101-35600	151.62	LIABILITY CLAIMS-D. MEDINA		299758	
	0062-801-5101-35600	143.64	LIABILITY CLAIMS-V. FRANCO-BEC		299758	
	0062-801-5101-35600	63.84	LIABILITY CLAIMS-V. ZIA-LOPEZ		299758	
	0062-801-5101-35600	103.88	LIABILITY CLAIMS-J. LILAVOIS		299758	
	0062-801-5101-35600	151.76	LIABILITY CLAIMS-Y. LEONG		299758	
						2,258.97
CAT SPECIALTIES, INC.	0010-801-3205-22310	75.21	FIRE UNIFORM		299759	
						75.21
CDW TECHNOLOGIES, INC	0010-801-3205-21250	589.82	COMPUTER SUPPLIES		299760	
						589.82

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
MARIA CHACON	0010-701-0010-08025	35.00	REFUND-RECREATION CLASS		299761	
						35.00
CHARTER COMMUNICATIONS	0010-801-6003-38400	476.80	INTERNET/CABLE SERVICE		299762	
						476.80
KING TAK CHEUNG	0010-701-0010-02010	278.64	REFUND-BUSINESS LICENSE FEE		299763	
	0077-701-0077-02110	201.82	REFUND-BID FEE		299763	
						480.46
CHUNG NING PANG M D	0010-701-0010-02010	94.47	REFUND-BUSINESS LICENSE FEE		299764	
						94.47
CLEAN ENERGY	0109-801-4201-31960	11,712.67	CNG FUEL 06/14	80410	299765	
						11,712.67
CLINICAL LABORATORY OF	0092-801-4222-31950	877.83	WATER ANALYSIS	80344	299766	
	0092-801-4222-31950	10.18	WATER ANALYSIS	80344	299766	
	0092-801-4222-31950	10.18	WATER ANALYSIS	80344	299766	
	0092-801-4222-31950	108.23	WATER ANALYSIS	80344	299766	
	0092-801-4222-31950	10.18	WATER ANALYSIS	80344	299766	
	0092-801-4222-31950	176.22	WATER ANALYSIS	80344	299766	
	0092-801-4222-31950	10.18	WATER ANALYSIS	80344	299766	
	0092-801-4222-31950	108.23	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	1,695.53	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	1,695.53	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	446.77	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	30.52	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	30.52	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	1,695.53	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4229-31950	40.70	WATER ANALYSIS	80344	299766	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
CLINICAL LABORATORY OF	0093-801-4229-31950	1,695.53	WATER ANALYSIS	80344	299766	
	0093-801-4232-31950	18.50	WATER ANALYSIS	80344	299766	
	0093-801-4226-31950	1,502.20	WATER ANALYSIS	80344	299766	
	0093-801-4226-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4226-31950	757.58	WATER ANALYSIS	80344	299766	
	0093-801-4226-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4226-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4226-31950	757.58	WATER ANALYSIS	80344	299766	
	0093-801-4226-31950	20.35	WATER ANALYSIS	80344	299766	
	0093-801-4226-31950	757.58	WATER ANALYSIS	80344	299766	
	0093-801-4231-31950	137.82	WATER ANALYSIS	80344	299766	
	0093-801-4231-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4228-31950	18.50	WATER ANALYSIS	80344	299766	
	0093-801-4228-31950	74.00	WATER ANALYSIS	80344	299766	
	0093-801-4228-31950	18.50	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	448.62	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	20.35	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	248.83	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	248.83	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	10.18	WATER ANALYSIS	80344	299766	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
CLINICAL LABORATORY OF	0093-801-4230-31950	859.32	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	61.05	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	794.57	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	40.70	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	20.35	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	20.35	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	794.58	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	61.05	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	248.82	WATER ANALYSIS	80344	299766	
	0093-801-4227-31950	30.52	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	10.18	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	71.22	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	794.58	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	30.52	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	30.52	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	20.35	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	20.35	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	20.35	WATER ANALYSIS	80344	299766	
	0093-801-4230-31950	71.22	WATER ANALYSIS	80344	299766	
						17,875.30
COAST FITNESS REPAIR SHOP INC (DBA)	0010-801-6505-38400	125.00	EQUIPMENT REPAIR		299767	
						125.00
COME LAND MAINTENANCE COMPANY	0010-801-6517-38250	188.00	JANITORIAL SERVICE	80063	299768	
	0010-801-6505-38250	605.00	JANITORIAL SERVICE	80283	299768	
	0109-801-6511-38250	605.00	JANITORIAL SERVICE	80283	299768	
	0109-801-6511-38250	605.00	JANITORIAL SERVICE	80283	299768	
	0010-801-3113-38250	1,958.33	JANITORIAL SERVICE	80113	299768	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						3,961.33
COMMUNICATIONS SERVICE CO.	0160-801-3103-22750	1,027.25	EQUIPMENT REPLACEMENT		299769	
						1,027.25
COMPUTER SERVICE COMPANY	0010-801-4206-38400	3,460.00	TRAFFIC SIGNAL MAINTENANCE		299770	
	0010-801-4206-38400	3,460.00	TRAFFIC SIGNAL MAINTENANCE		299770	
	0010-801-4206-38400	7,168.39	TRAFFIC SIGNAL MAINTENANCE		299770	
	0010-801-4206-38400	3,460.00	TRAFFIC SIGNAL MAINTENANCE		299770	
	0010-801-4206-38400	4,045.75	TRAFFIC SIGNAL MAINTENANCE		299770	
						21,594.14
CROWN GRAPHICS (DBA)	0060-801-4211-38410	27.00	FLEET DECAL	80008	299771	
	0160-850-4211-54050	494.32	FLEET DECAL		299771	
						521.32
DAILY JOURNAL CORPORATION	0010-801-5002-91546	159.60	LEGAL NOTICE		299772	
	0010-801-5002-91548	159.60	LEGAL NOTICE		299772	
	0010-801-5002-91544	159.60	LEGAL NOTICE		299772	
	0010-801-5002-91545	159.60	LEGAL NOTICE		299772	
	0010-801-5002-91584	310.80	LEGAL NOTICE		299772	
						949.20
DANA SAFETY SUPPLY, INC.	0160-850-4211-54050	946.00	FLEET SUPPLIES		299773	
	0160-850-4211-54050	481.45	FLEET SUPPLIES		299773	
						1,427.45
DAPEER ROSENBLIT & LITVAK	0010-801-1702-31600	3,234.92	LEGAL FEES	80211	299774	
						3,234.92
DATA WEST CORPORATION	0092-801-4221-38400	120.00	SYSTEM SUPPORT	80263	299775	
						120.00
DAVID & JOYCE WHALEY	0077-701-0077-02110	74.12	REFUND-BUSINESS LICENSE FEE		299776	
						74.12
DAY WIRELESS SYSTEMS (DBA)	0071-801-3210-38400	166.25	FIRE AUDIO EQUIPMENT REPAIR		299777	
						166.25

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
DELL MARKETING LP	0010-801-3115-24150	112.20	COMPUTER SUPPLIES		299778	
						112.20
DEPARTMENT OF CONSERVATION	0010-701-0010-09200	1,190.17	STRONG MOTION FEE		299779	
						1,190.17
DEPARTMENT OF JUSTICE	0010-701-0010-03710	684.00	FINGERPRINT PROCESSING		299780	
	0010-801-1801-39550	160.00	FINGERPRINT PROCESSING		299780	
						844.00
DETROIT INDUSTRIAL TOOLS	0092-801-4223-23700	239.86	WATER TOOLS		299781	
						239.86
DUNN-EDWARDS CORPORATION	0010-801-4210-23100	63.29	PAINT SUPPLIES		299782	
						63.29
EMPIRE CLEANING SUPPLY	0010-801-6505-22150	765.35	JANITORIAL SUPPLIES		299783	
	0010-801-6505-22150	1,451.67	JANITORIAL SUPPLIES		299783	
	0010-801-3210-22150	736.94	JANITORIAL SUPPLIES	80249	299783	
	0010-801-3210-22150	62.37	JANITORIAL SUPPLIES	80249	299783	
						3,016.33
EUROFINS EATON ANALYTICAL, INC.	0093-801-4226-31950	785.00	WATER CARBON CHANGEOUT	80173	299784	
						785.00
EVOLUTION RECYCLING INC.	0092-701-0092-07520	713.52	REFUND-WATER METER		299785	
						713.52
EWING IRRIGATION PRODUCTS,INC.	0092-801-4222-23300	160.56	WATER SUPPLIES	80174	299786	
						160.56
FAITH LUTHERAN CHURCH	0010-701-0010-02010	18.06	REFUND-BUSINESS LICENSE FEE		299787	
	0077-701-0077-02110	18.06	REFUND-BUSINESS LICENSE FEE		299787	
						36.12
FEDERAL SIGNAL CORPORATION -EMERG.	0160-850-4211-54050	1,362.50	FLEET SUPPLIES		299788	
						1,362.50
FEDEX OFFICE PRINTS & SHIP SERVICES	0092-801-4222-31950	55.73	PRINTING SERVICES		299789	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						55.73
FLEXTRONICS AMERICA, LLC	0010-801-3115-38400	430.55	COMPUTER SUPPLIES	80582	299790	
						430.55
FORD OF MONTEBELLO	0060-801-4211-23500	816.41	FLEET PARTS-UNIT 045		299791	
	0060-801-4211-23500	563.68	FLEET PARTS		299791	
						1,380.09
GONZALO GABRIEL	0136-801-3101-33250	72.86	POLICE POST TRAINING		299792	
						72.86
GALLADE CHEMICAL, INC.	0092-801-4222-23300	453.99	WATER CHEMICALS	80170	299793	
	0092-801-4222-23300	453.99	WATER CHEMICALS	80170	299793	
						907.98
GAREN III P LTD.	0010-701-0010-02010	105.00	REFUND-BUSINESS LICENSE FEE		299794	
						105.00
GARFIELD MEDICAL CENTER	0010-801-3113-41100	24.00	PHYSICAL		299795	
						24.00
GARVEY EQUIPMENT COMPANY	0176-801-6516-24100	98.10	FLEET SUPPLIES		299796	
	0010-801-3210-38400	21.03	FLEET SUPPLIES	80232	299796	
						119.13
GARVEY MEDICAL CENTER INC.	0010-701-0010-02010	83.47	REFUND-BUSINESS LICENSE FEE		299797	
						83.47
GOLDEN STAR TECHNOLOGY INC/DBA: GST	0010-801-6005-38400	2,084.82	SERVER SWITCH		299798	
						2,084.82
GOVCONNECTION INC	0010-801-1701-24150	200.00	SOFTWARE UPGRADE		299799	
	0010-801-1702-24150	50.00	SOFTWARE UPGRADE		299799	
	0010-801-1703-22750	286.32	SOFTWARE UPGRADE		299799	
	0010-801-1404-38400	1,200.41	NETWORK MAINTENANCE	80591	299799	
	0043-801-1404-38400	1,200.42	NETWORK MAINTENANCE	80591	299799	
	0092-801-1404-38400	994.51	NETWORK MAINTENANCE	80591	299799	
	0160-801-5002-99319	2,415.00	NETWORK MAINTENANCE		299799	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						6,346.66
GOVCONNECTION INC	0010-801-6005-38400	828.79	LIBRARY-LCD PROJECTOR		299800	
						828.79
GRAINGER	0010-801-4202-23950	102.51	ELECTRICAL SUPPLIES	80129	299801	
						102.51
GRAND PRIX TIRE & AUTO CENTER	0060-801-4211-38400	60.00	FLEET ALIGNMENT-UNIT 898	80013	299802	
						60.00
GRISWOLD INDUSTRIES	0093-801-4226-23300	1,859.96	WATER WELLS REPAIR	80168	299803	
	0092-801-4222-23400	193.02	WATER WELLS REPAIR	80168	299803	
						2,052.98
H & H AUTO PARTS WHOLESALE	0060-801-4211-23500	236.86	FLEET PARTS-UNIT 008		299804	
	0060-801-4211-23500	42.80	FLEET PARTS-UNIT 091		299804	
	0060-801-4211-23500	65.40	FLEET PARTS-UNIT 937		299804	
	0060-801-4211-23500	47.01	FLEET PARTS-UNIT 908		299804	
	0060-801-4211-23500	219.35	FLEET PARTS		299804	
	0060-801-4211-23500	1.86	FLEET PARTS		299804	
	0060-801-4211-23500	152.45	FLEET PARTS		299804	
	0060-801-4211-23500	22.49	FLEET PARTS		299804	
	0060-801-4211-23500	45.20	FLEET PARTS-UNIT 015		299804	
	0060-801-4211-23500	86.33-	FLEET PARTS-CREDIT		299804	
	0060-801-4211-23500	17.99-	FLEET PARTS-CREDIT		299804	
						729.10
HAROLD'S KEY SHOP, INC.	0010-801-3103-24100	42.24	KEY/LOCK SERVICES		299805	
	0010-801-3120-38400	21.80	KEY/LOCK SERVICES		299805	
	0060-801-4211-38410	27.25	KEY/LOCK SERVICES		299805	
						91.29
HEALTHFIRST MEDICAL GROUP	0010-801-1801-31900	1,737.50	PRE-EMPLOYMENT PHYSICALS		299806	
						1,737.50
HERSHEY BUSINESS PRODUCTS, LLC	0010-801-6502-38400	218.00	TYPEWRITER MAINTENANCE		299807	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
HERSHEY BUSINESS PRODUCTS, LLC	0010-801-1801-38400	150.42	TYPEWRITER MAINTENANCE		299807	368.42
HI STANDARD AUTOMOTIVE, LLC	0160-850-4211-54050	2,376.96	FLEET CONVERSION-UNIT 076		299808	2,376.96
SONJA HOLLADAY	0159-801-6507-31910	1,245.75	INSTRUCTOR-RECREATION CLASS		299809	
	0159-801-6507-31910	3,030.65	INSTRUCTOR-RECREATION CLASS		299809	4,276.40
HOME DEPOT CREDIT SERVICES	0060-801-4211-23500	234.51	HARDWARE SUPPLIES	80017	299810	
	0060-801-4211-23500	0.94	HARDWARE SUPPLIES		299810	
	0010-801-3210-38400	43.14	HARDWARE SUPPLIES	80233	299810	
	0010-801-3210-38400	54.95	HARDWARE SUPPLIES	80233	299810	333.54
INTER VALLEY POOL SUPPLY	0010-801-6503-23050	659.33	POOL CHEMICAL		299811	
	0010-801-6503-23050	531.77	POOL CHEMICAL		299811	
	0010-801-6503-23050	608.77	POOL CHEMICAL		299811	
	0010-801-6503-23050	567.02	POOL CHEMICAL		299811	2,366.89
INTERLOG CONSTRUCTION	0010-801-5002-91528	18,408.00	ELDER/HIGHLANDS PICNIC SHELTER	80517	299812	
	0010-801-5002-91529	18,408.00	ELDER/HIGHLANDS PICNIC SHELTER	80517	299812	
	0010-801-5004-91525	75,050.00	ELDER/HIGHLANDS ADA IMPROVEMNT	80503	299812	111,866.00
IP LEARNING CENTER	0159-801-6507-31910	279.00	INSTRUCTOR-RECREATION CLASS		299813	279.00
JAYVEE DANCE (DBA)	0159-801-6507-31910	1,093.95	INSTRUCTOR-RECREATION CLASS		299814	1,093.95
JENKINS & HOGIN, LLP	0010-801-1601-31600	70.00	LEGAL-CA DEPT OF FINANCE		299815	
	0010-801-1601-31600	2,556.00	LEGAL-VILLA GARFIELD		299815	2,626.00
JHM SUPPLY INC	0010-801-6517-22100	305.07	PARKS SUPPLIES		299816	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						305.07
JWA URBAN CONSULTANTS INC	0169-801-2201-31850	6,900.00	ANNUAL ACTION PLAN		299817	
						6,900.00
LOUISE KESSLER	0010-701-0010-08025	52.00	REFUND-RECREATION CLASS		299818	
						52.00
GWEN KISHIDA	0423-801-6006-22450	129.01	LIBRARY SUPPLIES		299819	
	0131-801-6001-39250	106.26	LIBRARY SUPPLIES		299819	
	0131-801-6006-22450	39.27	PETTY CASH-REFRESHMENTS		299819	
	0131-801-6006-22450	91.21	PETTY CASH-REFRESHMENTS		299819	
	0075-450-0075-08250	40.00	PETTY CASH-TRAINING (TRUST)		299819	
						405.75
KOVATCH MOBILE EQUIPMENT	0060-801-3210-38400	152.96	FLEET PARTS	80235	299820	
	0060-801-3210-38400	156.42	FLEET PARTS	80235	299820	
	0060-801-3210-38400	212.19	FLEET PARTS-ENGINE 63	80235	299820	
						521.57
L N CURTIS & SONS	0010-801-3210-38400	746.65	FIRE SUPPLIES	80236	299821	
						746.65
MACY LAC	0010-701-0010-02010	104.00	REFUND-BUSINESS LICENSE FEE		299822	
						104.00
LAW OFFICES OF CARPENTER & ROTHANS	0010-801-1601-31600	8,465.53	LEGAL SERVICE-P.OSUNA		299823	
	0010-801-1601-31600	6,496.00	LEGAL SERVICE-P OSUNA		299823	
	0010-801-1601-31600	9,698.73	LEGAL SERVICE-P OSUNA		299823	
						24,660.26
LAWN MOWER CORNER/KNG POWER EQUIPME	0092-801-4222-38400	88.79	EQUIPMENT PARTS		299824	
						88.79
LIFE SAFETY CONSULTING & ENGINEERIN	0010-701-0010-06330	562.50	FIRE PLAN CHECK		299825	
						562.50
LIFE-ASSIST INC	0010-801-3220-22350	521.97	FIRE MEDICAL SUPPLIES	80250	299826	
	0010-801-3220-22350	310.50	FIRE MEDICAL SUPPLIES	80250	299826	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
LIFE-ASSIST INC	0010-801-3220-22350	439.40	FIRE MEDICAL SUPPLIES	80250	299826	
	0010-801-3220-22350	1,147.63	FIRE MEDICAL SUPPLIES	80250	299826	
	0010-801-3220-22350	1,313.49	FIRE MEDICAL SUPPLIES	80250	299826	
						3,732.99
THE LIGHTHOUSE INC (DBA)	0060-801-4211-23500	719.27	FLEET CONVERSION	80045	299827	
						719.27
LONG BEACH BMW MOTORCYCLES (DBA)	0060-801-4211-38400	274.30	FLEET REPAIR	80021	299828	
	0060-801-4211-38400	1,188.72	FLEET REPAIR		299828	
						1,463.02
LOS ANGELES COUNTY DEPT. OF	0010-801-4206-41100	1,266.40	TRAFFIC SIGNAL MAINTENANCE		299829	
						1,266.40
LOS ANGELES COUNTY DISTRICT	0010-801-3104-31950	1,550.20	MUNI. CODES HEARING FEES	80091	299830	
						1,550.20
LOS ANGELES TIMES	0010-801-3113-39350	64.00	SUBSCRIPTION		299831	
						64.00
MARIPOSA LANDSCAPES, INC	0092-801-4222-38500	2,000.00	LANDSCAPE MAINTENANCE	80292	299832	
	0092-801-4222-38500	130.00	LANDSCAPE MAINTENANCE		299832	
	0092-801-4222-38500	2,000.00	LANDSCAPE MAINTENANCE		299832	
	0092-801-4222-38500	130.00	LANDSCAPE MAINTENANCE		299832	
	0092-801-4222-38500	382.99	LANDSCAPE MAINTENANCE		299832	
						4,642.99
MATCO TOOLS (DBA)	0060-801-4211-24100	27.80	FLEET TOOLS		299833	
						27.80
MATT CHLOR INC.	0092-801-4222-23300	663.33	WATER CHEMICAL SUPPLIES	80154	299834	
						663.33
MCMASTER-CARR SUPPLY CO.	0092-801-4223-22300	588.76	WATER SUPPLIES		299835	
						588.76
MCNEILL SECURITY AND FIRE SYSTEMS	0075-450-0075-08320	195.00	ALARM SERVICES (TRUST)		299836	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						195.00
METROPOLITAN TRANSPORTATION	0109-801-6511-41200	4,466.00	LANGLEY TAP CARD SALES	80506	299837	
	0109-801-6511-41200	2,576.00	LANGLEY TAP CARD SALES	80506	299837	
						7,042.00
MISSION SUPER HARDWARE	0010-801-3210-22750	84.65	HARDWARE SUPPLIES	80248	299838	
	0010-801-3210-22750	30.49	HARDWARE SUPPLIES	80248	299838	
	0010-801-3210-22750	104.20	HARDWARE SUPPLIES	80248	299838	
	0010-801-3210-38400	7.37	HARDWARE SUPPLIES	80248	299838	
	0010-801-3210-38400	58.47	HARDWARE SUPPLIES	80248	299838	
	0010-801-3210-38400	246.30	HARDWARE SUPPLIES	80248	299838	
	0010-801-6517-23050	18.28	HARDWARE SUPPLIES	80076	299838	
	0010-801-6517-23050	173.41	HARDWARE SUPPLIES	80076	299838	
						723.17
MODERN TRAILER SUPPLY CO (DBA)	0060-801-4211-38410	435.86	FLEET SUPPLIES		299839	
						435.86
BERTHA MONDRAGON	0010-701-0010-08025	35.00	REFUND-RECREATION CLASS		299840	
						35.00
MONTEREY CAR WASH INC	0060-801-4211-38400	965.00	CAR WASHES	80029	299841	
						965.00
MV TRANSPORTATION, INC	0166-801-4201-31960	54,758.43	SPIRIT BUS OPERATION	80475	299842	
	0109-701-0109-07680	2,509.75-	SPIRIT BUS FARE		299842	
	0109-801-4201-31960	280.00	SPIRIT BUS GPS	80475	299842	
	0109-801-4201-31960	200.00	SPIRIT BUS FUEL	80475	299842	
						52,728.68
MYERS TIRE SUPPLY	0060-801-4211-23500	13.07	FLEET SUPPLIES		299843	
						13.07
NATIONAL IMPRINT CORPORATION	0010-801-3120-39700	357.14	POLICE-CRB SUPPLIES		299844	
	0010-801-3120-39250	175.05	POLICE-CRB SUPPLIES		299844	
	0010-801-3120-39250	214.73	POLICE-CRB SUPPLIES		299844	

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
NATIONAL IMPRINT CORPORATION	0010-801-3120-39700	240.56	POLICE-CRB SUPPLIES		299844	
	0010-801-3120-22750	312.45	POLICE-CRB SUPPLIES		299844	
						1,299.93
NAVARRO'S TOWING	0062-801-5101-35650	2,718.00	TOWING SERVICES		299845	
						2,718.00
GEORGE NORIEGA	0075-450-0075-08360	2,410.67	EE COMPUTER PROGRAM (TRUST)		299846	
						2,410.67
O'REILLY AUTO PARTS	0060-801-4211-23500	209.83	FLEET PARTS	80471	299847	
	0060-801-4211-23500	47.78	FLEET PARTS	80471	299847	
	0060-801-4211-23500	40.93	FLEET PARTS		299847	
	0060-801-4211-23500	46.39	FLEET PARTS		299847	
	0060-801-4211-23500	25.03	FLEET PARTS		299847	
	0060-801-4211-23500	240.21	FLEET PARTS		299847	
						610.17
OCLC, INC	0010-801-6003-31700	1,040.13	LIBRARY CATALOGING SERVICE		299848	
						1,040.13
OFFICE DEPOT INC.	0163-801-6005-31950	47.85	OFFICE SUPPLIES		299849	
	0163-801-6005-31950	14.88	OFFICE SUPPLIES		299849	
	0163-801-6005-31950	1,044.55	OFFICE SUPPLIES		299849	
	0010-801-6003-22450	6.70	OFFICE SUPPLIES		299849	
	0423-801-6006-22450	163.84	OFFICE SUPPLIES		299849	
	0010-801-6002-21350	142.59	OFFICE SUPPLIES		299849	
	0163-801-6005-31950	121.88	OFFICE SUPPLIES		299849	
	0010-801-6002-21350	75.69	OFFICE SUPPLIES		299849	
	0010-801-6002-21350	28.78	OFFICE SUPPLIES		299849	
	0163-801-6005-31950	27.32	OFFICE SUPPLIES		299849	
	0163-801-6005-31950	67.72	OFFICE SUPPLIES		299849	
	0163-801-6005-31950	101.40	OFFICE SUPPLIES		299849	
	0131-801-6006-22450	57.85	OFFICE SUPPLIES		299849	

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
OFFICE DEPOT INC.	0423-801-6006-22450	12.45	OFFICE SUPPLIES		299849	
	0131-801-6006-22450	25.44	OFFICE SUPPLIES		299849	
	0131-801-6006-22450	7.63	OFFICE SUPPLIES		299849	
	0131-801-6006-22450	7.41	OFFICE SUPPLIES		299849	
	0163-801-6005-31950	6.53	OFFICE SUPPLIES		299849	
	0163-801-6005-31950	67.33	OFFICE SUPPLIES		299849	
	0131-801-6006-22450	6.53	OFFICE SUPPLIES		299849	
	0010-801-6002-21350	207.98	OFFICE SUPPLIES		299849	
	0010-801-6003-22450	156.85	OFFICE SUPPLIES		299849	
	0131-801-6006-22450	163.84-	OFFICE SUPPLIES-CREDIT		299849	
	0010-801-3210-38400	123.50	OFFICE SUPPLIES	80251	299849	
	0010-801-3210-38400	9.36	OFFICE SUPPLIES	80251	299849	
	0010-801-1408-21250	75.34	OFFICE SUPPLIES		299849	
	0010-801-6502-39250	75.32	OFFICE SUPPLIES		299849	
	0010-801-1801-21350	75.32	OFFICE SUPPLIES		299849	
	0010-801-3114-21250	573.96	OFFICE SUPPLIES		299849	
	0010-801-3103-38400	599.50	OFFICE SUPPLIES		299849	
	0010-801-3114-21250	34.86	OFFICE SUPPLIES		299849	
	0010-801-3114-21350	52.78	OFFICE SUPPLIES	80097	299849	
	0010-801-3114-21350	21.35	OFFICE SUPPLIES	80097	299849	
	0010-801-3104-21200	72.40	OFFICE SUPPLIES		299849	
						3,949.05
OFFICE SOLUTIONS	0010-801-1702-21350	406.99	OFFICE SUPPLIES		299850	
	0010-801-1702-22750	114.68	OFFICE SUPPLIES		299850	
						521.67
SAMANTHA ORTIZ	0010-701-0010-07050	35.70	REFUND-PICNIC RESERVATION		299851	
						35.70
PARKHOUSE TIRE, INC.	0060-801-4211-23500	487.08	FLEET TIRES	80035	299852	
						487.08

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
PBS ENGINEERS, INC.	0010-701-0010-06100	819.00	PLAN CHECK	80052	299853	
	0010-701-0010-06100	56.00	PLAN CHECK	80052	299853	
	0010-701-0010-06100	840.00	PLAN CHECK	80052	299853	
	0010-701-0010-06100	2,185.00	PLAN CHECK	80052	299853	
						3,900.00
PITNEY BOWES INC	0010-801-1408-38400	185.29	MAILING SUPPLIES		299854	
						185.29
PRESERVATION TECHNOLOGIES, LP	0010-801-6003-22450	691.50	COMPUTER SUPPLIES		299855	
						691.50
PROGRESS PRINTERS	0092-801-4221-38400	1,744.00	WINDOW ENVELOPES		299856	
	0092-801-4221-38400	1,635.00	RETURN ENVELOPES		299856	
						3,379.00
ROSEMEAD OIL PRODUCTS, INC.	0060-801-4211-22250	263.12	MOTOR OIL	80041	299857	
	0060-801-4211-22250	110.35	MOTOR OIL	80041	299857	
	0060-801-4211-22250	403.03	MOTOR OIL		299857	
						776.50
ROSSANA DIAZ	0010-701-0010-07050	51.00	REFUND-PICNIC RESERVATION		299858	
						51.00
ROY WISKAR LANDSCAPE DESIGN &CONTRA	0075-450-0075-08200	500.00	REFUND-EXCAVATION BOND (TRUST)		299859	
						500.00
S C FUELS (DBA)	0060-801-4211-22250	15,354.04	FUEL	80042	299860	
						15,354.04
SAN GABRIEL VALLEY WATER CO.	0092-801-4222-36300	55.95	WATER SERVICES		299861	
	0093-801-4233-22900	106.88	WATER SERVICES		299861	
						162.83
SANDE EQUIPMENT COMPANY, INC.	0060-801-4211-38400	612.94	GRAFFITI REMOVAL SUPPLIES		299862	
						612.94
SIGMANET, INC	0063-801-5002-99064	62,722.96	EMAIL SEVER SOFTWARE UPGRADE	80594	299863	
	0010-801-6517-22100	813.69	COMPUTER SUPPLIES		299863	

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
SIGMANET, INC	0010-801-6517-23100	813.69	COMPUTER SUPPLIES		299863	64,350.34
GARY SIMS	0136-801-3101-33250	113.68	POLICE POST TRAINING		299864	113.68
SMARDAN SUPPLY COMPANY	0092-801-4222-23300	21.47	PLUMBING SUPPLIES	80195	299865	21.47
SPRINT CORPORATION	0010-801-3115-38400	1,129.82	POLICE DATA SERVICE		299866	
	0010-801-3115-38400	1,353.66	POLICE DATA SERVICE		299866	2,483.48
STAPLES BUSINESS ADVANTAGE	0010-801-3201-22200	29.40	OFFICE SUPPLIES		299867	29.40
STETSON ENGINEERS, INC,	0093-801-4230-31950	500.63	NPDES PERMIT APPLICATION	80196	299868	
	0093-801-4226-31950	814.59	NPDES PERMIT APPLICATION	80196	299868	
	0092-801-4222-31950	3,180.20	CONSUMER CONFIDENCE REPORT	80196	299868	4,495.42
LILY TA	0010-701-0010-07630	70.00	REFUND-RECREATION CLASS		299869	70.00
TAMPA TARZANA LLC	0010-701-0010-02010	75.00	REFUND-BUSINESS LICENSE FEE		299870	75.00
TANK SPECIALISTS OF CALIFORNIA	0060-801-4211-31950	1,345.00	WATER TESTING		299871	
	0060-801-4211-31950	125.00	WATER TESTING		299871	
	0060-801-4211-31950	125.00	WATER TESTING		299871	1,595.00
THE CHRYSALIS CENTER	0077-801-1111-31950	4,916.00	BID MAINTENANCE	80305	299872	4,916.00
THE GAS COMPANY (DBA)	0060-801-4211-22250	7.49	GAS SERVICES		299873	7.49
THOMSON REUTERS (LEGAL) INC.	0010-801-3104-39100	246.44	POLICE INFORMATION SERVICES	80100	299874	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						246.44
TOM'S CLOTHING & UNIFORMS INC	0010-801-3101-22320	112.89	UNIFORMS-D. DELINKO	80101	299875	
	0010-801-3101-22320	200.00	UNIFORMS-M. COOK	80101	299875	
	0010-801-3101-22320	95.16	UNIFORMS-E. GLANVILLE	80101	299875	
	0176-801-6516-22310	49.05	UNIFORMS-C. REYES	80082	299875	
	0010-801-3210-22320	264.87	UNIFORMS-S. CHOWRUSMEEKFUL	80241	299875	
	0010-801-3210-22310	187.48	UNIFORMS-R. HARPER	80247	299875	
	0010-801-3210-22310	130.99	UNIFORMS-J. LEGA	80247	299875	
	0010-801-3210-22310	136.25	UNIFORMS-R. MATA	80247	299875	
	0010-801-3210-22310	59.95	UNIFORMS-S. HABERLE	80247	299875	
	0010-801-3210-22310	138.00	UNIFORMS-K. LEASURE	80247	299875	
						1,374.64
TRAW ASSOCIATES CONSULTING	0010-450-1703-02520	5,625.00	COMM DEV CONSULTING SVC	80618	299876	
	0010-450-1703-02520	5,550.00	COMM DEV CONSULTING SVC	80618	299876	
	0010-450-1703-02520	3,525.00	COMM DEV CONSULTING SVC	80618	299876	
	0010-450-1703-02520	4,125.00	COMM DEV CONSULTING SVC	80618	299876	
	0010-450-1703-02520	4,050.00	COMM DEV CONSULTING SVC	80513	299876	
	0010-450-1703-02520	4,200.00	COMM DEV CONSULTING SVC	80513	299876	
	0010-450-1703-02520	4,050.00	COMM DEV CONSULTING SVC	80513	299876	
	0010-450-1703-02520	3,975.00	COMM DEV CONSULTING SVC	80513	299876	
						35,100.00
TURF STAR INC	0060-801-4211-23500	148.64	FLEET PARTS		299877	
						148.64
TURNOUT MAINTENANCE COMPANY LLC	0010-801-3210-38400	252.98	FIRE UNIFORM CLEAN/REPAIR		299878	
						252.98
UNDERGROUND SERVICE ALERT	0092-801-4223-39300	150.00	UNDERGROUND UTILITY SERVICES		299879	
						150.00
TUYET VAN	0159-701-0159-07010	60.00	REFUND-RECREATION CLASS		299880	
						60.00

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
MARICELA VASQUEZ	0010-801-6506-22750	129.00	REIMBURSE-DAY CARE SUPPLIES		299881	
						129.00
VERIZON WIRELESS	0010-801-1703-24150	431.91	COMPUTER SUPPLIES	80525	299882	
	0010-801-6502-32050	8.71	WIRELESS VOICE/DATA SERVICES		299882	
	0010-801-3104-21200	7.37	WIRELESS VOICE/DATA SERVICES		299882	
						447.99
VISTA PAINT CO.	0010-801-6517-23100	298.57	PAINT SUPPLIES	80083	299883	
						298.57
VULCAN MATERIAL CO	0110-801-4202-23600	299.01	ASPHALT		299884	
	0110-801-4202-23600	664.20	ASPHALT		299884	
	0110-801-4202-23600	598.41	ASPHALT		299884	
	0110-801-4202-23600	625.31	ASPHALT		299884	
	0110-801-4202-23600	299.75	ASPHALT		299884	
						2,486.68
WARREN DISTRIBUTING, INC.	0060-801-4211-23500	47.21	FLEET PARTS	80047	299885	
	0060-801-4211-23500	30.72	FLEET PARTS	80047	299885	
	0060-801-4211-23500	60.95	FLEET PARTS	80047	299885	
	0060-801-4211-23500	127.77	FLEET PARTS	80047	299885	
	0060-801-4211-23500	161.59	FLEET PARTS	80047	299885	
	0060-801-4211-23500	62.24	FLEET PARTS	80047	299885	
	0060-801-4211-23500	9.36	FLEET PARTS	80047	299885	
	0060-801-4211-23500	88.14	FLEET PARTS		299885	
	0060-801-4211-23500	97.50	FLEET PARTS		299885	
	0060-801-4211-23500	68.02	FLEET PARTS		299885	
	0060-801-4211-23500	4.31	FLEET PARTS		299885	
	0060-801-4211-23500	194.33	FLEET PARTS		299885	
	0060-801-4211-23500	238.97	FLEET PARTS		299885	
	0060-801-4211-23500	582.98	FLEET PARTS		299885	
	0060-801-4211-23500	773.44-	FLEET PARTS-CREDIT		299885	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
WARREN DISTRIBUTING, INC.	0060-801-4211-23500	5.18-	FLEET PARTS-CREDIT		299885	
						995.47
WECK LABORATORIES (DBA)	0093-801-4230-31950	400.00	WATER LABORATORY SUPPLIES	80202	299886	
	0093-801-4230-31950	350.00	WATER LABORATORY SUPPLIES	80202	299886	
						750.00
WEST COAST ARBORISTS, INC.	0092-801-4222-38500	807.20	TREE MAINTENANCE SERVICES	80198	299887	
	0092-801-4222-38500	2,421.60	TREE MAINTENANCE SERVICES	80198	299887	
						3,228.80
WESTCO SERVICE COMPANY	0010-801-4210-38150	1,857.83	AIR CONDITIONING REPAIR		299888	
						1,857.83
WESTERN WATER WORKS SUPPLY CO.	0092-801-4223-23350	1,776.00	WATER SUPPLIES	80576	299889	
	0092-801-4223-23350	733.40	WATER SUPPLIES		299889	
	0092-801-4221-23700	182.43	WATER SUPPLIES		299889	
						2,691.83
PATRICIA WILLIAMS	0010-701-0010-08025	52.00	REFUND-RECREATION CLASS		299890	
						52.00
WILLIES TIRES AND ALIGNMENT	0060-801-4211-38400	90.00	FLEET ALIGNMENT-UNIT 979		299891	
						90.00
WITTMAN ENTERPRISES	0010-801-3220-31400	2,090.00	AMBULANCE BILLING SVC.	80246	299892	
	0010-801-3220-31400	3,784.00	AMBULANCE BILLING SVC.		299892	
						5,874.00
WOLFE & WYMAN, LLP	0010-801-1601-31600	570.00	LEGAL-XY DONG		299893	
	0010-801-1601-31600	285.00	LEGAL-HAGEDORN		299893	
						855.00
THOMAS WONG	0159-801-6507-31940	354.90	INSTRUCTOR-RECREATION CLASS		299894	
						354.90
X-IGENT PRINTING, INC	0092-801-4220-39700	2,290.42	CONSUMER CONFIDENCE REPORTS	80595	299895	
	0092-801-4220-39700	5.97	CONSUMER CONFIDENCE REPORTS		299895	

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						2,296.39
XEROX CORPORATION	0092-801-1408-38400	1,169.76	COPIER RENTAL	80261	299896	
	0010-801-1408-38400	404.90	COPIER RENTAL	80262	299896	
	0092-801-1408-38400	2,169.69	COPIER RENTAL	80262	299896	
						3,744.35
TANYA YAKUSHI	0159-701-0159-07010	120.00	REFUND-RECREATION CLASS		299897	
						120.00
ZUMAR INDUSTRIES, INC.	0010-801-4206-23800	408.75	STREET SIGNS		299898	
						408.75
	TOTAL FOR PRINTED WARRANTS					**1,061,361.74**

TOTAL FOR PREPAID WARRANTS	0.00
TOTAL FOR PRINTED WARRANTS	1,061,361.74
TOTAL WARRANTS	1,061,361.74
TOTAL VOID CHECKS	0
TOTAL PREPAID CHECKS	0
TOTAL CHECKS PRINTED	172
TOTAL CHECKS ISSUED	172

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014
FUND SUMMARY

FUND	DESCRIPTION	PREPAID	PRINTED	TOTAL
0010	GENERAL FUND	0.00	304,954.35	304,954.35
0043	REFUSE FUND	0.00	408,617.74	408,617.74
0060	CITY SHOP FUND	0.00	31,009.51	31,009.51
0062	GENERAL LIABILITY FUND	0.00	6,246.91	6,246.91
0063	TECHNOLOGY INTERNAL SERV FUND	0.00	62,722.96	62,722.96
0071	PUBLIC SAFETY IMPACT FEE FUND	0.00	166.25	166.25
0075	SPECIAL DEPOSITS FUND	0.00	6,945.67	6,945.67
0077	BUSINESS IMPROVEMENT AREA #1	0.00	5,210.00	5,210.00
0092	WATER FUND	0.00	30,143.69	30,143.69
0093	WATER TREATMENT FUND	0.00	79,101.13	79,101.13
0109	OPA PROPOSITION A	0.00	17,934.92	17,934.92
0110	MEASURE R FUND	0.00	2,486.68	2,486.68
0131	LIBRARY TAX FUND	0.00	177.76	177.76
0136	POST	0.00	186.54	186.54
0159	RECREATION FUND	0.00	6,184.25	6,184.25
0160	ASSET FORFEITURE	0.00	22,399.49	22,399.49
0163	CAL LIBRARY LITERACY SVC GRANT	0.00	1,499.46	1,499.46
0166	PROPOSITION C	0.00	54,758.43	54,758.43
0169	CDBG FUND	0.00	6,900.00	6,900.00
0176	MAINTENANCE DISTRICT 93-1	0.00	485.70	485.70
0342	SAFETEA-LU GRANT	0.00	12,925.00	12,925.00
0423	TARGET GRANT	0.00	305.30	305.30
	TOTAL	**0.00**	**1,061,361.74**	**1,061,361.74**

FY 1415

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
ACCOUNTEMPS	0010-801-1403-31950	740.16	TEMPORARY STAFFING SERVICES		299713	740.16
ANTHEM BLUE CROSS	0010-801-5102-12330	7,493.64	8-9/14 MEDICAL INSURANCE		299714	7,493.64
AT & T	0010-801-3112-32050	5.08	PHONE SERVICE		299715	
	0010-801-3114-32050	4.31	PHONE SERVICE		299715	9.39
	0010-801-3113-32050	40.67	PHONE SERVICE		299716	40.67
AYRES HOTEL LAGUNA WOODS LLC	0136-801-3101-33250	660.40	POLICE POST TRAINING		299700	660.40
BANKCARD CENTER	0010-801-1101-22670	1,757.30	6/14 STMT-COUNCIL AWARDS		299701	
	0010-801-1101-39400	5,107.00	6/14 STMT-ICA CONFERENCE		299701	
	0010-801-1403-39400	510.00	6/14 STMT-TRAINING		299701	
	0010-801-1704-21350	115.52	6/14 STMT-STORAGE BOX		299701	
	0010-801-1704-31950	50.00	6/14 STMT-ECON DEV MEMBERSHIP		299701	
	0010-801-1704-39400	47.45	6/14 STMT-ECON SUBSCRIPTION		299701	
	0010-801-1801-39550	176.28	6/14 STMT-REFRESHMENTS		299701	
	0010-801-3101-22650	225.52	6/14 STMT-PD TRAINING SUPPLIES		299701	
	0010-801-3102-22300	570.79	6/14 STMT-MOTORCYCLE SUPPLIES		299701	
	0010-801-3102-22310	155.65	6/14 STMT-CROSSING GU SUPPLIES		299701	
	0010-801-3103-22310	237.59	6/14 STMT-PD TRAINING SUPPLIES		299701	
	0010-801-3120-39700	444.69	6/14 STMT-BLOCK MEETING		299701	
	0010-801-3220-39400	3,181.00	6/14 STMT-FIRE TRAINING		299701	
	0010-801-3230-39400	2,243.88	6/14 STMT-EOC SUPPLIES		299701	
	0010-801-3230-39700	649.99	6/14 STMT-EOC SUPPLIES		299701	
	0063-801-5002-99055	4,798.00	6/14 STMT-WEB FILTER SUBS		299701	
	0075-450-0075-08420	50.00	6/14 STMT-EE OF MONTH (TRUST)		299701	
	0330-801-3102-33100	633.59	6/14 STMT-PD TRAINING		299701	

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
BANKCARD CENTER	0349-801-3201-39400	8,026.53	6/14 STMT-EOC SMART CLASSROOM		299701	
	0010-801-3102-33100	369.99	6/14 STMT-POLICE TRAINING		299701	
						29,350.77
RUDY BOJORQUEZ	0075-450-0075-08420	300.00	NATIONAL NIGHT OUT (TRUST)		299717	
						300.00
CAVENAUGH & ASSOCIATES	0136-801-3101-33250	551.00	POLICE POST TRAINING		299702	
						551.00
CHARTER COMMUNICATIONS	0010-801-6502-32050	150.62	INTERNET/CABLE SERVICE		299703	
	0010-801-6502-32050	153.64	INTERNET/CABLE SERVICE		299703	
	0075-450-0075-08550	190.28	INTERNET/CABLE SERVICE (TRUST)		299703	
	0010-801-3230-32050	130.00	INTERNET/CABLE SERVICE		299703	
						624.54
CITY OF MONTEREY PARK	0010-801-1101-22670	400.00	CHIEF BIRRELL RETIREMENT		299718	
						400.00
CPFIT	0065-464	564.00	FIRE LTD INSURANCE		299719	
						564.00
DIVERSIFIED RISK INSURANCE	0075-450-0075-08350	401.74	SPECIAL EVENT INSURANCE(TRUST)		299704	
						401.74
EAGLE TOURS	0075-450-0075-08550	400.00	CHARTER SERVICE (TRUST)		299705	
						400.00
SHIRLEY HWONG	0075-450-0075-08500	100.00	REIMBURSE-COMM EVENT (TRUST)		299706	
						100.00
MAE Y. PANG	0159-801-6507-31910	567.00	INSTRUCTOR-RECREATION CLASS		299707	
						567.00
MONTEREY PARK PETTY CASH	0075-450-0075-08420	113.09	PETTY CASH-EXPLORER (TRUST)		299708	
	0075-450-0075-08420	60.50	PETTY CASH-EXPLORER (TRUST)		299708	
	0010-801-4212-33100	3.25	PETTY CASH-MILEAGE		299708	
	0060-801-4211-31950	10.00	PETTY CASH-WEIGH CERTIFICATE		299708	
	0092-801-4223-23900	21.21	PETTY CASH-REFRESHMENTS		299708	

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
MONTEREY PARK PETTY CASH	0092-801-4223-23900	54.16	PETTY CASH-REFRESHMENTS		299708	
	0075-450-0075-08420	48.00	PETTY CASH-EXPLORER (TRUST)		299708	
	0075-450-0075-08420	121.72	PETTY CASH-EXPLORER (TRUST)		299708	
	0010-801-3205-22750	18.33	PETTY CASH-REFRESHMENTS		299708	
	0010-801-3205-22750	27.23	PETTY CASH-SUPPLIES		299708	
	0010-801-3205-22750	47.85	PETTY CASH-REFRESHMENTS		299708	
	0010-801-1407-38400	13.66	PETTY CASH-REFRESHMENTS		299708	
	0010-801-6503-31150	47.36	PETTY CASH-SUPPLIES		299708	
	0010-801-6503-31150	27.50	PETTY CASH-SUPPLIES		299708	
						613.86
	0010-801-3210-22750	54.01	PETTY CASH-REFRESHMENTS		299720	
	0010-801-3205-21250	24.41	PETTY CASH-SUPPLIES		299720	
	0060-801-3210-38400	92.51	PETTY CASH-VEHICLE BATTERY		299720	
	0010-801-1403-39400	18.26	PETTY CASH-MILEAGE		299720	
	0010-801-3201-22670	59.99	PETTY CASH-REFRESHMENTS		299720	
	0010-801-3201-22670	7.63	PETTY CASH-SUPPLIES		299720	
	0010-801-3201-22670	52.14	PETTY CASH-REFRESHMENTS		299720	
	0010-801-6503-31150	96.13	PETTY CASH-SUPPLIES		299720	
						405.08
PACIFIC TELEMANAGEMENT SERVICES	0010-801-6502-32050	228.00	PHONE SERVICE		299709	
						228.00
PARTYLINE EVENTS	0075-450-0075-08915	241.94	BARNES PARK PICNIC RENTAL		299721	
	0010-801-6502-31150	428.87	BARNES PARK PICNIC RENTAL		299721	
						670.81
PITNEY BOWES POSTAGE BY PHONE	0010-801-1301-32200	6.63	POSTAGE		299722	
	0010-801-1403-32200	98.86	POSTAGE		299722	
	0010-801-1406-32200	191.41	POSTAGE		299722	
	0010-801-1701-32200	3.09	POSTAGE		299722	
	0010-801-1702-32200	261.37	POSTAGE		299722	

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
PITNEY BOWES POSTAGE BY PHONE	0010-801-1801-32200	84.04	POSTAGE		299722	
	0010-801-3101-32200	20.31	POSTAGE		299722	
	0010-801-3102-32200	22.50	POSTAGE		299722	
	0010-801-3104-32200	10.93	POSTAGE		299722	
	0010-801-3111-32200	0.69	POSTAGE		299722	
	0010-801-3113-32200	9.76	POSTAGE		299722	
	0010-801-3114-32200	56.60	POSTAGE		299722	
	0010-801-3201-32200	11.52	POSTAGE		299722	
	0010-801-3205-32200	93.21	POSTAGE		299722	
	0010-801-3210-32200	108.69	POSTAGE		299722	
	0010-801-3220-32200	5.83	POSTAGE		299722	
	0010-801-6001-32200	30.74	POSTAGE		299722	
	0010-801-6502-32200	11.16	POSTAGE		299722	
	0010-801-6505-32200	198.27	POSTAGE		299722	
	0043-801-1201-32200	1.19	POSTAGE		299722	
	0043-801-4212-32200	7.72	POSTAGE		299722	
	0075-450-0075-09230	91.86	POSTAGE (TRUST)		299722	
	0092-801-4220-32200	49.32	POSTAGE		299722	
	0092-801-4221-32200	16.32	POSTAGE		299722	
	0092-801-4223-32200	2.40	POSTAGE		299722	
						1,394.42
SAN GABRIEL VACUUM	0010-801-3210-38400	46.28	REPAIR VACUUM CLEANER		299723	
						46.28
ISRAEL SANCHEZ	0136-801-3101-33250	250.00	POLICE POST TRAINING		299710	
						250.00
THE STANDARD	0065-458	3,807.05	LTD INSURANCE		299711	
						3,807.05
STATE BOARD OF EQUALIZATION	0060-801-4211-22250	22.28	EXEMPT BUS OPERATOR FEE		299724	
						22.28

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
STATE BOARD OF EQUALIZATION	0060-801-4211-22250	1,365.60	DIESEL FUEL TAX		299725	1,365.60
MARICELA VASQUEZ	0010-801-6506-22750	300.00	DAY CARE SUPPLIES		299726	300.00
VISION SERVICE PLAN-CA	0065-466	2,871.44	VISION PLAN		299712	2,871.44
	TOTAL FOR PREPAID WARRANTS					**54,178.13**

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
ADMINISTRATIVE FIRE SERVICE	0010-801-3210-39300	50.00	FIRE MEMBERSHIP		299899	50.00
ADVANCE PEST TERMITE CONTROL	0010-801-3210-22750	47.00	PEST CONTROL	90210	299900	
	0010-801-3210-22750	35.00	PEST CONTROL	90210	299900	
	0010-801-3210-22750	42.00	PEST CONTROL	90210	299900	124.00
CITY OF ALHAMBRA	0166-801-4201-41100	28,081.00	METROLINK MEMBERSHIP		299901	28,081.00
AMERICAN RED CROSS	0010-801-6503-23050	133.00	AQUATIC TRAINING		299902	133.00
ARROYO BACKGROUND INVESTIGATIONS	0010-801-3104-31950	900.00	BACKGROUND INVESTIGATIONS		299903	900.00
ASTRO PLUMBING SUPPLY CO (DBA)	0010-801-4210-38100	44.52	PLUMBING SUPPLIES		299904	
	0010-801-4210-23300	1,720.97	PLUMBING SUPPLIES	90169	299904	
	0010-801-4210-23300	121.84	PLUMBING SUPPLIES	90169	299904	1,887.33
ATHENS SERVICES	0010-801-4205-41200	26,248.90	STREET SWEEPING	90168	299905	26,248.90
AUTOZONE WEST, INC	0060-801-4211-23500	189.66	FLEET SUPPLIES		299906	189.66
CALIFORNIA STATEWIDE COMMUNITIES	0012-801-5102-31850	2,233.50	TRUST FEE		299907	2,233.50
CANON FINANCIAL SERVICES, INC.	0092-801-4223-37500	125.31	COPIER MACHINE RENTAL		299908	125.31
CENTURY MANUFACTURING CORPORATION	0010-801-4202-23950	355.93	STREET GRAFFITI SUPPLIES		299909	355.93
CINTAS CORPORATION	0092-801-4221-22310	46.37	WATER UNIFORMS		299910	
	0092-801-4222-22310	68.97	WATER UNIFORMS		299910	

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
CINTAS CORPORATION	0092-801-4223-22310	85.44	WATER UNIFORMS		299910	
	0092-801-4223-22150	90.11	WATER UNIFORMS		299910	
	0092-801-4221-22310	46.37	WATER UNIFORMS		299910	
	0092-801-4222-22310	68.97	WATER UNIFORMS		299910	
	0092-801-4223-22310	85.44	WATER UNIFORMS		299910	
	0092-801-4223-22150	90.11	WATER UNIFORMS		299910	
						581.78
COMPRESSED AIR SPECIALITIES	0010-801-3210-38400	1,744.61	FIRE-AIR COMPRESSOR REPAIR		299911	
						1,744.61
CORVEL ENTERPRISE COMP INC	0080-801-8301-20000	6,866.67	WORKER'S COMP. ADMIN. FEE		299912	
						6,866.67
CURRENT SOFTWARE INC	0060-801-4211-24150	500.00	FLEET-SOFTWARE SUPPORT		299913	
						500.00
DISCOUNT SCHOOL SUPPLY	0010-801-6506-22750	897.15	DAY CARE SUPPLIES		299914	
						897.15
DUNN-EDWARDS CORPORATION	0010-801-4210-23100	66.32	PAINT SUPPLIES		299915	
						66.32
DEAN N EDDOW	0159-801-6507-31910	509.20	INSTRUCTOR-RECREATION CLASS		299916	
						509.20
EMPIRE CLEANING SUPPLY	0010-801-3210-22150	937.97	JANITORIAL SUPPLIES	90209	299917	
						937.97
FILEKEEPERS, LLC	0010-801-1802-31950	189.76	STORAGE SERVICE		299918	
	0010-801-1704-39250	35.76	STORAGE SERVICE		299918	
						225.52
FORD OF MONTEBELLO	0060-801-4211-23500	156.04	FLEET PARTS-UNIT 014	90045	299919	
	0060-801-4211-23500	152.86	FLEET PARTS-UNIT 014	90045	299919	
	0060-801-4211-38400	552.77	FLEET PARTS-UNIT 928	90045	299919	
						861.67
CHAI FOSTERLING	0159-801-6507-31910	522.90	INSTRUCTOR-RECREATION CLASS		299920	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						522.90
FRY'S ELECTRONICS, INC	0060-801-4211-24150	69.72	FLEET COMPUTER SUPPLIES	90046	299921	
						69.72
GRAND PRIX TIRE & AUTO CENTER	0060-801-4211-38400	50.00	FLEET TIRES-UNIT 032	90049	299922	
						50.00
TONY GRBAC	0159-801-6507-31910	949.50	INSTRUCTOR-RECREATION CLASS		299923	
						949.50
JIE GUO	0159-801-6507-31910	312.00	INSTRUCTOR-RECREATION CLASS		299924	
						312.00
HAROLD'S KEY SHOP, INC.	0010-801-4210-38100	125.00	KEY/LOCK SERVICES	90158	299925	
	0010-801-6502-38100	54.50	KEY/LOCK SERVICES		299925	
	0010-801-4210-38100	368.60	KEY/LOCK SERVICES	90158	299925	
						548.10
HOME DEPOT CREDIT SERVICES	0092-801-4210-23050	128.62	HARDWARE SUPPLIES	90191	299926	
	0092-801-4210-23050	21.37	HARDWARE SUPPLIES	90191	299926	
	0092-801-4210-23050	141.47	HARDWARE SUPPLIES	90191	299926	
	0092-801-4210-23050	131.07-	HARDWARE SUPPLIES-CREDIT	90191	299926	
	0010-801-4202-23950	116.82	HARDWARE SUPPLIES	90191	299926	
	0010-801-4202-23950	94.85	HARDWARE SUPPLIES	90191	299926	
	0010-801-3210-22750	393.97	HARDWARE SUPPLIES	90236	299926	
	0092-801-4223-23100	93.05	HARDWARE SUPPLIES	90089	299926	
						859.08
HOWARD'S, INC.	0092-801-4210-23050	707.41	PW-TRAINING EQUIPMENT		299927	
						707.41
MITCHELL ING	0010-801-1201-39400	127.68	ICA SEMINAR		299928	
						127.68
INTERLOG CONSTRUCTION	0075-450-0075-08160	250.00	REFUND-FIRE HYDRANT DEP(TRUST)		299929	
	0093-701-0093-07530	113.13-	WATER USAGE		299929	
	0075-450-0075-08160	250.00	REFUND-FIRE HYDRANT DEP(TRUST)		299929	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
INTERLOG CONSTRUCTION	0093-701-0093-07530	113.13-	WATER USAGE		299929	
						273.74
MARK ISHIDA	0159-801-6507-31910	229.60	INSTRUCTOR-RECREATION CLASS		299930	
	0159-801-6507-31910	331.80	INSTRUCTOR-RECREATION CLASS		299930	
						561.40
JCL BARRICADE COMPANY	0022-801-4206-23100	1,198.23	STREET SUPPLIES		299931	
						1,198.23
JSE EMERGENCY MEDICAL GROUP, INC	0010-801-3220-39400	500.00	FIRE MEDICAL CONSULTANT	90211	299932	
	0010-801-3220-39400	500.00	FIRE MEDICAL CONSULTANT	90211	299932	
						1,000.00
RICHARD KAGEYAMA	0159-801-6507-31910	478.50	INSTRUCTOR-RECREATION CLASS		299933	
	0159-801-6507-31910	330.40	INSTRUCTOR-RECREATION CLASS		299933	
	0159-801-6507-31910	102.70	INSTRUCTOR-RECREATION CLASS		299933	
						911.60
GABRIELA KASANJIAN	0159-801-6507-31910	124.80	INSTRUCTOR-RECREATION CLASS		299934	
						124.80
L N CURTIS & SONS	0010-801-3210-38400	1,206.92	FIRE SUPPLIES	90212	299935	
						1,206.92
CHIU SANG LEE	0159-801-6507-31910	187.20	INSTRUCTOR-RECREATION CLASS		299936	
						187.20
HANS J LIANG	0010-801-1101-33200	127.68	ICA CONFERENCE		299937	
						127.68
LINCOLN EQUIPMENT INC.	0010-801-6503-31150	467.38	POOL SUPPLIES	90263	299938	
						467.38
LOS ANGELES FREIGHTLINERS	0060-801-4211-23500	13.98	FLEET PARTS-UNIT 879		299939	
						13.98
PUI YEE BIANCA MA	0159-701-0159-07010	127.00	REFUND-RECREATION CLASS		299940	
						127.00

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
MAE Y. PANG	0159-801-6507-31910	665.25	INSTRUCTOR-RECREATION CLASS		299941	
						665.25
MARIN CONSULTING ASSOCIATES	0136-801-3101-33250	1,650.00	POLICE-POST TRAINING		299942	
						1,650.00
MCMASTER-CARR SUPPLY CO.	0092-801-4222-23700	127.71	WATER SUPPLIES	90122	299943	
	0092-801-4222-23700	367.02	WATER SUPPLIES	90122	299943	
						494.73
MCNEILL SECURITY AND FIRE SYSTEMS (	0092-801-4222-38420	966.00	ALARM SERVICES		299944	
	0092-801-4222-38420	603.75	ALARM SERVICES		299944	
	0010-801-6001-38400	204.75	ALARM SERVICES		299944	
						1,774.50
MISSION SUPER HARDWARE	0022-801-4206-23900	54.48	HARDWARE SUPPLIES		299945	
						54.48
MOBILE MINI LLC	0075-450-0075-08910	115.26	FARMERS MKT STORAGE (TRUST)		299946	
						115.26
PETER MORRIS	0159-801-6507-31910	180.60	INSTRUCTOR-RECREATION CLASS		299947	
						180.60
MR. ROOTER PLUMBING (DBA)	0010-801-4210-38100	2,521.04	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	193.00	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	348.00	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	1,398.60	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	2,200.00	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	158.00	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	592.56	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	567.00	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	1,264.00	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	999.99	PLUMBING SERVICES	90188	299948	
	0010-801-4210-38100	2,085.30	PLUMBING SERVICES	90188	299948	
						12,327.49

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
N.W. POTTS CO., INC.	0010-801-4210-23300	33.59	PLUMBING SUPPLIES		299949	33.59
KEVIN P. NORWALL	0159-801-6507-31910	255.85	INSTRUCTOR RECREATION CLASS		299950	255.85
O'NEAL'S	0010-801-6505-38400	470.00	BILLIARD TABLE MAINTENANCE		299951	470.00
O'REILLY AUTO PARTS	0060-801-4211-38410	163.39	FLEET PARTS		299952	
	0060-801-4211-23500	261.06	FLEET PARTS-UNIT 982	90069	299952	424.45
OFFICE DEPOT INC.	0010-801-6505-21350	513.29	OFFICE SUPPLIES		299953	
	0010-801-6502-21250	74.16	OFFICE SUPPLIES		299953	
	0010-801-6505-21350	104.08	OFFICE SUPPLIES		299953	
	0010-801-1101-21350	37.68	OFFICE SUPPLIES		299953	
	0010-801-1101-21350	30.84	OFFICE SUPPLIES		299953	760.05
NELSON ONG	0159-801-6507-31910	1,058.25	INSTRUCTOR-RECREATION CLASS		299954	1,058.25
PAYKE GYMNASTIC ACADEMY	0159-801-6507-31910	525.30	INSTRUCTOR-RECREATION CLASS		299955	525.30
ISMAEL PEREZ	0159-801-6507-31910	4,290.75	INSTRUCTOR-RECREATION CLASS		299956	
	0010-701-0010-07640	1,330.00-	LIFEGUARD REIMBURSEMENT		299956	2,960.75
PLUMBERS DEPOT INC	0042-801-4204-22750	124.47	SEWER SUPPLIES	90185	299957	124.47
PROSOURCE FACILITY SUPPLY	0010-801-4210-22150	486.65	JANITORIAL SUPPLIES		299958	486.65
PRUDENTIAL OVERALL SUPPLY	0060-801-4211-22150	27.23	SHOP RAGS	90075	299959	
	0010-801-3210-22150	18.98	SHOP RAGS	90075	299959	
	0060-801-4211-22150	27.23	SHOP RAGS	90075	299959	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
PRUDENTIAL OVERALL SUPPLY	0010-801-3210-22150	18.98	SHOP RAGS	90075	299959	
	0060-801-4211-22300	34.42	UNIFORMS	90075	299959	
	0060-801-4211-22300	34.42	UNIFORMS	90075	299959	
						161.26
PYRO-COMM SYSTEMS, INC	0075-450-0075-08320	631.25	LIBRARY FIRE ALARM (TRUST)		299960	
	0075-450-0075-08320	2,496.49	LIBRARY FIRE ALARM (TRUST)		299960	
						3,127.74
R S D REFRIGERATION	0010-801-4210-23700	27.32	AIR CONDITIONING PARTS	90183	299961	
	0010-801-4210-23700	1.86	AIR CONDITIONING PARTS	90183	299961	
	0010-801-4210-23700	48.57	AIR CONDITIONING PARTS	90183	299961	
						77.75
RAINBOW ART	0159-801-6507-31910	720.37	INSTRUCTOR-RECREATION CLASS		299962	
						720.37
DANNY SALAZAR	0010-801-1801-39400	1,824.00	TUITION REIMBURSEMENT		299963	
						1,824.00
SAN GABRIEL VALLEY COUNCIL OF GOVT	0166-801-4201-39300	18,533.10	CMO-MEMBERSHIP		299964	
	0010-801-1110-39300	5,000.00	CMO-MEMBERSHIP		299964	
						23,533.10
SCPLRC	0010-801-1801-39300	150.00	HR-MEMBERSHIP		299965	
						150.00
SEA CLEAR POOLS INC	0010-801-6503-38200	1,980.00	POOL SERVICE REPAIRS		299966	
	0010-801-6503-38200	265.42	POOL SERVICE REPAIRS		299966	
						2,245.42
SIGNET DESIGN CORP.	0075-450-0075-08200	560.00	REFUND GRADING BOND (TRUST)		299967	
						560.00
SMITTY'S SIGNWORKS	0092-801-4222-38420	76.65	WATER SIGNS		299968	
						76.65
THE STANDARD	0065-464	4,608.86	LTD INSURANCE		299969	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						4,608.86
STATE OF CALIFORNIA DMV	0010-801-3102-22750	200.00	POLICE-MATURE DRIVER CERT		299970	200.00
SUCCESS PRINTING GRAPHICS INC	0159-801-6509-31880	3,092.50	CASCADES PRINTING	90278	299971	3,092.50
PHILIP B. SUN	0010-701-0010-08025	32.00	REFUND-RECREATION CLASS		299972	32.00
PAUL TALBOT	0010-801-1201-39400	127.68	ICA CONFERENCE		299973	127.68
NAKA TIENDERA	0075-450-0075-08200	14,475.50	REFUND GRADING BOND (TRUST)		299974	14,475.50
DOROTHY TSU	0159-801-6507-31910	245.70	INSTRUCTOR-RECREATION CLASS		299975	245.70
VULCAN MATERIAL CO	0110-801-4202-23600	336.07	ASPHALT	90175	299976	
	0110-801-4202-23600	299.01	ASPHALT	90175	299976	
	0110-801-4202-23600	79.61	ASPHALT	90175	299976	
	0110-801-4202-23600	356.08	ASPHALT	90175	299976	1,070.77
WALTERS WHOLESALE ELECTRIC CO	0010-801-4210-23400	32.39	ELECTRICAL SUPPLIES	90174	299977	
	0010-801-4210-23400	177.35	ELECTRICAL SUPPLIES	90174	299977	
	0010-801-4210-23400	43.55	ELECTRICAL SUPPLIES	90174	299977	253.29
XIAODONG WANG	0159-801-6507-31910	1,732.50	INSTRUCTOR-RECREATION CLASS		299978	1,732.50
WARREN DISTRIBUTING, INC.	0060-801-4211-23500	83.06	FLEET PARTS-UNIT 042	90084	299979	83.06
WELLS FARGO BANK, N.A.	0012-801-5102-31850	2,500.00	TRUSTEE FEE		299980	2,500.00

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
WESTERN WATER WORKS SUPPLY CO.	0092-801-4223-23350	1,381.47	WATER SUPPLIES	90140	299981	
	0092-801-4223-23300	1,187.09	WATER SUPPLIES	90140	299981	
	0092-801-4223-23300	1,605.14	WATER SUPPLIES	90140	299981	
	0092-801-4223-23300	316.10	WATER SUPPLIES	90140	299981	
	0092-801-4223-23300	975.56	WATER SUPPLIES	90140	299981	
						5,465.36
WHITE CAP CONSTRUCTION SUPPLY	0042-801-4204-22750	447.01	STREET SUPPLIES		299982	
	0010-801-4202-23950	272.20	BUILDING SUPPLIES	90201	299982	
						719.21
RICKY WONG	0159-801-6507-31910	42.90	INSTRUCTOR-RECREATION CLASS		299983	
	0159-801-6507-31910	42.90	INSTRUCTOR-RECREATION CLASS		299983	
	0159-801-6507-31910	28.60	INSTRUCTOR-RECREATION CLASS		299983	
						114.40
THOMAS WONG	0159-801-6507-31910	373.75	INSTRUCTOR-RECREATION CLASS		299984	
	0159-801-6507-31910	202.80	INSTRUCTOR-RECREATION CLASS		299984	
						576.55
VICTOR WONG	0159-801-6507-31910	967.50	INSTRUCTOR-RECREATION CLASS		299985	
						967.50
SIMON YEN	0159-801-6507-31910	504.00	INSTRUCTOR-RECREATION CLASS		299986	
						504.00
TOTAL FOR PRINTED WARRANTS						**177,472.68**

TOTAL FOR PREPAID WARRANTS	54,178.13
TOTAL FOR PRINTED WARRANTS	177,472.68
TOTAL WARRANTS	231,650.81
TOTAL VOID CHECKS	0
TOTAL PREPAID CHECKS	27
TOTAL CHECKS PRINTED	88
TOTAL CHECKS ISSUED	115

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/06/2014
FUND SUMMARY

FUND	DESCRIPTION	PREPAID	PRINTED	TOTAL
0010	GENERAL FUND	27,687.28	60,826.96	88,514.24
0012	RETIREMENT FUND	0.00	4,733.50	4,733.50
0022	STATE GAS TAX FUND	0.00	1,252.71	1,252.71
0042	SEWER FUND	0.00	571.48	571.48
0043	REFUSE FUND	8.91	0.00	8.91
0060	CITY SHOP FUND	1,490.39	2,315.84	3,806.23
0063	TECHNOLOGY INTERNAL SERV FUND	4,798.00	0.00	4,798.00
0065	PAYROLL CLEARING ACCOUNT	7,242.49	4,608.86	11,851.35
0075	SPECIAL DEPOSITS FUND	2,119.13	18,778.50	20,897.63
0080	WORKERS COMP FUND	0.00	6,866.67	6,866.67
0092	WATER FUND	143.41	9,274.43	9,417.84
0093	WATER TREATMENT FUND	0.00	226.26-	226.26-
0110	MEASURE R FUND	0.00	1,070.77	1,070.77
0136	POST	1,461.40	1,650.00	3,111.40
0159	RECREATION FUND	567.00	19,135.12	19,702.12
0166	PROPOSITION C	0.00	46,614.10	46,614.10
0330	SR PEDESTRIAN & BICYCLE SAFETY	633.59	0.00	633.59
0349	ELAC INSTRUCTIONAL SERV PROG	8,026.53	0.00	8,026.53
	TOTAL	**54,178.13**	**177,472.68**	**231,650.81**

CITY OF MONTEREY PARK

FINAL WARRANT REGISTER

COUNCIL MEETING DATE 08/20/2014

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
ACCELA INC	0010-801-1703-33200	899.00	BUILDING SYSTEM TRAINING		300005	
						899.00
ACCOUNTEMPS	0010-801-1403-31950	740.16	TEMPORARY STAFFING SERVICES		299987	
						740.16
	0010-801-1403-31950	740.16	TEMPORARY STAFFING SERVICES		300020	
						740.16
ARAMARK	0075-450-0075-08760	3,696.70	RETIREMENT CATERING (TRUST)		300021	
	0075-450-0075-08761	240.00	RETIREMENT CATERING (TRUST)		300021	
						3,936.70
ARTHUR J. GALLAGHER & CO.	0010-801-1802-35250	79,335.00	REAL PROPERTY EARTHQUAKE INS		300006	
	0043-801-1802-35250	31,734.00	REAL PROPERTY EARTHQUAKE INS		300006	
	0092-801-1802-35250	47,601.00	REAL PROPERTY EARTHQUAKE INS		300006	
						158,670.00
AT & T	0010-801-3112-32050	282.29	PHONE SERVICE		299988	
	0022-801-4206-32050	603.67	PHONE SERVICE		299988	
	0092-801-4222-32050	112.49	PHONE SERVICE		299988	
						998.45
AT&T	0092-801-4220-32050	199.31	INTERNET/PHONE SERVICE		299989	
	0092-801-4222-32050	661.30	INTERNET/PHONE SERVICE		299989	
	0010-801-6517-32050	14.99	INTERNET/PHONE SERVICE		299989	
	0022-801-4206-32050	297.04	INTERNET/PHONE SERVICE		299989	
	0109-801-6511-32050	66.66	INTERNET/PHONE SERVICE		299989	
	0010-801-6502-32050	161.29	INTERNET/PHONE SERVICE		299989	
	0010-801-6001-32050	194.40	INTERNET/PHONE SERVICE		299989	
	0010-801-3201-32050	966.32	INTERNET/PHONE SERVICE		299989	
	0010-801-3230-32050	2,623.70	INTERNET/PHONE SERVICE		299989	
	0010-801-3112-32050	3,104.09	INTERNET/PHONE SERVICE		299989	
	0010-801-3113-32050	14.89	INTERNET/PHONE SERVICE		299989	
	0010-801-3114-41100	16.66	INTERNET/PHONE SERVICE		299989	

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
AT&T	0010-801-1801-32050	15.14	INTERNET/PHONE SERVICE		299989	
	0010-801-4209-32050	252.18	INTERNET/PHONE SERVICE		299989	
	0010-801-1301-32050	14.94	INTERNET/PHONE SERVICE		299989	
	0010-801-1404-32050	48.89	INTERNET/PHONE SERVICE		299989	
	0010-801-1408-32050	122.97	INTERNET/PHONE SERVICE		299989	
	0043-801-1404-32050	25.05	INTERNET/PHONE SERVICE		299989	
	0092-801-1404-32050	30.42	INTERNET/PHONE SERVICE		299989	
	0010-801-1408-32050	1,124.10	INTERNET/PHONE SERVICE		299989	
	0010-801-3112-32050	749.40	INTERNET/PHONE SERVICE		299989	
	0010-801-3201-32050	374.70	INTERNET/PHONE SERVICE		299989	
	0010-801-6001-32050	124.90	INTERNET/PHONE SERVICE		299989	
	0169-801-2201-32050	124.90	INTERNET/PHONE SERVICE		299989	
						11,328.24
CALIFORNIA WATER SERVICE CO.	0092-801-4222-36300	548.11	WATER SERVICE		299990	
						548.11
BYRON CHAN	0062-801-5101-35650	550.00	CLAIM SETTLEMENT		299991	
						550.00
CHARTER COMMUNICATIONS	0010-801-1404-32050	26.18	INTERNET/CABLE SERVICE		299992	
	0010-801-3112-32050	50.80	INTERNET/CABLE SERVICE		299992	
	0043-801-1404-32050	19.29	INTERNET/CABLE SERVICE		299992	
	0092-801-1404-32050	23.43	INTERNET/CABLE SERVICE		299992	
						119.70
	0010-801-3201-32050	600.52	INTERNET/CABLE SERVICE		300022	
	0010-801-3230-32050	130.00	INTERNET/CABLE SERVICE		300022	
	0010-801-6502-32050	1.12	INTERNET/CABLE SERVICE		300022	
						731.64
MISTY V. CHENG	0010-801-1403-31950	1,775.00	TEMPORARY STAFFING SERVICES		300023	
	0092-801-1403-31950	1,775.00	TEMPORARY STAFFING SERVICES		300023	
						3,550.00

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
CITY OF GLENDALE FIRE DEPT.	0010-801-3210-32180	125,012.00	FIRE-VERDUGO DISPATCH SVCS	90312	300024	125,012.00
CITY OF MONTEREY PARK	0010-801-1101-22670	400.00-	VOID CHECK		299718	400.00-
	0060-801-4211-54050	1,279.37	SEIZED VEHICLE		300008	1,279.37
	0010-801-1101-22670	320.00	J BIRRELL RETIREMENT DINNER		300009	320.00
	0092-450-0092-09000	2,599.00	REFUND-WATER DEPOSIT		300007	
	0092-701-0092-07510	1,980.17-	WATER USAGE		300007	
	0092-701-0092-07510	404.32	REFUND-WATER PAYMENT		300007	1,023.15
CITYWIDE TOWING INC.	0062-801-5101-35650	1,500.00	CLAIM SETTLEMENT 1938-CL P		299993	1,500.00
RAYMOND COTA	0010-801-3103-22800	766.20	POLICE K-9 KENNEL		299994	766.20
CPRS, DISTRICT X	0109-801-6511-22750	20.00-	VOID CHECK		296135	20.00-
DIRECTV,LLC	0010-801-3230-32050	171.96	EOC SERVICES		299995	171.96
EAGLE TOURS	0109-801-4201-31950	900.00	CHARTER SERVICE		299996	900.00
ELVAS GROUP INC	0075-450-0075-09080	300.00	LOOK ALIKE CONTEST (TRUST)		300025	300.00
ENDEAVOR PRINT INC.	0166-801-4201-31960	971.01	SPIRIT BUSES GRAPHICS		299997	971.01
	0109-801-4201-31960	1,012.41	SPIRIT BUSES GRAPHICS		300010	1,012.41

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
FOUR SEASONS CONSTRUCTION	0152-701-0152-05455	52.25-	VOID CHECK		299511	
	0880-701-0880-05455	222.75-	VOID CHECK		299511	
	0152-701-0152-05455	90.25-	VOID CHECK		299511	
	0880-701-0880-05455	384.75-	VOID CHECK		299511	
	0152-701-0152-05455	95.00-	VOID CHECK		299511	
	0880-701-0880-05455	405.00-	VOID CHECK		299511	
	0152-701-0152-05455	34.20-	VOID CHECK		299511	
	0880-701-0880-05455	145.80-	VOID CHECK		299511	
	0152-701-0152-05451	445.50-	VOID CHECK		299511	
	0880-701-0880-05451	654.50-	VOID CHECK		299511	
	0152-701-0152-05453	385.00-	VOID CHECK		299511	
	0152-701-0152-05454	202.50-	VOID CHECK		299511	
	0880-701-0880-05454	22.50-	VOID CHECK		299511	
	0152-701-0152-05451	60.75-	VOID CHECK		299511	
	0880-701-0880-05454	89.25-	VOID CHECK		299511	
	0152-701-0152-05453	225.00-	VOID CHECK		299511	
	0152-701-0152-05452	141.00-	VOID CHECK		299511	
	0880-701-0880-05452	9.00-	VOID CHECK		299511	
	0152-701-0152-05452	141.00-	VOID CHECK		299511	
	0880-701-0880-05452	9.00-	VOID CHECK		299511	
	0152-701-0152-05454	65.25-	VOID CHECK		299511	
	0880-701-0880-05454	7.25-	VOID CHECK		299511	
	0152-701-0152-05452	68.15-	VOID CHECK		299511	
	0880-701-0880-05452	4.35-	VOID CHECK		299511	
	0152-701-0152-05452	1,588.60-	VOID CHECK		299511	
	0880-701-0880-05452	101.40-	VOID CHECK		299511	
	0152-701-0152-05455	323.00-	VOID CHECK		299511	
	0880-701-0880-05455	1,377.00-	VOID CHECK		299511	
						7,350.00-

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
FOUR SEASONS RESTORATION, INC.	0152-701-0152-05455	52.25	REPAIR-534 N. CHANDLER AVE		300011	
	0880-701-0880-05455	222.75	REPAIR-534 N. CHANDLER AVE		300011	
	0152-701-0152-05455	90.25	REPAIR-534 N. CHANDLER AVE		300011	
	0880-701-0880-05455	384.75	REPAIR-534 N. CHANDLER AVE		300011	
	0152-701-0152-05455	95.00	REPAIR-534 N. CHANDLER AVE		300011	
	0880-701-0880-05455	405.00	REPAIR-534 N. CHANDLER AVE		300011	
	0152-701-0152-05455	323.00	REPAIR-534 N. CHANDLER AVE		300011	
	0880-701-0880-05455	1,377.00	REPAIR-534 N. CHANDLER AVE		300011	
	0152-701-0152-05455	34.20	REPAIR-534 N. CHANDLER AVE		300011	
	0880-701-0880-05455	145.80	REPAIR-534 N. CHANDLER AVE		300011	
	0152-701-0152-05451	445.50	REPAIR-325 E POMONA		300011	
	0880-701-0880-05451	654.50	REPAIR-325 E POMONA		300011	
	0152-701-0152-05453	385.00	REPAIR-341 E POMONA		300011	
	0152-701-0152-05454	202.50	REPAIR-321 E POMONA		300011	
	0880-701-0880-05454	22.50	REPAIR-321 E POMONA		300011	
	0152-701-0152-05451	60.75	REPAIR-325 E POMONA		300011	
	0880-701-0880-05451	89.25	REPAIR-325 E POMONA		300011	
	0152-701-0152-05453	225.00	REPAIR-341 E POMONA		300011	
	0152-701-0152-05452	141.00	REPAIR-371 E POMONA		300011	
	0880-701-0880-05452	9.00	REPAIR-371 E POMONA		300011	
	0152-701-0152-05452	141.00	REPAIR-371 E POMONA		300011	
	0880-701-0880-05452	9.00	REPAIR-371 E POMONA		300011	
	0152-701-0152-05454	65.25	REPAIR-321 E POMONA		300011	
	0880-701-0880-05454	7.25	REPAIR-321 E POMONA		300011	
	0152-701-0152-05452	68.15	REPAIR-371 E POMONA		300011	
	0880-701-0880-05452	4.35	REPAIR-371 E POMONA		300011	
	0152-701-0152-05452	1,588.60	REPAIR-371 E POMONA		300011	
	0880-701-0880-05452	101.40	REPAIR-371 E POMONA		300011	
						7,350.00

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
FREEWAY TOWING, INC	0010-801-3104-31950	1,875.00	TOWING FEE		300012	
						1,875.00
HENSLEY LAW GROUP	0075-450-0075-09201	377.00	LEGAL-MARKET PLACE (TRUST)		300026	
	0075-450-0075-08950	145.00	LEGAL-OLSON (TRUST)		300026	
	0010-801-1601-31600	667.00	LEGAL-CA DEPT OF FINANCE		300026	
	0010-801-1601-31600	20,000.00	LEGAL-GENERAL		300026	
	0010-801-1601-31600	5,366.50	LEGAL-VILLA GARFIELD		300026	
						26,555.50
INDEPENDENT CITIES RISK	0062-801-5101-35100	680,362.00	INSURANCE PREMIUMS 2014-2015		300013	
	0010-801-1802-35200	744.00	INSURANCE PREMIUMS 2014-2015		300013	
	0010-801-1802-35200	15,246.25	INSURANCE PREMIUMS 2014-2015		300013	
	0092-801-1802-35200	45,738.75	INSURANCE PREMIUMS 2014-2015		300013	
	0080-801-8301-35300	312,343.00	INSURANCE PREMIUMS 2014-2015		300013	
	0080-801-8301-35300	9,942.00-	INSURANCE PREMIUMS 2014-2015		300013	
	0010-801-1802-35200	6,515.00	INSURANCE PREMIUMS 2014-2015		300013	
	0092-801-1802-35200	19,545.00	INSURANCE PREMIUMS 2014-2015		300013	
	0092-801-1802-35200	167.00-	INSURANCE PREMIUMS 2014-2015		300013	
	0010-801-1802-35400	1,947.00	INSURANCE PREMIUMS 2014-2015		300013	
	0062-801-5101-35100	5,214.00	INSURANCE PREMIUMS 2014-2015		300013	
						1,077,546.00
JRW GROUP ENTERTAINMENT	0075-450-0075-08550	1,350.00	LANGLEY RECREATION TRIP(TRUST)		299998	
						1,350.00
LOS ANGELES COUNTY DISTRICT	0160-801-3104-39100	20,000.00	LADA ASSET FORFEITURE PAYMENT		299999	
						20,000.00
MONTEREY PARK PETTY CASH	0010-801-3120-39700	100.00	PETTY CASH-NNO SUPPLIES		300014	
	0075-450-0075-08600	19.87	PETTY CASH-4TH OF JULY (TRUST)		300014	
	0010-801-6503-31150	18.51	PETTY CASH-SUPPLIES		300014	
	0010-801-3201-22670	39.99	PETTY CASH-REFRESHMENTS		300014	
	0010-801-3210-22750	9.29	PETTY CASH-REFRESHMENTS		300014	

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
MONTEREY PARK PETTY CASH	0092-801-1406-24100	21.80	PETTY CASH-SUPPLIES		300014	
	0010-801-4212-31500	31.86	PETTY CASH-MILEAGE		300014	
						241.32
	0075-450-0075-08420	66.00	PETTY CASH-SUPPLIES (TRUST)		300027	
	0075-450-0075-08420	37.47	PETTY CASH-SUPPLIES (TRUST)		300027	
	0075-450-0075-08420	98.21	PETTY CASH-SUPPLIES (TRUST)		300027	
	0010-801-3120-39700	77.69	PETTY CASH-REFRESHMENTS		300027	
	0010-801-1801-39550	50.00	PETTY CASH-REFRESHMENTS		300027	
	0075-450-0075-08420	60.00	PETTY CASH-REFRESHMENTS(TRUST)		300027	
	0010-801-6517-22400	189.11	PETTY CASH-PARK SUPPLIES		300027	
	0010-801-3104-22750	76.04	PETTY CASH-REFRESHMENTS		300027	
						654.52
MP-QZ SISTER CITIES ASSOCIATION	0075-450-0075-09080	1,500.00	STUDENT EXCH. PROGRAM (TRUST)		300028	
						1,500.00
OLYMPIA HEALTH CARE	0010-701-0010-07960	131.08-	VOID CHECK		298588	
						131.08-
PACIFIC TELEMANAGEMENT SERVICES	0010-801-6502-32050	228.00	PHONE SERVICE		300000	
						228.00
PARTYLINE EVENTS	0075-450-0075-08915	1,308.87	BARNES PICNIC RENTAL (TRUST)	90276	300029	
	0075-450-0075-08915	654.43	BARNES PICNIC RENTAL (TRUST)	90276	300029	
						1,963.30
PITNEY BOWES POSTAGE BY PHONE	0010-801-1301-32200	2.38	POSTAGE		300030	
	0010-801-1403-32200	143.81	POSTAGE		300030	
	0010-801-1406-32200	109.19	POSTAGE		300030	
	0010-801-1407-32200	5.28	POSTAGE		300030	
	0010-801-1701-32200	6.39	POSTAGE		300030	
	0010-801-1702-32200	251.44	POSTAGE		300030	
	0010-801-1801-32200	66.24	POSTAGE		300030	
	0010-801-1802-32200	5.32	POSTAGE		300030	

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
PITNEY BOWES POSTAGE BY PHONE	0010-801-3101-32200	20.08	POSTAGE		300030	
	0010-801-3102-32200	33.31	POSTAGE		300030	
	0010-801-3104-32200	24.97	POSTAGE		300030	
	0010-801-3111-32200	5.37	POSTAGE		300030	
	0010-801-3113-32200	3.22	POSTAGE		300030	
	0010-801-3114-32200	59.84	POSTAGE		300030	
	0010-801-3120-32200	171.69	POSTAGE		300030	
	0010-801-3201-32200	39.29	POSTAGE		300030	
	0010-801-3205-32200	97.20	POSTAGE		300030	
	0010-801-3210-32200	7.62	POSTAGE		300030	
	0010-801-3220-32200	9.28	POSTAGE		300030	
	0010-801-4209-32200	1.92	POSTAGE		300030	
	0010-801-6001-32200	75.60	POSTAGE		300030	
	0010-801-6502-32200	1.92	POSTAGE		300030	
	0010-801-6505-32200	6.72	POSTAGE		300030	
	0043-801-4212-32200	18.60	POSTAGE		300030	
	0060-801-4211-32200	0.48	POSTAGE		300030	
	0075-450-0075-09230	69.54	POSTAGE (TRUST)		300030	
	0077-801-1111-31950	2.87	POSTAGE		300030	
	0092-801-1201-32200	4.34	POSTAGE		300030	
	0092-801-4220-32200	4.32	POSTAGE		300030	
	0092-801-4221-32200	23.21	POSTAGE		300030	
	0092-801-4223-32200	0.69	POSTAGE		300030	
	0163-801-6005-32200	0.48	POSTAGE		300030	
	0010-801-1704-32200	34.56	POSTAGE		300030	
						1,307.17
PROGRESSIVE SOLUTIONS INC	0092-801-1406-38400	5,020.95	CASHIER REGISTER MAINTENANCE	90295	300015	
						5,020.95
RAQUEL RICHARDS	0010-801-1801-39550	27.90	PETTY CASH-REFRESHMENTS		300031	

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
RAQUEL RICHARDS	0010-801-1801-39550	23.00	PETTY CASH-REFRESHMENTS		300031	
	0010-801-1801-39550	31.38	PETTY CASH-SUPPLIES		300031	
	0010-801-1801-39550	19.38	PETTY CASH-REFRESHMENTS		300031	
	0010-801-1801-39550	34.63	PETTY CASH-REFRESHMENTS		300031	
	0010-801-1802-33200	41.90	PETTY CASH-REFRESHMENTS		300031	
	0010-801-1801-39550	18.73	PETTY CASH-REFRESHMENTS		300031	
	0010-801-1801-39550	100.00	PETTY CASH-REFRESHMENTS		300031	
	0010-801-1802-33100	12.98	PETTY CASH-MILEAGE		300031	
	0010-801-1801-39550	60.62	PETTY CASH-REFRESHMENTS		300031	
						370.52
REGAL ENTERTAINMENT GROUP	0075-450-0075-08370	700.00	EE SERVICE PROGRAM (TRUST)		300001	
	0010-801-1801-32200	8.00	EE SERVICE PROGRAM SHIPPING		300001	
						708.00
SAN GABRIEL VALLEY WATER ASSOC	0010-801-4212-31500	25.00	QUARTERLY LUNCHEON		300032	
						25.00
ST FRANCIS MEDICAL CENTER	0010-701-0010-07960	131.08	REFUND AMBULANCE FEE		300016	
						131.08
CODAY STEVEN	0075-450-0075-08420	50.00	PETTY CASH-EOTM (TRUST)		300033	
	0060-801-4211-22250	80.70	PETTY CASH-GAS		300033	
	0060-801-4211-22250	20.35	PETTY CASH-GAS		300033	
	0060-801-4211-22250	15.00	PETTY CASH-GAS		300033	
	0075-450-0075-08420	50.00	PETTY CASH-EOTM (TRUST)		300033	
	0060-801-4211-22250	80.35	PETTY CASH-GAS		300033	
	0010-801-3120-39700	48.49	PETTY CASH-REFRESHMENTS		300033	
	0010-801-3104-22750	43.38	PETTY CASH-REFRESHMENTS		300033	
	0010-801-3103-22750	48.55	PETTY CASH-SUPPLIES		300033	
	0075-450-0075-08420	50.00	PETTY CASH-EOTM (TRUST)		300033	
						486.82
THE GAS COMPANY (DBA)	0010-801-3114-36200	270.53	GAS SERVICES		300002	

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						270.53
UNITED PARCEL SERVICE	0010-801-1301-32200	15.92	DELIVERY SERVICES		300003	
	0010-801-1407-32200	210.60	DELIVERY SERVICES		300003	
	0010-801-3114-32200	104.80	DELIVERY SERVICES		300003	
						331.32
UNITED STATES POST OFFICE	0092-801-4221-32200	10,000.00	WATER BILLS POSTAGE		300017	
						10,000.00
VERIZON WIRELESS	0010-801-1702-32050	14.01	WIRELESS VOICE/DATA SERVICES		300004	
	0010-801-1703-32050	6.55	WIRELESS VOICE/DATA SERVICES		300004	
	0010-801-1701-32050	61.51	WIRELESS VOICE/DATA SERVICES		300004	
	0010-801-3220-32050	135.33	WIRELESS VOICE/DATA SERVICES		300004	
	0010-801-3205-32050	5.53	WIRELESS VOICE/DATA SERVICES		300004	
	0010-801-3201-32050	0.22	WIRELESS VOICE/DATA SERVICES		300004	
	0010-801-3210-32050	1.00	WIRELESS VOICE/DATA SERVICES		300004	
	0349-801-3201-39400	45.61	WIRELESS VOICE/DATA SERVICES		300004	
						269.76
	0010-801-4209-32050	24.90	WIRELESS VOICE/DATA SERVICES		300018	
	0010-801-4212-32050	9.19	WIRELESS VOICE/DATA SERVICES		300018	
	0010-801-6517-32050	13.56	WIRELESS VOICE/DATA SERVICES		300018	
	0092-801-4222-32050	5.07	WIRELESS VOICE/DATA SERVICES		300018	
	0092-801-4221-32050	2.01	WIRELESS VOICE/DATA SERVICES		300018	
	0092-801-4223-32050	13.05	WIRELESS VOICE/DATA SERVICES		300018	
	0010-801-6502-32050	12.82	WIRELESS VOICE/DATA SERVICES		300018	
	0022-801-4206-32050	61.53	WIRELESS VOICE/DATA SERVICES		300018	
	0092-801-4222-32050	152.02	WIRELESS VOICE/DATA SERVICES		300018	
	0160-801-3115-38400	38.05	WIRELESS VOICE/DATA SERVICES		300018	
						332.20
	0010-801-6502-32050	19.09	WIRELESS VOICE/DATA SERVICES		300034	
						19.09

PREPAID WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
YDP MPK SISTER CITY ASSOC. (DBA)	0075-450-0075-09080	1,500.00	STUDENT EXCHANGE PROGRAM-TRUST		300019	
						1,500.00
	TOTAL FOR PREPAID WARRANTS					1,468,203.26

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
"CIVIC PLUS" AND "EPOWEREDSCHOOLS"	0010-801-6509-31850	1,433.99	CITY WEBSITE HOSTING & SUPPORT	90248	300035	
	0043-801-6509-31850	1,433.99	CITY WEBSITE HOSTING & SUPPORT	90248	300035	
	0092-801-6509-31850	1,433.98	CITY WEBSITE HOSTING & SUPPORT	90248	300035	
						4,301.96
A & J PORTABLE RESTROOM INC	0010-801-6508-39860	800.00	FARMERS MARKET RESTROOM	90251	300036	
						800.00
ACCELA INC	0010-450-1703-02520	1,695.60	BUILDING SYSTEM TRAINING	90313	300037	
	0010-450-1703-02520	1,884.00	BUILDING SYSTEM MAINTENANCE	90313	300037	
	0010-450-1703-02520	1,078.31	BUILDING SYSTEM TRAINING	90313	300037	
	0010-450-1703-02520	2,864.34	BUILDING SYSTEM TRAINING	90313	300037	
	0010-450-1703-02520	722.66	BUILDING SYSTEM TRAINING	90313	300037	
						8,244.91
ADLERHORST INTERNATIONAL INC.	0160-801-3103-22800	266.66	POLICE TRAINING		300038	
						266.66
ADVANCE PEST TERMITE CONTROL	0010-801-3113-38100	39.00	PEST CONTROL	90000	300039	
	0010-801-3104-22750	30.00	PEST CONTROL		300039	
	0010-801-6502-38250	30.00	PEST CONTROL	90252	300039	
	0010-801-6502-38250	42.00	PEST CONTROL	90252	300039	
	0010-801-6502-38250	38.00	PEST CONTROL	90252	300039	
	0010-801-6502-38250	42.00	PEST CONTROL	90252	300039	
	0010-801-6502-38250	53.00	PEST CONTROL	90252	300039	
	0010-801-6517-38100	47.00	PEST CONTROL	90252	300039	
						321.00
ADVANCED BATTERY SYSTEMS, INC.	0060-801-4211-23500	253.56	FLEET PARTS-UNIT 854	90033	300040	
						253.56
ALHAMBRA MUNICIPAL COURT	0010-701-0010-03620	7,725.56	CITATION PROCESSING		300041	
						7,725.56
CITY OF ALHAMBRA	0060-801-4211-22250	194.05	CNG FUEL	90041	300042	
						194.05

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
ALLSTAR FIRE EQUIPMENT INC.	0010-801-3210-22300	113.06	FIRE SUPPLIES	90226	300043	113.06
ALPHACARD	0010-801-3210-22750	116.77	COMPUTER SUPPLIES		300044	116.77
AMTECH ELEVATOR SERVICES	0010-801-4210-38100	469.63	ELEVATOR MAINTENANCE	90197	300045	469.63
ARAMARK UNIFORM & CAREER APPAREL, I	0010-801-3210-39050	29.69	FIRE UNIFORM SERVICES	90221	300046	
	0010-801-3210-39050	35.31	FIRE UNIFORM SERVICES	90221	300046	
	0010-801-3210-39050	18.73	FIRE UNIFORM SERVICES	90221	300046	
	0010-801-3210-39050	8.29	FIRE UNIFORM SERVICES	90221	300046	
	0010-801-3210-39050	5.89	FIRE UNIFORM SERVICES	90221	300046	
	0010-801-3210-39050	75.44	FIRE UNIFORM SERVICES	90221	300046	
	0010-801-3210-39050	3.48	FIRE UNIFORM SERVICES	90221	300046	
	0010-801-3210-39050	15.25	FIRE UNIFORM SERVICES	90221	300046	192.08
BRENT ARCHIBALD	0136-801-3101-33250	45.00	POLICE POST TRAINING		300047	45.00
ARROYO BACKGROUND INVESTIGATIONS	0010-801-3104-31950	900.00	BACKGROUND INVESTIGATIONS		300048	900.00
ASTRO PLUMBING SUPPLY CO (DBA)	0010-801-4210-23300	2,213.53	PLUMBING SUPPLIES	90169	300049	2,213.53
AUTOZONE WEST, INC	0060-801-4211-23500	25.33	FLEET SUPPLIES-UNIT 916	90310	300050	
	0060-801-4211-23500	379.32	FLEET SUPPLIES-UNITS 043 & 045	90310	300050	
	0060-801-4211-23500	93.99	FLEET SUPPLIES-UNIT 890	90310	300050	
	0060-801-4211-23500	35.15	FLEET SUPPLIES	90310	300050	
	0060-801-4211-23500	25.33	FLEET SUPPLIES-UNIT 948	90310	300050	559.12
AVOCET ENVIRONMENTAL, INC.	0093-801-4227-41100	4,211.47	WATER QUALITY PERMITS	90095	300051	4,211.47

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
B & K ELECTRIC WHOLESALE	0092-801-4222-23400	251.04	WATER ELECTRICAL SUPPLIES	90096	300052	251.04
B W GRAPHICS	0010-801-6502-39250	28.34	BUSINESS CARDS-A GARCIA		300053	
	0010-801-3104-39250	37.06	BUSINESS CARDS-B HUNG		300053	
	0010-801-6502-39250	28.34	BUSINESS CARDS-O MURO		300053	
	0010-801-6502-39250	28.34	BUSINESS CARDS-B HERRERA		300053	
	0010-801-6517-21350	28.34	BUSINESS CARDS-C REYES		300053	
	0010-801-6502-39250	39.24	BUSINESS CARDS-M VAZQUEZ		300053	
	0010-801-1702-39250	41.42	BUSINESS CARDS-W STECYK		300053	
	0010-801-1703-39250	41.42	BUSINESS CARDS-J SMITH		300053	
	0010-801-6001-39250	32.70	BUSINESS CARDS-N ARVIZU		300053	
	0010-801-6001-39250	32.70	BUSINESS CARDS-C COSTALES		300053	
	0010-801-6001-39250	39.24	BUSINESS CARDS-M YEPES		300053	
	0010-801-6001-39250	39.24	BUSINESS CARDS-D BARRON		300053	
	0010-801-6502-39250	38.15	BUSINESS CARDS-B YANG		300053	454.53
BACKFLOW APPARATUS & VALVE CO	0092-801-4221-23700	1,606.22	WATER SUPPLIES	90097	300054	1,606.22
BARNEY'S BLENDS, INC.	0010-801-6517-22750	25.00	PARK SUPPLIES		300055	25.00
BIOSYSTEMS, INC.	0110-801-4202-23600	302.03	STREET SUPPLIES		300056	302.03
BRAVO BUSINESS RESOURCES	0092-801-4220-31950	130.00	TRANSLATION SERVICES		300057	130.00
BYTOPS SIGN	0010-801-3120-39700	299.75	BANNER		300058	299.75
C.E.G. INVESTIGATIONS	0010-801-3102-31950	186.06	POLICE TRAFFIC HEARINGS		300059	186.06
CALBO TRAINING INSTITUTE	0010-801-1703-33200	330.00	BUILDING TRAINING		300060	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
CALBO TRAINING INSTITUTE	0010-801-1703-33200	330.00	BUILDING TRAINING		300060	
	0010-801-1703-33200	330.00	BUILDING TRAINING		300060	
	0010-801-1703-33200	330.00	BUILDING TRAINING		300060	
	0010-801-1703-33200	165.00	BUILDING TRAINING		300060	
	0010-801-1702-33200	165.00	BUILDING TRAINING		300060	
						1,650.00
WEI-HSIU CAMERON	0159-701-0159-07010	105.00	REFUND RECREATION CLASS		300061	
						105.00
CANON FINANCIAL SERVICES, INC.	0010-801-3104-37500	1,919.90	COPIER MACHINE RENTAL	90004	300062	
	0010-801-1301-37500	1,557.61	COPIER MACHINE RENTAL		300062	
						3,477.51
CINTAS CORPORATION	0092-801-4221-22310	46.37	WATER UNIFORMS		300063	
	0092-801-4222-22310	68.97	WATER UNIFORMS		300063	
	0092-801-4223-22310	85.44	WATER UNIFORMS		300063	
	0092-801-4223-22150	90.11	WATER UNIFORMS		300063	
						290.89
CITATION MANAGEMENT (DBA)	0010-701-0010-03630	2,807.08	PARKING CITATIONS SERVICE		300064	
						2,807.08
CITY OF MONTEREY PARK	0010-801-1101-39250	306.09	COPIER REPAIR		300065	
						306.09
COIT SERVICES, INC	0010-801-6506-31150	175.00	CARPET CLEANING-DAY CARE		300066	
						175.00
COME LAND MAINTENANCE COMPANY	0010-801-4210-38250	2,450.00	JANITORIAL SERVICE	90194	300067	
	0010-801-3114-38250	650.00	JANITORIAL SERVICE	90194	300067	
	0092-801-4220-38250	150.00	JANITORIAL SERVICE	90194	300067	
	0092-801-4222-38250	150.00	JANITORIAL SERVICE	90194	300067	
	0010-801-3114-38250	280.00	JANITORIAL SERVICE	90196	300067	
	0092-801-4220-38250	100.00	JANITORIAL SERVICE	90196	300067	
	0092-801-4222-38250	80.00	JANITORIAL SERVICE	90196	300067	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
COME LAND MAINTENANCE COMPANY	0010-801-4210-38250	625.00	JANITORIAL SERVICE	90196	300067	
	0010-801-4210-38250	1,661.00	JANITORIAL SERVICE	90193	300067	
	0010-801-3114-38250	755.00	JANITORIAL SERVICE	90193	300067	
	0092-801-4220-38250	279.00	JANITORIAL SERVICE	90193	300067	
	0092-801-4222-38250	132.00	JANITORIAL SERVICE	90193	300067	
	0010-801-6502-38250	200.00	JANITORIAL SERVICE	90258	300067	
	0010-801-6502-38250	858.00	JANITORIAL SERVICE	90257	300067	
	0010-801-6502-38250	648.50	JANITORIAL SERVICE	90254	300067	
	0010-801-6502-38250	288.70	JANITORIAL SERVICE		300067	
	0010-801-6505-38250	4,190.00	JANITORIAL SERVICE	90253	300067	
	0178-801-6502-38250	263.00	JANITORIAL SERVICE	90255	300067	
	0010-801-6502-38250	1,194.50	JANITORIAL SERVICE	90256	300067	
	0060-801-4211-38400	140.00	JANITORIAL SERVICE		300067	
	0010-801-4210-38250	257.00	JANITORIAL SERVICE	90195	300067	
	0010-801-3114-38250	132.00	JANITORIAL SERVICE	90195	300067	
	0092-801-4220-38250	23.00	JANITORIAL SERVICE	90195	300067	
	0092-801-4222-38250	49.00	JANITORIAL SERVICE	90195	300067	
	0010-801-6517-38250	188.00	JANITORIAL SERVICE	90302	300067	
						15,743.70
COUNTY OF LOS ANGELES	0010-701-0010-08100	1,988.11	LAFCO OPERATING EXPENSES		300068	
						1,988.11
	0010-801-6517-41100	426.64	PEST ERADICATION	90303	300069	
						426.64
CPS HUMAN RESOURCE SERVICES (DBA)	0010-801-1801-31950	929.50	RECRUITMENT SERVICES		300070	
						929.50
CROWN GRAPHICS (DBA)	0060-801-4211-38410	6.87	FLEET DECAL	90043	300071	
						6.87
DAILY JOURNAL CORPORATION	0043-801-1301-34050	121.80	LEGAL NOTICE		300072	
	0010-801-1301-34050	165.00	LEGAL NOTICE		300072	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
DAILY JOURNAL CORPORATION	0092-801-1301-34050	180.60	LEGAL NOTICE		300072	467.40
DEPT OF TRANSPORTATION	0022-801-4206-41100	1,636.01	TRAFFIC SIGNALS & LIGHTING	90247	300073	1,636.01
DIVISION OF THE STATE ARCHITECT	0010-701-0010-02020	109.80	FEES COLLECTED UNDER SB1186		300074	109.80
FRANK DUKE	0136-801-3101-33250	45.00	POLICE POST TRAINING		300075	45.00
DUNN-EDWARDS CORPORATION	0010-801-4210-23100	219.50	PAINT SUPPLIES		300076	
	0010-801-4210-23100	32.30	PAINT SUPPLIES		300076	251.80
ELAC WOMEN'S SOFTBALL	0075-450-0075-08110	200.00	REFUND-FIREWORK DEPOSIT(TRUST)		300077	200.00
EMERGENCY RESPONSE CRIME SCENE CLEA	0010-801-3103-22750	150.00	POLICE-DECONTAMINATE UNIT 015		300078	150.00
EMPIRE CLEANING SUPPLY	0010-801-6505-22150	870.65	JANITORIAL SUPPLIES		300079	
	0010-801-6505-22150	345.73	JANITORIAL SUPPLIES		300079	
	0010-801-6505-22150	1,271.60	JANITORIAL SUPPLIES		300079	2,487.98
ESRI INC	0010-801-3230-39400	1,535.32	SOFTWARE MAINTENANCE	90233	300080	
	0010-801-3230-39400	2.44	SOFTWARE MAINTENANCE		300080	1,537.76
EUROFINS EATON ANALYTICAL, INC.	0093-801-4230-31950	940.00	WATER TREATMENT	90103	300081	940.00
EVOQUA WATER TECHNOLOGIES LLC	0071-801-3210-38400	102.88	WATER SUPPLIES		300082	102.88
EWING IRRIGATION PRODUCTS,INC.	0092-801-4223-23300	339.95	WATER SUPPLIES	90104	300083	339.95

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
FEDERAL EXPRESS CORP.	0010-801-5002-96049	30.99	DELIVERY SERVICE		300084	
	0010-801-1403-32200	65.10	DELIVERY SERVICE		300084	
						96.09
FENSCO SERVICES INC	0010-801-4210-38100	1,430.00	FENCE INSTALLATION		300085	
						1,430.00
DENISE FERRARI	0010-801-3103-22310	138.85	REIMBURSEMENT-POLICE UNIFORMS		300086	
						138.85
CHRISTINE FRATINO	0159-701-0159-07010	130.00	REFUND RECREATION CLASS		300087	
						130.00
GALLADE CHEMICAL, INC.	0092-801-4222-23300	898.71	WATER CHEMICALS	90106	300088	
						898.71
JOANN GARCIA	0010-701-0010-07050	102.00	REFUND-PICNIC RESERVATION		300089	
						102.00
GARFIELD MEDICAL CENTER	0010-801-3113-22600	24.00	PHYSICAL		300090	
	0010-801-3113-22600	24.00	PHYSICAL		300090	
						48.00
GARVEY EQUIPMENT COMPANY	0010-801-3210-38400	94.15	FLEET SUPPLIES	90235	300091	
						94.15
JONATHAN GIN	0349-801-3201-39400	229.41	REIMBURSE-EOC SUPPLIES		300092	
						229.41
STEPHEN GIOVANAZZI	0010-801-3103-22310	188.98	REIMBURSEMENT-POLICE UNIFORMS		300093	
	0010-801-3103-22310	22.45	REIMBURSEMENT-POLICE UNIFORMS		300093	
	0010-801-3103-22310	138.94	REIMBURSEMENT-POLICE UNIFORMS		300093	
	0010-801-3103-22310	39.85	REIMBURSEMENT-POLICE UNIFORMS		300093	
						390.22
GORDON TERMITE CONTROL INC	0092-801-4222-31950	110.00	PEST CONTROL		300094	
	0092-801-4221-23900	110.00	PEST CONTROL		300094	
						220.00

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
GOVCONNECTION INC	0063-801-5002-99055	818.42	NETWORK MAINTENANCE		300095	
	0010-801-1404-22750	8.04	NETWORK MAINTENANCE		300095	
	0010-801-1404-22750	94.91	NETWORK MAINTENANCE		300095	
						921.37
GRAINGER	0060-801-4211-23500	52.83	ELECTRICAL SUPPLIES		300096	
	0110-801-4202-23600	410.05	ELECTRICAL SUPPLIES	90160	300096	
	0110-801-4202-23600	205.03	ELECTRICAL SUPPLIES	90160	300096	
	0092-801-4210-23050	196.99	ELECTRICAL SUPPLIES	90160	300096	
	0010-801-6517-22310	460.55	ELECTRICAL SUPPLIES		300096	
						1,325.45
GRANICUS, INC	0010-801-6509-38400	3,276.00	WEBSITE MANAGEMENT SERVICES	90341	300097	
						3,276.00
GRM INFORMATION MANAGEMENT	0010-801-1301-31950	36.17	CITY CLERK-RECORD STORAGE		300098	
						36.17
H & H AUTO PARTS WHOLESALE	0060-801-4211-38410	51.89	FLEET PARTS		300099	
	0060-801-4211-38410	51.89	FLEET PARTS		300099	
	0060-801-4211-23500	34.01	FLEET PARTS	90050	300099	
	0060-801-4211-23500	19.47	FLEET PARTS-UNIT 007	90050	300099	
	0060-801-4211-23500	99.43	FLEET PARTS-UNIT 928	90050	300099	
	0060-801-4211-23500	49.36-	FLEET PARTS-CREDIT	90050	300099	
						207.33
SHADIA HAMIDEH	0010-701-0010-03630	53.00	REFUND-PARKING CITATION		300100	
						53.00
HEALTH SOURCE MSO	0010-701-0010-07960	121.75	REFUND-AMBULANCE FEE		300101	
						121.75
	0010-701-0010-07960	778.63	REFUND-AMBULANCE FEE		300102	
						778.63
HEALTHCARE PARTNERS	0010-701-0010-07960	1,738.80	REFUND-AMBULANCE FEE		300103	
						1,738.80

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
HOME DEPOT CREDIT SERVICES	0092-801-4210-23050	83.43	HARDWARE SUPPLIES	90191	300104	
	0092-801-4223-22150	68.41	HARDWARE SUPPLIES	90089	300104	
	0092-801-4223-23100	149.82	HARDWARE SUPPLIES	90089	300104	
	0060-801-4211-23500	170.45	HARDWARE SUPPLIES	90053	300104	
	0010-801-4202-23950	135.92	HARDWARE SUPPLIES	90191	300104	
	0042-801-4204-22750	111.98	HARDWARE SUPPLIES	90191	300104	
	0022-801-4206-23900	73.07	HARDWARE SUPPLIES	90191	300104	
	0022-801-4206-23100	21.09	HARDWARE SUPPLIES	90191	300104	
						814.17
INTER VALLEY POOL SUPPLY	0010-801-6503-23050	944.98	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	325.82	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	457.13	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	368.86	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	737.71	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	998.78	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	951.24	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	650.19	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	756.82	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	697.65	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	411.97	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	674.70	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	236.68	POOL CHEMICAL	90262	300105	
	0010-801-6503-23050	676.24	POOL CHEMICALS	90262	300105	
	0010-801-6503-23050	228.89	POOL CHEMICALS	90262	300105	
	0010-801-6503-23050	798.80	POOL CHEMICALS	90262	300105	
						9,916.46
INTERNATIONAL CODE COUNCIL, INC	0010-801-1703-39350	85.07	CODE BOOKS		300106	
						85.07
INTERNATIONAL DOWNTOWN ASSOCIATION	0077-801-1111-31950	300.00	MEMBERSHIP RENEWAL		300107	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						300.00
JCL BARRICADE COMPANY	0022-801-4206-23800	300.53	STREET SUPPLIES		300108	
	0022-801-4206-23800	57.01	STREET SUPPLIES		300108	
						357.54
KNIGHT COMMUNICATIONS INC	0010-801-3115-31700	10,250.00	SYSTEM MANAGEMENT SERVICE	90008	300109	
	0010-801-3115-38400	25,700.00	SYSTEM MANAGEMENT SERVICE	90009	300109	
	0010-801-1301-38400	497.17	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0010-801-1404-38400	268.42	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0043-801-1404-38400	385.00	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0092-801-1404-38400	608.83	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0010-801-1701-38400	376.67	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0010-801-1702-38400	376.67	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0010-801-1703-38400	376.67	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0010-801-1801-38400	733.75	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0010-801-3115-38400	1,181.92	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0010-801-3201-38400	897.50	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0022-801-4202-38400	469.58	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0092-801-4210-38400	386.75	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0060-801-4211-38400	1,716.66	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0043-801-4212-38400	552.92	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0092-801-4220-38400	1,628.33	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0131-801-6001-38400	853.33	SYSTEM MANAGEMENT SERVICE	90031	300109	
	0010-801-6502-38400	1,110.83	SYSTEM MANAGEMENT SERVICE	90031	300109	
						48,371.00
KOPPL PIPELINE SERVICES, INC.	0093-801-4229-23300	1,150.00	WATER TANK SUPPLIES	90115	300110	
						1,150.00
KOVATCH MOBILE EQUIPMENT	0060-801-3210-38400	21,138.68	FIRE-REPAIR UNIT 061	90237	300111	
	0060-801-3210-38400	802.50-	FLEET PARTS-CREDIT	90237	300111	
						20,336.18

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
LA CO DEPT OF HEALTH SERVICES	0010-701-0010-07960	121.90	REFUND-AMBULANCE FEE		300112	121.90
LANDMARK FENCE & GATE CO. INC.	0092-801-4222-23400	832.00	DOOR MAINTENANCE-DELTA PLANT		300113	832.00
LANGUAGE LINE SERVICES	0010-801-3112-32050	3.76	TRANSLATION SERVICES		300114	3.76
EVA LARA	0159-701-0159-07010	7.00	REFUND-RECREATION CLASS		300115	7.00
LAW OFFICES OF CARPENTER & ROTHANS	0010-801-1601-31600	11.00	LEGAL SERVICE		300116	11.00
LAWN MOWER CORNER/KNG POWER EQUIPME	0060-801-4211-23500	52.29	EQUIPMENT PARTS-UNIT 084	90057	300117	
	0060-801-4211-23500	31.61	EQUIPMENT PARTS-P 163	90057	300117	83.90
LEADER INDUSTRIES	0060-801-4211-38400	138.00	FLEET PARTS-RA62		300118	138.00
LEXIPOL LLC	0160-801-3101-39400	3,600.00	POLICE POLICY MANUAL UPDATE	90014	300119	
	0160-801-3101-39350	5,400.00	POLICE TRAINING BULLETINS	90014	300119	9,000.00
ECHO WENJING LI	0010-701-0010-03630	358.00	REFUND-PARKING CITATION		300120	358.00
LIEBERT CASSIDY WHITMORE	0010-801-1601-31600	591.00	LEGAL SERVICES-GENERAL		300121	591.00
	0010-801-1801-39400	75.00	HR-TRAINING		300122	75.00
LIFE SAFETY CONSULTING & ENGINEERIN	0010-701-0010-06330	225.00	FIRE PLAN CHECK	90272	300123	
	0010-701-0010-06330	225.00	FIRE PLAN CHECK	90272	300123	
	0010-701-0010-06330	150.00	FIRE PLAN CHECK	90272	300123	600.00

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
LIFE-ASSIST INC	0010-801-3220-24200	128.97	FIRE MEDICAL SUPPLIES	90275	300124	
	0010-801-3220-24200	122.55	FIRE MEDICAL SUPPLIES	90275	300124	
	0010-801-3220-22350	28.75	FIRE MEDICAL SUPPLIES	90275	300124	
	0010-801-3220-24200	344.00	FIRE MEDICAL SUPPLIES	90275	300124	
	0010-801-3220-22350	1,079.10	FIRE MEDICAL SUPPLIES	90275	300124	
	0010-801-3220-24200	122.55	FIRE MEDICAL SUPPLIES	90275	300124	
	0010-801-3220-22350	18.92	FIRE MEDICAL SUPPLIES	90275	300124	
	0010-801-3220-24200	612.32	FIRE MEDICAL SUPPLIES	90275	300124	
	0010-801-3220-22350	40.00	FIRE MEDICAL SUPPLIES	90275	300124	
	0010-801-3220-22350	204.00	FIRE MEDICAL SUPPLIES	90275	300124	
						2,701.16
THE LIGHTHOUSE INC (DBA)	0060-801-4211-23500	151.51	FLEET PARTS-UNIT 080T	90082	300125	
						151.51
LINCOLN EQUIPMENT INC.	0010-801-6503-31150	570.69	POOL SUPPLIES	90263	300126	
						570.69
ANNIE H. LIU	0010-701-0010-06220	250.00	REFUND-CODE CITATION		300127	
						250.00
LOGAN SUPPLY CO., INC.	0092-801-4223-23100	161.43	WATER SUPPLIES/TOOLS	90118	300128	
	0092-801-4223-24100	1,137.85	WATER SUPPLIES/TOOLS	90118	300128	
	0092-801-4223-24100	60.00	WATER SUPPLIES/TOOLS	90118	300128	
						1,359.28
TERENCE LOKE	0092-701-0092-07520	552.56	REFUND-WATER METER INSTALLING		300129	
						552.56
LOS ANGELES COUNTY FIRE DEPT.	0060-801-3210-38400	1,964.93	FIRE REPAIR-UNIT 950,984,250	90271	300130	
						1,964.93
LOS ANGELES COUNTY SHERIFF'S DEPART	0010-801-3113-22600	554.05	PRISONER MEALS	90010	300131	
						554.05
CITY OF LOS ANGELES	0043-801-4203-31950	11,497.80	WATERSHED MANAGEMENT PLAN		300132	
						11,497.80

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
WILLIAM LY	0075-450-0075-08200	1,707.20	REFUND-GRADING BOND (TRUST)		300133	1,707.20
MANAGED HEALTH NETWORK INC	0010-801-1801-31950	840.84	EAP PREMIUM		300134	840.84
MARGARET MANATT	0010-701-0010-07960	253.00	REFUND-AMBULANCE FEE		300135	253.00
MARK KEPPEL H.S. ALLIANCE	0075-450-0075-08110	200.00	REFUND-FIREWORK DEPOSIT(TRUST)		300136	200.00
MARK KRIKORIAN	0010-701-0010-06330	266.00	PLAN CHECKER CONSULTANT	90273	300137	
	0010-701-0010-06330	150.00	PLAN CHECKER CONSULTANT	90273	300137	
	0010-701-0010-06330	91.00	PLAN CHECK	90273	300137	507.00
MATCO TOOLS (DBA)	0060-801-4211-24100	96.96	FLEET TOOLS	90060	300138	
	0060-801-4211-24100	6.16	FLEET TOOLS	90060	300138	103.12
MCMASTER-CARR SUPPLY CO.	0092-801-4222-23400	156.44	WATER SUPPLIES	90122	300139	156.44
MCNEILL SECURITY AND FIRE SYSTEMS (	0010-801-4210-38100	119.00	ALARM SERVICES		300140	
	0092-801-4222-31950	966.00	ALARM SERVICES		300140	
	0092-801-4222-31950	603.75	ALARM SERVICES		300140	1,688.75
METRON-FARNIER, LLC	0092-801-4224-81070	292.12	WATER METER/PARTS	90124	300141	292.12
METROPOLITAN TRANSPORTATION	0109-801-6511-41200	1,134.00	LANGLEY TAP CARD SALES		300142	1,134.00
MIKE'S MUFFLER	0060-801-4211-38400	263.53	FLEET-REPAIR UNIT 015	90062	300143	263.53
REBECCA MINOR	0010-801-3104-22310	124.14	REIMBURSEMENT-POLICE UNIFORMS		300144	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						124.14
MISSION SUPER HARDWARE	0010-801-3230-22750	83.78	HARDWARE SUPPLIES	90241	300145	
	0010-801-3210-22750	57.66	HARDWARE SUPPLIES	90241	300145	
	0092-801-4223-22300	53.39	HARDWARE SUPPLIES	90155	300145	
	0010-801-6517-23050	7.35	HARDWARE SUPPLIES	90309	300145	
	0010-801-6517-23050	7.27	HARDWARE SUPPLIES	90309	300145	
						209.45
MOBILE MINI LLC	0010-801-6508-39860	115.26	FARMERS MARKET STORAGE		300146	
						115.26
MOLINA HEALTHCARE OF CALIFORNIA	0010-701-0010-07960	124.04	REFUND-AMBULANCE FEE		300147	
						124.04
MOTOROLA SOLUTIONS C/O ADVANCED ELE	0010-801-3112-38400	101,644.80	POLICE RADIO SERVICE	90018	300148	
						101,644.80
MUSIC GEM	0075-450-0075-08550	190.00	LANGLEY DANCE BAND (TRUST)		300149	
						190.00
	0075-450-0075-08550	190.00	LANGLEY DANCE BAND (TRUST)		300150	
						190.00
	0075-450-0075-08550	190.00	LANGLEY DANCE BAND (TRUST)		300151	
						190.00
	0075-450-0075-08550	190.00	LANGLEY DANCE BAND (TRUST)		300152	
						190.00
	0075-450-0075-08550	190.00	LANGLEY DANCE BAND (TRUST)		300153	
						190.00
NAVARRO'S TOWING	0062-801-5101-35650	350.00	TOWING SERVICES		300154	
						350.00
NEC BUSINESS NETWORK SOLUTIONS	0010-801-3112-38400	1,652.72	PHONE LINE MAINTENANCE	90019	300155	
						1,652.72
O'REILLY AUTO PARTS	0060-801-4211-23500	21.71	FLEET PARTS	90069	300156	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
O'REILLY AUTO PARTS	0060-801-4211-23500	5.98	FLEET PARTS	90069	300156	
	0060-801-4211-23500	26.60	FLEET PARTS	90069	300156	
	0060-801-4211-23500	140.40	FLEET PARTS-P31	90069	300156	
	0060-801-4211-23500	40.50-	FLEET PARTS-CREDIT	90069	300156	
	0060-801-4211-23500	147.10-	FLEET PARTS-CREDIT	90069	300156	
						7.09
OFFICE DEPOT INC.	0010-801-3114-21350	131.84	OFFICE SUPPLIES	90022	300157	
	0010-801-1701-21350	70.07	OFFICE SUPPLIES	90207	300157	
	0010-801-3210-21350	168.50	OFFICE SUPPLIES	90240	300157	
	0010-801-3210-21250	109.11	OFFICE SUPPLIES	90240	300157	
	0010-801-3210-21250	109.11	OFFICE SUPPLIES	90240	300157	
	0010-801-3210-21250	38.14	OFFICE SUPPLIES	90240	300157	
	0092-801-4221-21350	154.95	OFFICE SUPPLIES	90126	300157	
	0092-801-4220-21250	83.18	OFFICE SUPPLIES	90126	300157	
	0010-801-6502-21350	76.83	OFFICE SUPPLIES	90280	300157	
	0010-801-6502-21350	141.50	OFFICE SUPPLIES	90280	300157	
	0176-801-6516-21350	297.65	OFFICE SUPPLIES	90319	300157	
	0010-801-6517-21350	21.79	OFFICE SUPPLIES	90319	300157	
						1,402.67
OFFICE SOLUTIONS	0010-801-1407-22750	72.21	OFFICE SUPPLIES	90288	300158	
						72.21
RICARDO OLIVAREZ	0010-801-3210-23400	121.96	REIMBURSEMENT-FIRE SUPPLIES		300159	
	0010-801-3210-23400	43.19	REIMBURSEMENT-FIRE SUPPLIES		300159	
	0010-801-3230-24150	144.89	REIMBURSEMENT-EOC SUPPLIES		300159	
						310.04
MARK OLIVAS	0075-450-0075-08360	2,254.12	EE COMPUTER PROGRAM (TRUST)		300160	
						2,254.12
SHELLEY ONG	0159-701-0159-07010	60.00	REFUND-RECREATION CLASS		300161	
						60.00

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
ORANGE COUNTY SHERIFF'S DEPT	0136-801-3101-33250	45.00	POLICE POST TRAINING		300162	45.00
	0136-801-3101-33250	120.00	POLICE POST TRAINING		300163	120.00
OVERPAYMENT RECOVERY	0010-701-0010-07960	1,498.75	REFUND-AMBULANCE FEE		300164	1,498.75
PARKHOUSE TIRE, INC.	0060-801-4211-23500	32.63	FLEET TIRES		300165	
	0060-801-4211-23500	799.27	FLEET TIRES	90071	300165	831.90
PBS ENGINEERS, INC.	0010-701-0010-06100	933.00	PLAN CHECK	90202	300166	933.00
POWELL ELECTRIC	0010-701-0010-02600	72.80	REFUND-ELECTRICAL PERMIT		300167	72.80
PREFERRED ALLIANCE INC	0010-801-1801-31900	84.00	DRIVER TESTING		300168	84.00
PROGRESSIVE SOLUTIONS INC	0010-801-1408-21250	148.75	CASHIER REGISTER SUPPLIES		300169	148.75
PRUDENTIAL OVERALL SUPPLY	0060-801-4211-22300	34.42	UNIFORMS	90075	300170	
	0060-801-4211-22300	34.42	UNIFORMS	90075	300170	
	0060-801-4211-22150	27.23	SHOP RAGS	90075	300170	
	0010-801-3210-22150	18.98	SHOP RAGS	90075	300170	
	0060-801-4211-22150	27.23	SHOP RAGS	90075	300170	
	0010-801-3210-22150	18.98	SHOP RAGS	90075	300170	161.26
PUBLIC SAFETY TRAINING CONSULT	0136-801-3101-33250	440.00	POLICE POST TRAINING		300171	440.00
R.P. LAURAIN & ASSOCIATES	0010-801-5004-90650	950.00	REAL ESTATE APPRAISAL SERVICE		300172	950.00

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
MARGARET RAMIREZ	0010-801-1301-31950	25.00	COUNCIL PRESENTATION		300173	25.00
RED WING SHOE STORES	0092-801-4223-22300	172.46	SAFETY BOOTS-A VILLALPANDO		300174	
	0092-801-4223-22300	200.00	SAFETY BOOTS-F DOMINGUEZ		300174	372.46
RENT-A-TOOL	0042-801-4204-22750	20.00	WATER SUPPLIES		300175	20.00
REYES ATHLETICS	0010-801-6502-22310	900.00	RECREATIONAL UNIFORM		300176	
	0010-801-6505-23910	357.12	RECREATIONAL UNIFORM		300176	
	0010-801-6506-22300	125.00	RECREATIONAL UNIFORM		300176	1,382.12
ROCHESTER MIDLAND	0010-801-6505-38250	570.63	JANITORIAL SUPPLIES	90266	300177	570.63
ROYAL WHOLESALE ELECTRIC	0093-801-4226-23300	2,769.04	WATER PARTS	90129	300178	2,769.04
S C FUELS (DBA)	0060-801-4211-22250	13,912.01	FUEL 7/14	90078	300179	13,912.01
JUDY SAI	0010-701-0010-07960	138.47	REFUND-AMBULANCE FEE		300180	138.47
SAN ANDELL SWIMMING POOLS	0092-801-4223-23300	15.47	WATER SUPPLIES	90146	300181	
	0092-801-4222-23300	277.51	WATER SUPPLIES	90146	300181	292.98
SAN GABRIEL VALLEY BASKETBALL CLUB	0075-450-0075-08110	200.00	REFUND-FIREWORK DEPOSIT(TRUST)		300182	200.00
SAN GABRIEL VALLEY CITY MANAGER'S A	0010-801-1201-33200	55.00	SGVCMA MEMBERSHIP		300183	55.00
SAN GABRIEL VALLEY ECONOMIC	0010-801-1110-39300	5,000.00	MEMBERSHIP		300184	5,000.00

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
SAN GABRIEL VALLEY MUNICIPAL WATER	0093-801-4226-42200	200,000.00	DS-AIR STRIPPER TREATMENT SYS		300185	200,000.00
SANDE EQUIPMENT COMPANY, INC.	0010-801-4202-23950	191.56	GRAFFITI REMOVAL SUPPLIES		300186	191.56
SUSAN SAXE-CLIFFORD, PH.D.	0010-801-1801-31900	450.00	PSYCHOLOGICAL EVALUATION		300187	450.00
SCAN/ NATOA	0010-801-6509-39350	80.00	MEMBERSHIP DUES		300188	80.00
SEA CLEAR POOLS INC	0010-801-6503-38200	757.45	POOL SERVICE REPAIRS	90267	300189	
	0010-801-6503-38200	1,192.70	POOL SERVICE REPAIRS	90267	300189	1,950.15
SEAL POOL SUPPLY, INC.	0010-801-6503-22150	117.28	POOL SUPPLIES		300190	
	0010-801-6503-22150	81.64	POOL SUPPLIES		300190	198.92
SHRED-IT LOS ANGELES	0010-801-3114-38400	125.09	SHREDDING SERVICES		300191	
	0010-801-3114-38400	125.09	SHREDDING SERVICES		300191	250.18
SIMPLEXGRINNELL LP	0010-801-4210-38100	931.00	ALARM TESTING	90179	300192	931.00
SMARDAN SUPPLY COMPANY	0092-801-4222-23300	242.84	PLUMBING SUPPLIES	90132	300193	242.84
SMS INC	0010-801-3115-38400	682.00	SERVER MAINTENANCE	90023	300194	682.00
SOTH-UNITED METHODIST CHRUCH	0075-450-0075-08110	200.00	REFUND-FIREWORK DEPOSIT(TRUST)		300195	200.00
SOUTHERN CALIFORNIA	0010-801-1110-39300	5,820.00	MEMBERSHIP		300196	5,820.00
SOUTHERN CALIFORNIA BRONZE CO., INC	0075-450-0075-08915	1,793.05	PLAQUE (TRUST)		300197	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
						1,793.05
THE STANDARD INSURANCE CO.	0065-464	607.47	EXECUTIVE PREMIUM		300198	607.47
THE STANDARD	0065-464	4,771.57	LTD INSURANCE		300199	4,771.57
STOTZ EQUIPMENT	0060-801-3210-38400	448.48	FIRE SUPPLIES		300200	448.48
SUPERCO SPECIALTY PRODUCTS (DBA)	0110-801-4202-23600	368.42	GRAFFITI REMOVAL SUPPLIES		300201	368.42
SUPREME TROPHIES & GIFTS CO.	0010-801-3205-24100	78.48	STAMPS		300202	
	0010-801-1301-22750	7.63	NAME BADGE		300202	86.11
THOMSON REUTERS (LEGAL) INC.	0010-801-3104-39100	246.44	POLICE INFORMATION SERVICES	90026	300203	246.44
DANILO TIRADOS	0010-701-0010-07050	306.00	REFUND-PICNIC RESERVATION		300204	306.00
ANTHONY TJIO	0075-450-0075-08200	7,566.00	REFUND-GRADING BOND (TRUST)		300205	7,566.00
TOM'S CLOTHING & UNIFORMS INC	0010-801-3103-22310	22.96	UNIFORMS-B. CEVALLOS	90029	300206	
	0010-801-3103-22310	192.03	UNIFORMS-B. CEVALLOS	90029	300206	
	0010-801-3103-22310	159.90	UNIFORMS-R. CONTRERAS	90029	300206	
	0010-801-3103-22310	303.13	UNIFORMS-R. COTA	90029	300206	
	0010-801-3103-22310	83.39	UNIFORMS-G. ESCARSEGA	90029	300206	
	0010-801-3103-22310	132.68	UNIFORMS-G. ESCARSEGA	90029	300206	
	0010-801-3103-22310	491.48	UNIFORMS-R. ESPARZA	90029	300206	
	0010-801-3103-22310	159.90	UNIFORMS-D. FERRARI	90029	300206	
	0010-801-3103-22310	211.85	UNIFORMS-D. FERRARI	90029	300206	
	0010-801-3103-22310	145.68	UNIFORMS-I. FLORES	90029	300206	
	0010-801-3103-22310	155.98	UNIFORMS-I. FLORES	90029	300206	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
TOM'S CLOTHING & UNIFORMS INC	0010-801-3103-22310	280.57	UNIFORMS-H. HERNANDEZ	90029	300206	
	0010-801-3103-22310	78.48	UNIFORMS-S. JIMENEZ	90029	300206	
	0010-801-3103-22310	155.62	UNIFORMS-W. LEON	90029	300206	
	0010-801-3103-22310	19.13	UNIFORMS-R. MUNDER	90029	300206	
	0010-801-3103-22310	58.86	UNIFORMS-R. MUNDER	90029	300206	
	0010-801-3103-22310	166.77	UNIFORMS-R. MUNDER	90029	300206	
	0010-801-3103-22310	246.11	UNIFORMS-L. NORRIS	90029	300206	
	0010-801-3103-22310	160.88	UNIFORMS-J. ORATE	90029	300206	
	0010-801-3103-22310	50.00	UNIFORMS-P. PALOMINO	90029	300206	
	0010-801-3103-22310	224.65	UNIFORMS-R. SALINAS	90029	300206	
	0010-801-3103-22310	12.94	UNIFORMS-G. SIMS	90029	300206	
	0010-801-3103-22310	25.51	UNIFORMS-V. VASQUEZ	90029	300206	
	0010-801-3103-22310	623.74	UNIFORMS-S. WUKELICH	90029	300206	
	0010-801-3114-22310	43.80	UNIFORMS-D. CASEY	90029	300206	
	0071-801-3120-22310	63.77	UNIFORMS-T. GRANT	90029	300206	
	0071-801-3120-22310	106.28	UNIFORMS-T. GRANT	90029	300206	
	0010-801-3101-22320	69.86	UNIFORMS-F. ACOSTA	90029	300206	
	0010-801-3101-22320	22.56	UNIFORMS-F. ACOSTA	90029	300206	
	0010-801-3102-22310	144.27	UNIFORMS-B. ARCHIBALD	90029	300206	
	0010-801-3102-22310	88.78	UNIFORMS-R. BARRERA	90029	300206	
	0010-801-3102-22310	17.46	UNIFORMS-R. BARRERA	90029	300206	
	0010-801-3102-22310	18.14	UNIFORMS-R. BARRERA	90029	300206	
	0010-801-3102-22310	62.78	UNIFORMS-R. BARRERA	90029	300206	
	0010-801-3102-22310	22.00	UNIFORMS-B. STOTHERS	90029	300206	
	0010-801-3104-22310	363.95	UNIFORMS-F.DUKE	90029	300206	
	0010-801-3104-22310	15.21	UNIFORMS-A. GUEVARA	90029	300206	
	0010-801-3104-22310	130.60	UNIFORMS-J. FLORES	90029	300206	
	0010-801-3104-22310	56.90	UNIFORMS-S. URICH	90029	300206	
	0010-801-3104-22310	53.16	UNIFORMS-S. URICH	90029	300206	
	0010-801-3104-22310	180.50	UNIFORMS-A. GUEVARA	90029	300206	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
TOM'S CLOTHING & UNIFORMS INC	0010-801-3104-22310	62.78	UNIFORMS-A. GUEVARA	90029	300206	
	0010-801-3210-22320	259.97	UNIFORMS-L. BAILEY	90219	300206	
	0010-801-3210-22320	255.06	UNIFORMS-P. MONTERO	90219	300206	
	0010-801-3201-22750	1,334.47	UNIFORMS-S. HABERLE		300206	
	0010-801-3201-12800	464.03	UNIFORMS-S. HABERLE		300206	
	0010-801-3201-12800	35.97	UNIFORMS-S. HABERLE		300206	
	0010-801-3210-22310	323.15	UNIFORMS-M. KHAIL	90217	300206	
	0010-801-3210-22310	659.95	UNIFORMS-R. TULLIUS	90217	300206	
	0010-801-3210-22310	49.05	UNIFORMS-R. DE ROSA	90217	300206	
	0010-801-3210-22310	70.85	UNIFORMS-B. GOMORY	90217	300206	
	0010-801-3210-22310	49.05	UNIFORMS-R. RYSDON	90217	300206	
	0010-801-3210-22310	65.40	UNIFORMS-R. HARPER	90217	300206	
	0010-801-3210-22310	135.16	UNIFORMS-J. BIRRELL	90217	300206	
	0010-801-3210-22310	234.35	UNIFORMS-A. MALOUF	90217	300206	
	0010-801-3210-22310	15.14	UNIFORMS-R. TULLIUS	90217	300206	
	0010-801-3210-22310	124.81	UNIFORMS-D. CLINE	90217	300206	
	0010-801-3210-22310	152.60	UNIFORMS-S. GREGG	90217	300206	
	0010-801-3210-22310	327.00	UNIFORMS-R. HARPER	90217	300206	
	0010-801-3210-22310	272.50	UNIFORMS-K. LEASURE	90217	300206	
	0010-801-3104-22310	625.00	UNIFORMS-G. JIMENEZ	90029	300206	
	0010-801-3103-22310	85.35	UNIFORMS-G. CRUZ	90029	300206	
	0010-801-3103-22310	114.40	UNIFORMS-D. FERRARI	90029	300206	
	0010-801-3103-22310	25.51	UNIFORMS-H.HERNANDEZ	90029	300206	
	0010-801-3103-22310	264.87	UNIFORMS-H. HERNANDEZ	90029	300206	
	0010-801-3103-22310	327.16	UNIFORMS-J. ORATE	90029	300206	
	0010-801-3103-22310	257.96	UNIFORMS-I. SANCHEZ	90029	300206	
	0010-801-3103-22310	156.96	UNIFORMS-T. URICH	90029	300206	
	0010-801-4209-22310	99.19	UNIFORMS-M. AGUILAR	90171	300206	
	0010-801-4209-22310	223.45	UNIFORMS-T. MAYA	90171	300206	
	0010-801-4209-22310	217.46	UNIFORMS-M. COLLAR	90171	300206	

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
TOM'S CLOTHING & UNIFORMS INC	0010-801-4209-22310	102.46	UNIFORMS-R. QUARTON	90171	300206	
	0010-801-4209-22310	234.35	UNIFORMS-M. LIRA	90171	300206	
	0010-801-4209-22310	138.98	UNIFORMS-M. MENCHACA	90171	300206	
	0092-801-4223-22310	300.00	UNIFORMS-D. ZAPATA	90157	300206	
	0092-801-4223-22310	234.90	UNIFORMS-D. MIRELES	90157	300206	
	0092-801-4223-22310	243.07	UNIFORMS-J. MEDINA	90157	300206	
	0092-801-4223-22310	132.44	UNIFORMS-A. VILLALPANDO	90157	300206	
	0092-801-4223-22310	300.00	UNIFORMS-F. DOMINGUEZ	90157	300206	
	0092-801-4223-22310	234.90	UNIFORMS-D. ABARCA	90157	300206	
	0092-801-4223-22310	300.00	UNIFORMS-E. VILLAREAL	90157	300206	
	0092-801-4221-22310	300.00	UNIFORMS-G. NORIEGA	90157	300206	
	0010-801-4209-22310	59.95	UNIFORMS- R. QUARTON	90171	300206	
	0010-801-4209-22310	104.64	UNIFORMS-R. HARRIS	90171	300206	
	0010-801-4209-22310	124.26	UNIFORMS-M. MENCHACA	90171	300206	
	0092-801-4221-22310	227.81	UNIFORMS-D. VERA	90157	300206	
	0092-801-4222-22310	234.35	UNIFORMS-F. FUENTES	90157	300206	
	0092-801-4222-22310	247.98	UNIFORMS-J. GREEN	90157	300206	
	0092-801-4222-22310	220.73	UNIFORMS-R. MARTINEZ	90157	300206	
	0092-801-4222-22310	247.98	UNIFORMS-T. RUGGERI	90157	300206	
	0092-801-4222-22310	223.45	UNIFORMS-S. VILLARROEL	90157	300206	
	0092-801-4221-22310	300.00	UNIFORMS-D. RUIZ	90157	300206	
	0092-801-4223-22310	134.07	UNIFORMS-A. VILLALPANDO	90157	300206	
	0092-801-4223-22310	283.40	UNIFORMS-G. YEE	90157	300206	
	0010-801-4209-22310	300.00	UNIFORMS-J. HERNANDEZ	90171	300206	
						18,140.58
TRANSTECH	0010-801-1703-31950	5,850.00	BUILDING INSPECTION		300207	
						5,850.00
TRENCH SHORING CO.	0092-801-4223-22300	130.80	WATER PARTS		300208	
						130.80

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
UNITED SITE SERVICES OF CA INC	0075-450-0075-08600	510.20	4TH OF JULY RESTROOM (TRUST)		300209	510.20
UNIVAR USA INC (CORP. HEADQUARTERS)	0093-801-4227-23300	6,960.51	WATER CHEMICALS	90134	300210	
	0092-801-4222-23300	331.20	WATER CHEMICALS	90134	300210	7,291.71
VULCAN MATERIAL CO	0110-801-4202-23600	373.87	ASPHALT	90175	300211	
	0110-801-4202-23600	76.65	ASPHALT	90175	300211	
	0110-801-4202-23600	77.39	ASPHALT	90175	300211	
	0110-801-4202-23600	446.51	ASPHALT	90175	300211	
	0110-801-4202-23600	374.61	ASPHALT	90175	300211	
	0110-801-4202-23600	1,787.60	ASPHALT	90175	300211	
	0110-801-4202-23600	373.13	ASPHALT	90175	300211	3,509.76
WALTERS WHOLESALE ELECTRIC CO	0010-801-4210-23400	68.32	ELECTRICAL SUPPLIES	90174	300212	68.32
WARREN DISTRIBUTING, INC.	0060-801-4211-23500	26.45	FLEET PARTS-UNIT 978	90084	300213	
	0060-801-4211-23500	37.09	FLEET PARTS	90084	300213	
	0060-801-4211-23500	93.83	FLEET PARTS-UNIT 890	90084	300213	
	0060-801-4211-23500	9.67	FLEET PARTS-UNIT 962	90084	300213	
	0060-801-4211-23500	55.36	FLEET PARTS-UNIT 898	90084	300213	
	0060-801-4211-23500	32.80	FLEET PARTS-UNIT 057	90084	300213	
	0060-801-4211-23500	16.97	FLEET PARTS-UNIT 854	90084	300213	
	0060-801-4211-23500	18.44	FLEET PARTS-UNIT 056	90084	300213	290.61
WEBIPLEX, INC	0010-801-3115-38400	5,234.95	SUBPOENA SYSTEM	90027	300214	5,234.95
WECK LABORATORIES (DBA)	0093-801-4230-31950	200.00	WATER TESTING	90136	300215	
	0093-801-4227-31950	480.00	WATER SAMPLING	90136	300215	680.00

PRINTED WARRANTS

VENDOR NAME	ACCOUNT	AMOUNT	DESCRIPTION	P.O.	CHECK #	TOTAL
WELLS FARGO FINANCIAL LEASING	0092-801-4212-37500	811.99	COPIER RENTAL	90243	300216	811.99
WESTCO SERVICE COMPANY	0010-801-4210-38150	331.90	AIR CONDITIONING REPAIR	90172	300217	331.90
WESTERN WATER WORKS SUPPLY CO.	0092-801-4223-23350	356.97	WATER SUPPLIES	90140	300218	356.97
TIM WISNIEWSKI	0136-801-3101-33250	45.00	POLICE POST TRAINING		300219	45.00
ANTHONY WONG	0010-801-1101-11100	80.00	MAYOR'S EXPENSES		300220	
	0092-801-1101-11100	60.00	MAYOR'S EXPENSES		300220	
	0043-801-1101-11100	60.00	MAYOR'S EXPENSES		300220	200.00
TIM WONG	0010-801-1703-33200	150.00	COMM DEVELOPMENT TRAINING		300221	150.00
YOSHIHITO YONEZAWA	0010-701-0010-07050	51.00	REFUND-PICNIC RESERVATION		300222	51.00
YUEZHEN ZHEN	0010-701-0010-07960	1,884.02	REFUND-AMBULANCE FEE		300223	1,884.02
ZUMAR INDUSTRIES, INC.	0010-801-4206-23800	55.57	STREET SIGNS	90173	300224	
	0010-801-4206-23800	1,288.00	STREET SIGNS	90173	300224	1,343.57
	TOTAL FOR PRINTED WARRANTS					**615,865.13**

TOTAL FOR PREPAID WARRANTS	1,468,203.26
TOTAL FOR PRINTED WARRANTS	615,865.13
TOTAL WARRANTS	2,084,068.39
TOTAL VOID CHECKS	4
TOTAL PREPAID CHECKS	48
TOTAL CHECKS PRINTED	190
TOTAL CHECKS ISSUED	238

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/20/2014
FUND SUMMARY

FUND	DESCRIPTION	PREPAID	PRINTED	TOTAL
0010	GENERAL FUND	276,187.33	278,620.66	554,807.99
0022	STATE GAS TAX FUND	962.24	2,557.29	3,519.53
0042	SEWER FUND	0.00	131.98	131.98
0043	REFUSE FUND	31,796.94	14,051.51	45,848.45
0060	CITY SHOP FUND	1,476.25	41,955.43	43,431.68
0062	GENERAL LIABILITY FUND	687,626.00	350.00	687,976.00
0063	TECHNOLOGY INTERNAL SERV FUND	0.00	818.42	818.42
0065	PAYROLL CLEARING ACCOUNT	0.00	5,379.04	5,379.04
0071	PUBLIC SAFETY IMPACT FEE FUND	0.00	272.93	272.93
0075	SPECIAL DEPOSITS FUND	12,273.09	15,580.57	27,853.66
0077	BUSINESS IMPROVEMENT AREA #1	2.87	300.00	302.87
0080	WORKERS COMP FUND	302,401.00	0.00	302,401.00
0092	WATER FUND	132,338.42	21,254.94	153,593.36
0093	WATER TREATMENT FUND	0.00	216,711.02	216,711.02
0109	OPA PROPOSITION A	1,959.07	1,134.00	3,093.07
0110	MEASURE R FUND	0.00	4,795.29	4,795.29
0131	LIBRARY TAX FUND	0.00	853.33	853.33
0136	POST	0.00	740.00	740.00
0152	HOME HOUSING PROGRAM	0.00	0.00	0.00
0159	RECREATION FUND	0.00	302.00	302.00
0160	ASSET FORFEITURE	20,038.05	9,266.66	29,304.71
0163	CAL LIBRARY LITERACY SVC GRANT	0.48	0.00	0.48
0166	PROPOSITION C	971.01	0.00	971.01
0169	CDBG FUND	124.90	0.00	124.90
0176	MAINTENANCE DISTRICT 93-1	0.00	297.65	297.65
0178	PROP A - PER PARCEL GRANT	0.00	263.00	263.00
0349	ELAC INSTRUCTIONAL SERV PROG	45.61	229.41	275.02
0880	CITY/HOUSING SPECIAL REVENUE	0.00	0.00	0.00

CITY OF MONTEREY PARK
FINAL WARRANT REGISTER
COUNCIL MEETING DATE 08/20/2014
FUND SUMMARY

FUND	DESCRIPTION	PREPAID	PRINTED	TOTAL
	TOTAL	1,468,203.26	615,865.13	2,084,068.39

City of Monterey Park

FINAL TRAVEL EXPENSE REPORT

DATE:	July 16, 2014	**Department:**	CMO
EMPLOYEE:	Mitchell Ing	**Vendor #**	T19952
DATES OF TRAVEL:	From July 12, 2014	To July 12, 2014	
DESTINATION:	San Diego, CA		
HOTEL NAME:	Rancho Bernardo Inn		
TITLE OF EVENT:	ICA Summer Conference		
ACCOUNT NUMBER:	0010-801-1101-33200	$	777.68
ACCOUNT NUMBER:		$	

Registration	650.00
Lodging	-
Per Diem	0.00
parking/taxi's	-
Mileage	127.68
TOTAL:	**777.68**

City of Monterey Park

FINAL TRAVEL EXPENSE REPORT

DATE:	July 16, 2014	**Department:**	CMO
EMPLOYEE:	Peter Chan	**Vendor #**	T19950
DATES OF TRAVEL:	From July 11, 2014 To July 13, 2014		
DESTINATION:	San Diego, CA		
HOTEL NAME:	Rancho Bernardo Inn		
TITLE OF EVENT:	ICA Summer Conference		
ACCOUNT NUMBER:	0010-801-1101-33200	**$**	1,342.79
ACCOUNT NUMBER:		**$**	

Registration	650.00
Lodging	692.79
Per Diem	0.00
parking/taxi's	-
Mileage	-
TOTAL:	**1,342.79**

City of Monterey Park

FINAL TRAVEL EXPENSE REPORT

DATE:	July 16, 2014	**Department:**	CMO
EMPLOYEE:	Anthony Wong	**Vendor #**	010060
DATES OF TRAVEL:	From July 11, 2014	To July 13, 2014	
DESTINATION:	San Diego, CA		
HOTEL NAME:	Rancho Bernanrdo Inn		
TITLE OF EVENT:	ICA Summer Conference		
ACCOUNT NUMBER:	0010-801-1101-33200	$	1,342.79
ACCOUNT NUMBER:		$	

Registration	650.00
Lodging	692.79
Per Diem	0.00
parking/taxi's	-
Mileage	-
TOTAL:	**1,342.79**

City of Monterey Park

FINAL TRAVEL EXPENSE REPORT

DATE:	July 16, 2014	**Department:**	CMO
EMPLOYEE:	Hans Liang	**Vendor #**	013438
DATES OF TRAVEL:	From July 11, 2014 To July 13, 2014		
DESTINATION:	San Diego, CA		
HOTEL NAME:	Rancho Bernardo Inn		
TITLE OF EVENT:	ICA Summer Conference		
ACCOUNT NUMBER:	0010-801-1101-33200	**$**	1,527.47
ACCOUNT NUMBER:		**$**	

Registration	650.00
Lodging	749.79
Per Diem	0.00
parking/taxi's	-
Mileage	127.68
TOTAL:	**1,527.47**

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-B.**

TO: The Honorable Mayor and City Council

FROM: Joseph Leon, City Treasurer

SUBJECT: Monthly Investment Report – July 2014

RECOMMENDATION: It is recommended that the City Council:

(1) Receive and file the monthly investment report; and

(2) Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

As of July 31, 2014 invested funds for the City of Monterey Park is $73,805,962.37.

BACKGROUND:

In accordance with the City's Investment Policy, a monthly investment report is presented to the City Council showing the types of investments, dates of maturities, amounts of deposits, rates of interest, and the current market values for securities with maturity more than 12 months.

Respectfully submitted by:

Joseph Leon
City Treasurer

Prepared by:

Annie Yaung, CPFO
Controller

Approved by:

Paul L. Talbot
City Manager

Chu Thai
Director of Management Services

CITY OF MONTEREY PARK
INVESTMENT REPORT
AS OF JULY 31, 2014

INSTITUTION NAME	PURCHASE DATE	MATURITY DATE	INTEREST RATE	% OF PORTFOLIO	AMOUNT
INVESTMENTS:					
CERTIFICATES OF DEPOSIT [2]					
AMERICAN PLUS BANK	12/02/13	12/02/15	0.80%		140,000.00
ASIAN PACIFIC NATIONAL BANK	03/04/14	03/04/15	0.65%		200,000.00
CATHAY BANK	08/14/13	08/14/14	0.80%		100,000.00
CATHAY BANK	10/07/13	10/07/14	0.80%		150,000.00
EAST WEST BANK	11/10/13	11/10/14	1.14%		250,000.00
EVERTRUST BANK	11/09/13	11/09/14	0.80%		100,000.00
EVERTRUST BANK	10/07/13	10/07/14	0.80%		150,000.00
FIRST CHOICE BANK	08/07/13	08/08/14	0.80%		240,000.00
FIRST GENERAL BANK	08/15/13	08/15/15	1.00%		240,000.00
PREFERRED BANK	06/06/14	06/06/15	0.90%		100,000.00
PREFERRED BANK	03/03/14	03/03/15	0.95%		140,000.00
TOMATO BANK, N.A.	03/04/14	03/04/15	0.80%		100,000.00
TOMATO BANK, N.A.	02/04/14	02/04/15	0.80%		140,000.00
ROYAL BUSINESS BANK	06/24/14	06/24/15	0.70%		250,000.00
BEAL BANK USA	12/18/13	12/16/15	0.60%		240,000.00
GE CAPITAL RETAIL BANK	09/13/13	09/13/16	1.05%		240,000.00
EVERBANK	01/16/13	01/16/15	0.70%		240,000.00
DISCOVER BANK	04/10/13	04/10/15	0.55%		240,000.00
GOLDMAN SACHS BANK USA	04/10/13	10/13/15	0.65%		240,000.00
COMENITY BANK	06/06/13	06/12/15	0.50%		200,000.00
STATE BANK OF INDIA	06/11/13	06/24/15	0.60%		200,000.00
BMW BANK NORTH AMERI	06/25/13	06/29/15	0.75%		240,000.00
AMERICAN EXPR CENT BANK	09/19/13	09/19/16	1.10%		240,000.00
BLUE HILLS BANK	05/30/14	05/30/17	0.95%		240,000.00
TOTAL CDs (24)		Average	0.872%	6.26%	4,620,000.00
BANK OF THE WEST SAVINGS		ON DEMAND	0.290%	7.77%	5,733,130.24
LA COUNTY TREASURY POOL		ON DEMAND	0.790%	85.62%	63,193,301.23
LOCAL AGENCY INVESTMENT FUND		ON DEMAND	0.240%	0.35%	259,530.90
TOTAL INVESTMENTS				100.00%	**$ 73,805,962.37**
BANK BALANCE: [1]					$ 2,534,753.78
AVERAGE MATURITY DAYS					22
AVERAGE INTEREST RATE FOR THE MONTH					0.750%

THE CITY'S INVESTMENT HAS SUFFICIENT LIQUIDITY TO MEET THE CITY'S EXPENDITURE REQUIREMENTS FOR THE NEXT 180 DAYS. THE 180-DAY LIQUIDITY DISCLOSURE IS REQUIRED PER GOVERNMENT CODE 53646.

THERE HAVE BEEN NO VARIANCES TO THE INVESTMENT POLICY.

CERBT STRATEGY 1 ONE YEAR PERFORMANCE RETURN AS OF JULY 31, 2014: 18.52%

(1) Bank balance is maintained to cover outstanding warrants and payroll checks as well as compensated balances.
(2) *Interest paid monthly*

City of Monterey Park
Investment By Funds Per Cash Basis

FUND	DESCRIPTION	7/31/2014
0010	GENERAL FUND	$ 18,659,457.21
0022	STATE GAS TAX FUND	$ 2,113,439.94
0042	SEWER FUND	$ 882,222.40
0043	REFUSE FUND	1,056,810.84
0060	CITY SHOP FUND	$ 1,531,975.40
0061	SEPARATION BENEFITS FUND	3,058,352.42
0062	GENERAL LIABILITY FUND	$ 1,629,485.07
0063	TECHNOLOGY INTERNAL SERV FUND	973,830.95
0064	OPEB INTERNAL SERV FUND	$ 850,000.00
0065	PAYROLL CLEARING ACCOUNT	27,252.45
0070	PARK FACILITIES FUND	$ 68,147.26
0071	PUBLIC SAFETY IMPACT FEE FUND	179,606.94
0075	SPECIAL DEPOSITS FUND	$ 2,013,322.16
0077	BUSINESS IMPROVEMENT AREA #1	206,086.89
0080	WORKERS COMP FUND	$ 2,585,097.68
0085	PENSION LIABILITY FUND	7,842,427.00
0092	WATER FUND	$ 13,477,561.97
0093	WATER TREATMENT FUND	11,172,434.22
0109	OPA PROPOSITION A	$ 1,918,696.74
0110	MEASURE R FUND	1,276,026.98
0115	CFF CALIF FOUNDATION FUNDS	$ 20,780.46
0131	LIBRARY TAX FUND	166,095.81
0152	HOME HOUSING PROGRAM	$ 2,281.16
0159	RECREATION FUND	$ 3,045.42
0160	ASSET FORFEITURE	536,259.00
0161	CONSTRUCTION AGENCY FUND	$ 15,917.78
0163	CAL LIBRARY LITERACY SVC GRANT	5,003.49
0165	AIR QUALITY IMPROVEMENT FUND	$ 212,265.02
0166	PROPOSITION C	839,514.25
0176	MAINTENANCE DISTRICT 93-1	149,640.61
0184	USED OIL RECYCLING BLOCK GRANT	24,324.76
0192	STATE LAW ENFORCE SVC (COPS)	85,710.76
0194	MED LIFE TRAFFIC SIGNALS FUND	64,575.27
0201	LOS ANGELES COUNTY GRANT	8,544.87
0203	CERCLA LIABILITY FUND	801,549.57
0211	ECO DEVELOP. INITIATIVE (EDI)	581,043.78
0214	BEVERAGE CONTAINER RECYCLING	72,667.95
0233	AIR QUALITY INVEST PROG GRANT	58,286.25

City of Monterey Park
Investment By Funds Per Cash Basis

FUND	DESCRIPTION	7/31/2014
0306	AB109 TASK FORCE GRANT	111,095.00
0343	RECREATION GRANT (075)	29,513.41
0344	MAINTENANCE GRANT (075)	107,026.33
0349	ELAC INSTRUCTIONAL SERV PROG	10,697.31
0351	CHARTER COMM TRUST GRANT	10,372.47
0352	GENERAL PLAN REVIEW TRUST	18,116.78
0356	LACMTA FUNDS	2,305.32
0415	PASSPORT TRUST GRANT	6,122.98
0421	ASPHALT/CONCRETE INCENTIVE	201,149.64
0422	LIBRARY AUTOMATION TRUST GRANT	3,078.38
0436	DISASTER MANAGEMENT AREA C	2,500.00
0445	LITERACY TRUST GRANT	5,968.25
0465	GROUND EMERG MEDICAL TRANSPORT	99,897.00
0502	LA ASTRONOMICAL SOCIETY GRANT	86,122.70
0880	CITY/HOUSING	709,176.97
	OUTSTANDING CHECKS	(2,766,920.90)
	TOTAL INVESTMENTS	$ 73,805,962.37

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-C.**

TO: The Honorable Mayor and City Council

FROM: Vincent D. Chang, City Clerk

SUBJECT: City Council Minutes

RECOMMENDATION:

It is recommended that the City Council

(1) Approve the minutes from the regular meeting of July 2, 2014, July 16, 2014 and the special meeting of July 2, 2014, July 7, 2014, July 16, 2014 and the special joint meeting of July 24, 2014 and;

(2) Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:
None.

BACKGROUND:
None.

FISCAL IMPACT:
None.

Respectfully submitted,

Vincent D. Chang
City Clerk

Prepared by:

Michelle Chen
Minutes Clerk

Approved By:

Paul L. Talbot
City Manager

Attachments: July 2, 2014 (Special), July 2, 2014 (Regular), July 7, 2014 (Special), July 16, 2014 (Special), July 16, 2014 (Regular), July 24, 2014 (Special Joint)

MINUTES
MONTEREY PARK CITY COUNCIL
SUCCESSOR AGENCY (SA)
REGULAR MEETING
JULY 2, 2014

The City Council of the City of Monterey Park held a Regular Meeting of the Council in the Council Chamber, located at 320 West Newmark Avenue in the City of Monterey Park, Wednesday, July 2, 2014 at 7:00 p.m.

The minutes include items considered by the City Council acting on behalf of the Successor Agency of the former Monterey Park Redevelopment Agency, which dissolved February 1, 2012. Successor Agency matters will include the notation of "SA" next to the Agenda Item Number.

CALL TO ORDER:
Mayor Wong called the meeting to order at 7:00 p.m.

FLAG SALUTE:
The Monterey Park Fire Explorers led the flag salute.

ROLL CALL:
City Clerk Chang called the roll:
Council Members Present: Real Sebastian, Ing, Chan, Liang, Wong
Council Members Absent: None

ALSO PRESENT: City Manager Talbot, City Attorney Hensley, City Treasurer Leon, Public Works Director/Assistant City Manager Bow, Police Chief Smith, Human Resources Director Cody, Community and Economic Development Director Huntley, Management Services Director Thai, Recreation and Community Services Director Costley, City Librarian Arvizu, Controller Yaung, Support Services Manager Shay

AGENDA ADDITIONS, DELETIONS, CHANGES AND ADOPTIONS

Discussion: City Manager Talbot reported corrections to Agenda Item No. 3C stating that the City Council is approving the minutes for the regular meeting of May 21, 2014 and June 4, 2014 and the special meeting of May 27, 2014 and the adjourned special meeting of May 28, 2014.

1. PRESENTATIONS:
None.

ORAL AND WRITTEN COMMUNICATIONS

- Rita Miller invited the residents to attend the city's Annual National Night Out on August 5, 2014 from 6:00 p.m. – 8:00 p.m. at City Hall and stated that refreshments and hot dogs will be served by the Monterey Park Police Department.

- Delario Robinson spoke of his concerns on comments expressed by public speakers at the last council meeting and thanked Public Works Director Bow and the city staff for their continued hard work and dedication to the residents and community. He also recommended the city invest in new media equipment to improve the visual quality of reports for the visually impaired and encourage city transparency.

2. SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA) CONSENT CALENDAR ITEM NOS. 2A - 2B

2A. WARRANT REGISTER FOR SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY OF JULY 2, 2014

It is required that the City Council (acting on behalf of the Successor Agency) approve all disbursements.

See Successor Agency minutes.

2B. SUCCESSOR AGENCY MINUTES

Approval of Minutes from the regular meeting of May 21, 2014 and June 4, 2014 of the Successor Agency to the former Monterey Park Redevelopment Agency.

See Successor Agency minutes.

This is the end of Successor Agency (SA) items.

3. CITY OF MONTEREY PARK CONSENT CALENDAR CONSISTS OF ITEM NOS. 3A - 3E

Matters listed under consent calendar are considered to be routine, ongoing business and are enacted by one motion unless specified.

Action Taken: Council Members approved and adopted Item Nos. 3A - 3E except for Item No. 3D which was pulled for separate discussion and Item No. 3E which was pulled and continued to the next regular council meeting of July 16, 2014 and reading resolutions and ordinances by title only and waiving further reading thereof.

Motion: Moved by Council Member Real Sebastian and seconded by Council Member Chan, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

3A.WARRANT REGISTER FOR THE CITY OF MONTEREY PARK OF JULY 2, 2014

It is required that the City Council approve all disbursements.

Action Taken: The City Council approved payment of warrants and adopted **Resolution No. 11666** allowing certain claims and demands per Warrant Register dated **July 2, 2014 Totaling $1,532,554.87** and specifying the funds out of which the same are to be paid on Consent Calendar.

Resolution No. 11666, entitled:
A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MONTEREY PARK, CALIFORNIA ALLOWING CERTAIN CLAIMS AND DEMANDS PER WARRANT REGISTER DATED **July 2, 2014 Totaling $1,532,554.87** AND SPECIFYING THE FUNDS OUT OF WHICH THE SAME ARE TO BE PAID

3B.A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MONTEREY PARK APPOINTING COUNCIL REPRESENTATIVES TO SPECIFIC ORGANIZATIONS

Pursuant to Section VIII of the City Council's Policies and Procedures, the City Council appoints representatives to various regional and community organizations each July. Appointments are recommended by the Mayor and confirmed by the City Council.

Action Taken: The City Council adopted **Resolution No. 11667** appointing representatives to specific organizations on Consent Calendar.

Resolution No. 11667, entitled:
A RESOLUTION ASSIGNING REPRESENTATIVES TO SPECIFIC ORGANIZATIONS IN ACCORDANCE WITH SECTION VIII OF THE CITY COUNCIL POLICIES AND PROCEDURES

3C.MINUTES

Approval of minutes from the regular meeting of May 21, 2014 and June 4, 2014 and the special meetings of May 27, 2014 and the adjourned special meeting of May 28, 2014.

Action Taken: The City Council approved the minutes from the regular meeting of May 21, 2014 and June 4, 2014 and the special meetings of May 27, 2014 and the adjourned special meeting of May 28, 2014 on Consent Calendar.

3D.CONSIDERATION OF PURCHASING EARTHQUAKE INSURANCE COVERAGE FOR THE CITY

Following the La Habra 5.1 earthquake, Human Resources notified the City Council at the City Council Meeting on May 21, 2014 concerning the current status of insurance coverage for the City in the event of a large earthquake affecting Monterey Park Facilities. Subsequently, Council discussed possible earthquake insurance coverage during the 2014-2015 Budget Hearing Process. However the item was continued to a future meeting. If the Council decides to obtain coverage, staff would recommend

consideration of $65,000,000 insurance coverage for proposed key properties (see attachment 1) with a 5% deductible for an annual cost of approximately $154,000.

This item was pulled for separate discussion.

Action Taken: Human Resources Director Cody informed the council of a staff report correction stating that staff is recommending the council consider a $25,000,000 insurance coverage for the proposed key properties. The City Council (1) considered purchasing Earthquake Insurance after reviewing the cost to the City during the 2014-2015 Budget Process; (2) authorized the expenditure of $154,000 and amended the 2014-2015 Budget accordingly and (3) directed staff to include the City Council's amendment to add the Emergency Operations Center (EOC) to the list of covered key properties under the proposed consideration of a $25,000,000 insurance coverage.

Motion: Moved by Council Member Real Sebastian and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

3E. PARCEL MAP NO. 72276 (306 N. HUNTINGTON AVENUE) - APPROVAL OF FINAL MAP

The final map has been reviewed by the City's consultant surveyor, Boghossian & Associates, for mathematical accuracy, survey analysis, title information, compliance with the Subdivision Map Act, Conditions of Approval and applicable Monterey Park Municipal Code provisions. As required, new curb, gutter, sidewalk and driveway aprons were constructed in the street right-of-way. All utility services were placed underground, and new trees, parkway landscaping and irrigation system were installed.

This item was pulled for separate discussion only.

Recommendation:

(1) Adopt a resolution approving Final Parcel Map No. 72276; and
(2) Take such additional, related, action that may be desirable.

Action Taken: None. This item was continued to the next Regular Council Meeting on Wednesday, July 16, 2014 at 7:00 p.m. on Consent Calendar.

4. PUBLIC HEARING

Mayor Wong opened the public hearing at 7:55 p.m. and closed the public hearing at 7:58 p.m. with no registered speakers.

4A. A PRELIMINARY PUBLIC HEARING TO SOLICIT COMMENTS FOR INCORPORATION INTO THE 2014-2015 ONE YEAR ACTION PLAN

Local governments receiving Community Development Block Grant (CDBG) and HOME Investment Partnership (HOME) program funds must prepare a Consolidated Plan every three to five years. The Consolidated Plan identifies needs and resources to achieve federal legislative goals for decent housing; creating an suitable living environments; and expanding economic opportunities for every resident, particularly for extremely low-income and low-income residents. The Consolidated Plan will serve as the federal planning document for those jurisdictions. As required by federal requirements, the City will submit its One Year Annual Action Plan (July 1, 2014 to June 30, 2015) to the U.S. Department of Housing and Urban Development (HUD) by August 16, 2014.

Action Taken: The City Council opened the public hearing, received and filed all public comment and closed the public hearing; (2) directed staff to reflect such comments in 2014-2015 One-Year Action Plan; (3) set the final public hearing for the adoption of the 2014-2015 One Year Action Plan for July 16, 2014 and (4) directed staff to include before and after pictures of the residential rehabilitation at the final public hearing scheduled at the next regular council meeting on July 16, 2014 at 7:00 p.m. for further discussion.

Motion: Moved by Mayor Wong and seconded by Council Member Chan, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

The City Council recessed at 8:18 p.m. and reconvened with all council members present at 8:36 p.m.

4B. CONSIDERATION OF ORDINANCES ESTABLISHING PROPOSED WATER, WASTEWATER AND SOLID WASTE RATES AND SETTING THE LIFELINE DISCOUNT RATE

A review of the City's essential utility services - water, wastewater, and solid waste - shows that additional revenue is needed for operations and infrastructure improvements/maintenance. A combination of deferred maintenance, aging facilities, and increased operations costs makes the proposed rate increases necessary to continue providing these utility services. City Management Services and Public Works staff reviewed the existing water, wastewater and solid waste rates. The attached recommended adjustments were made following that review in accordance with the Monterey Park Municipal Code ("MPMC') in order to better recover the City's costs incurred for providing for these services. Below are brief highlights of the recommendation. The revenues generated within five years will support $26.3 million in water capital improvement programs, $12.8 million in sewer capital improvement programs and make the trash service cost neutral for the City.

Public Speakers:

- Nancy Arcuri spoke in favor of the proposed rate increases stating that residents' should pay for their personal utility usage the same way we pay our cell phone and gas services.

- Raymond Mauna spoke against the proposed rate increases stating his concerns that the city's presentation and staff report is incomplete and requested the council address the speakers' concerns disclosed at the public hearing held on June 18, 2014.

- Delario Robinson expressed his appreciation and thanked the city staff for their presentation and continued dedication to outreach with the City Council and residents. He also spoke as a 12 year resident stating he currently pays over $100.00 on his monthly water and wastewater rates to the San Gabriel Valley Municipal Water District and spoke in favor of designating a Citizen's Committee to oversee the capital improvement projects and regulate the developer impact fee.

- Jing Wen Tan spoke against the proposed rate increases stating her concerns that the proposed rates are too high and encouraged the council to reject staff's recommendation. She also recommended that the council address the residents' concerns and present additional information for further discussion.

- Chris Li spoke against the proposed rate increases stating that staff's recommendations and proposed rates are too high and requested additional information to the proposed capital improvement plan.

- Randy Reyes presented to the City Clerk written communication that was received, distributed and filed. He addressed the council and spoke against the proposed rate increases stating his concerns and recommendations to support the residents' concerns and comments. He encouraged the council to reject staff's recommendations and approve a flat surcharge.

- Andy Islas spoke in opposition of the proposed rate increases stating his concerns that the protest letter was poorly delivered. He recommended that the council outreach to the residents' to address the lack of awareness in the community and to avoid the potential "sticker shock" when the new rate increases are reflected in their September bill.

- Andrew Liu thanked staff for their due diligence to a complicated system stating the city's aging water and sewer infrastructure needs to be fixed and concurs with Public Works Director Bow that the council needs to ensure the maximum rates are set to ensure funding is available to complete any future capital improvement projects. He also spoke of his recommendations that the city find alternative funding sources and give the residents' good faith that the proposed rate increases will "sunset" and revert to the original rates.

EXTENSION OF COUNCIL MEETING

Action Taken: The City Council approved to extend the meeting to 12:00 a.m.

Motion: Moved by Mayor Wong and seconded by Council Member Chan, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

The City Council recessed at 11:22 p.m. and reconvened with all council members present at 11:42 p.m.

Action Taken No. 1: The City Council (1) opened the public hearing; (2) received all written and verbal testimony regarding the proposed rate increases; (3) determined that no majority protests exists and introduced and waived the first reading of the **Ordinance** setting the amount of water rates and charges as amended to include the council's recommendation to the "revised Exhibit "A" to the water rates and charges ordinance," (attached): (1) set the cap for the water rates not to exceed 15% annually for the next 5 years commencing on September 1, 2014; (2) the water rates and charges include an annual rate increase of 15% for the first year commencing on September 1, 2014 and the council hereby suspends the rate increase schedule for Years 2 - 5 from a 15% annual increase to 10% annual increase; (3) the City Council reserves the right to increase the annual rate increase back to 15% annual rate levels for Years 2 - 5; (4) the water rates set forth on September 1, 2019 shall automatically revert back to the rates in existence set forth on August 1, 2017; and (5) the City Council will meet at least 30 days in advance of each annual rate increase to receive a detail presentation from staff identifying expenditures made from the fund for the prior year, discuss the projected expenditures for the next 12 months period, and the council shall review the annual water rates and charges and determine whether to increase or decrease the water rates schedule for the next 12 months during the annual meeting.

Ordinance - 1st Reading, entitled:
AN ORDINANCE SETTING THE AMOUNT OF WATER RATES PURSUANT TO HEALTH AND SAFETY CODE § 5471 AND MONTEREY PARK MUNICIPAL CODE CHAPTER 14.12.

Motion: Moved by Council Member Real Sebastian and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Chan, Liang, Wong
Noes:	Council Members:	Ing
Absent:	Council Members:	None
Abstain:	Council Members:	None

Action Taken No. 2: The City Council (1) opened the public hearing; (2) received all written and verbal testimony regarding the proposed rate increases; (3) determined that

no majority protests exists and introduced and waived the first reading of the **Ordinance** setting the amount of wastewater rates and charges as amended to include the council's recommendation to the "revised Exhibit "A" to the wastewater rates and charges ordinance," (attached): (1) set the cap for the wastewater rates not to exceed 15% annually for the next 5 years commencing on September 1, 2014; (2) the wastewater rates and charges include an annual rate increase of 15% for the first year commencing on September 1, 2014 and the council hereby suspends the rate increase schedule for Years 2 - 5 from a 15% annual increase to 10% annual increase; (3) the City Council reserves the right to increase the annual rate increase back to the 15% annual rate levels for Years 2 - 5; (4) the wastewater rates set forth on September 1, 2019 shall automatically revert back to the rates in existence set forth on August 1, 2017; and (5) the City Council will meet at least 30 days in advance of each annual rate increase to receive a detail presentation from staff identifying expenditures made from the fund for the prior year, discuss the projected expenditures for the next 12 months period, and the council shall review the annual wastewater rates and charges and determine whether to increase or decrease the wastewater rates schedule for the next 12 months during the annual meeting.

Ordinance - 1st Reading, entitled:
AN ORDINANCE SETTING THE AMOUNT OF WASTEWATER RATES PURSUANT TO HEALTH AND SAFETY CODE § 5471

Motion: Moved by Council Member Real Sebastian and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Chan, Liang, Wong
Noes:	Council Members:	Ing
Absent:	Council Members:	None
Abstain:	Council Members:	None

Action Taken No. 3: The City Council (1) opened the public hearing; (2) received all written and verbal testimony regarding the proposed rate increases; and (3) determined that no majority protests exists and introduced and waived the first reading of the **Ordinance** setting the amount of solid waste rates and charges.

Ordinance - 1st Reading, entitled:
AN ORDINANCE SETTING THE AMOUNT OF SOLID RATES PURSUANT TO HEALTH AND SAFETY CODE § 5471

Motion: Moved by Council Member Real Sebastian and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Chan, Liang, Wong
Noes:	Council Members:	Ing
Absent:	Council Members:	None
Abstain:	Council Members:	None

Action Taken No. 4: The City Council adopted **Resolution No. 11668** setting the discount rate for the lifeline rate established by Monterey Park Municipal Code § 14.12.185.

Resolution No. 11668, entitled:
A RESOLUTION SETTING THE DISCOUNT RATE FOR THE LIFELINE RATE ESTABLISHED BY MONTEREY PARK MUNICIPAL CODE § 14.12.185

Motion: Moved by Council Member Chan and seconded by Council Member Real Sebastian, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Chan, Liang, Wong
Noes:	Council Members:	Ing
Absent:	Council Members:	None
Abstain:	Council Members:	None

5. UNFINISHED BUSINESS
None.

6. NEW BUSINESS
None.

7. COUNCIL COMMUNICATIONS AND MAYOR/COUNCIL AND AGENCY MATTERS

Council communications and committee reports from Council Representatives of specific organizations.

The City Council wished the residents' a Happy 4th of July and to have a safe and sane Independence Day. The council invited the residents' to attend the city's Annual 4th of July Fireworks Spectacular and Celebration at Barnes Park. Food and entertainment will be available starting at 3:00 p.m. and the fireworks show starting at 9:00 p.m. Council Member Real Sebastian informed the residents' the City of Alhambra will be celebrating "710 Day" on July 10, 2014 to support closing the 710 freeway form 4:00 p.m. - 7:00 p.m. and invited the residents' to attend the city's "National Night Out" event on Tuesday, August 5, 2014 from 6:00 p.m. - 8:00 p.m. at City Hall.

8. CLOSED SESSION
None.

ADJOURNMENT
There being no further business for consideration, the meeting was adjourned at 12:00 a.m. in honor of Mr. Jose Martin Becerra, a long-time resident celebrating his 102nd birthday today.

_____
Vincent D. Chang
City Clerk

"Revised Exhibit "A" to the Water Rates and Charges Ordinance"

City of Monterey Park

Water 15%, 10%, 10%, 10% 10%

Monthly Water Meter Charge

Meter Size	Existing Rate	Sept 2014	Sept 2015	Sept 2016	Sept 2017	Sept 2018
5/8 or 3/4"	$12.63	**$14.50**	**$15.95**	**$17.55**	**$19.30**	**$21.25**
1"	$13.67	**$15.70**	**$17.25**	**$19.00**	**$20.90**	**$23.00**
1 1/2"	$21.53	**$24.75**	**$27.25**	**$30.00**	**$33.00**	**$36.30**
2"	$27.71	**$31.85**	**$35.05**	**$38.55**	**$42.40**	**$46.65**
3"	$55.48	**$63.80**	**$70.20**	**$77.20**	**$84.90**	**$93.40**
4"	$91.72	**$105.50**	**$116.05**	**$127.65**	**$140.40**	**$154.45**
6"	$280.07	**$322.10**	**$354.30**	**$389.75**	**$428.75**	**$471.65**
8"	$700.44	**$805.50**	**$886.05**	**$974.65**	**$1,072.10**	**$1,179.30**

Monthly Water Consumption Charge (per unit)

	Existing Rate	Sept 2014	Sept 2015	Sept 2016	Sept 2017	Sept 2018
Current (All Users)						
Tier 1 5/8" or 3/4" (units 6-20)	$1.38					
Tier 1 All other (units 0-20)	$1.38					
Tier 2 (above 20 units)	$1.81					
Proposed Single Family Residential						
Tier 1 (units 0-6)		**$1.59**	**$1.75**	**$1.93**	**$2.12**	**$2.33**
Tier 2 (units 7-12)		**$1.73**	**$1.90**	**$2.09**	**$2.30**	**$2.53**
Tier 3 (above 12 units)		**$1.85**	**$2.04**	**$2.24**	**$2.46**	**$2.71**
Proposed All Other						
All Units of Consumption		**$1.81**	**$1.99**	**$2.19**	**$2.41**	**$2.65**

Water Treatment Charge

% (meter + consumption)	37.5%	**37.5%**	**37.5%**	**37.5%**	**37.5%**	**37.5%**

One Unit = 748 gallons of water

Water 15%, 10%, 10%, 10% 10%

Budget Projections	**Year 1 FY 14/15**	**Year 2 FY 15/16**	**Year 3 FY 16/17**	**Year 4 FY 17/18**	**Year 5 FY 18/19**
Revenues					
Meter Charge	2,394,300	2,633,400	2,898,100	3,187,300	3,508,600
Consumption	6,260,700	6,886,700	7,575,400	8,332,900	9,166,200
Treatment	3,245,600	3,570,100	3,927,600	4,320,100	4,753,000
Total Revenues	11,900,600	13,090,200	14,401,100	15,840,300	17,427,800
Expenditures					
Operating	11,791,000	12,144,700	12,509,100	12,884,300	13,270,900
Available CIP	**109,600**	**945,500**	**1,892,000**	**2,956,000**	**4,156,900**

"Revised Exhibit "A" to the Wastewater Rates and Charges Ordinance"

City of Monterey Park

Proposed Wastewater, then 10% Increase Years 2-5

	Existing Rate	Sept 2014	Sept 2015	Sept 2016	Sept 2017	Sept 2018
Existing Rate *- Based on Units of Water*						
All Customers	$0.081/unit of water					
Proposed Rate *- Based on Meter Size & Customer Type (flat fee)*						
Single Family						
5/8" & 3/4"		**$7.69**	**$8.46**	**$9.31**	**$10.24**	**$11.26**
1"		**$9.39**	**$10.33**	**$11.36**	**$12.50**	**$13.75**
1 1/2" & 2"		**$9.72**	**$10.69**	**$11.76**	**$12.94**	**$14.23**
Multi-Family						
3/4"		**$21.94**	**$24.13**	**$26.54**	**$29.19**	**$32.11**
1"		**$26.29**	**$28.92**	**$31.81**	**$34.99**	**$38.49**
1 1/4"		**$43.29**	**$47.62**	**$52.38**	**$57.62**	**$63.38**
1 1/2"		**$63.63**	**$69.99**	**$76.99**	**$84.69**	**$93.16**
2"		**$121.90**	**$134.09**	**$147.50**	**$162.25**	**$178.48**
3"		**$312.30**	**$343.53**	**$377.88**	**$415.67**	**$457.24**
4"		**$404.01**	**$444.41**	**$488.85**	**$537.74**	**$591.51**
Commercial						
3/4"		**$20.49**	**$22.54**	**$24.79**	**$27.27**	**$30.00**
1"		**$30.76**	**$33.84**	**$37.22**	**$40.94**	**$45.03**
1 1/4"		**$30.76**	**$33.84**	**$37.22**	**$40.94**	**$45.03**
1 1/2"		**$59.29**	**$65.22**	**$71.74**	**$78.91**	**$86.80**
2"		**$150.45**	**$165.50**	**$182.05**	**$200.26**	**$220.29**
3"		**$204.67**	**$225.14**	**$247.65**	**$272.42**	**$299.66**
4"		**$292.39**	**$321.63**	**$353.79**	**$389.17**	**$428.09**
6"		**$795.62**	**$875.18**	**$962.70**	**$1,058.97**	**$1,164.87**
Institutional						
3/4"		**$35.00**	**$38.50**	**$42.35**	**$46.59**	**$51.25**
2"		**$51.78**	**$56.96**	**$62.66**	**$68.93**	**$75.82**
3"		**$55.42**	**$60.96**	**$67.06**	**$73.77**	**$81.15**
4"		**$127.24**	**$139.96**	**$153.96**	**$169.36**	**$186.30**

Wastewater Projections

Budget Projections	Year 1 FY 14/15	Year 2 FY 15/16	Year 3 FY 16/17	Year 4 FY 17/18	Year 5 FY 18/19
Wastewater Charges	2,392,250	2,631,587	2,895,039	3,184,496	3,502,582
Operating Expenditures	1,100,000	1,133,000	1,166,990	1,202,000	1,238,060
Available CIP	**1,292,250**	**1,498,587**	**1,728,049**	**1,982,496**	**2,264,523**

MINUTES
MONTEREY PARK CITY COUNCIL
SUCCESSOR AGENCY (SA)
REGULAR MEETING
JULY 16, 2014

The City Council of the City of Monterey Park held a Regular Meeting of the Council in the Council Chamber, located at 320 West Newmark Avenue in the City of Monterey Park, Wednesday, July 16, 2014 at 7:00 p.m.

The minutes include items considered by the City Council acting on behalf of the Successor Agency of the former Monterey Park Redevelopment Agency, which dissolved February 1, 2012. Successor Agency matters will include the notation of "SA" next to the Agenda Item Number.

CALL TO ORDER:
Mayor Wong called the meeting to order at 7:01 p.m.

FLAG SALUTE:
The Monterey Park Police Explorers led the flag salute.

ROLL CALL:
City Clerk Chang called the roll:
Council Members Present: Real Sebastian, Ing, Chan, Liang, Wong
Council Members Absent: None

ALSO PRESENT: City Manager Talbot, City Attorney Hensley, City Treasurer Leon, Public Works Director/Assistant City Manager Bow, Police Chief Smith, Fire Chief Haberle, Human Resources Director Cody, Community and Economic Development Director Huntley, Management Services Director Thai, Recreation and Community Services Director Costley, City Librarian Arvizu, Controller Yaung

AGENDA ADDITIONS, DELETIONS, CHANGES AND ADOPTIONS

Discussion: City Attorney Hensley informed the council to a clarification on Agenda Item No. 4B specifying on Section 2.B. of both the proposed Water Ordinance and Wastewater Ordinance setting the Amount of Rates and Charges provision to state, "The rates set forth on Exhibit A include an annual fifteen percent (15%) increase for the next five years commencing on September 1, 2014. The rates shall be as set forth on Exhibit A except that the Council is hereby suspending the rate increase for the second through fifth year of the rate schedule from fifteen percent (15%) annual increases to ten percent (10%) annual increases but reserves the right to increase the rate back up to the fifteen percent (15%) levels set forth on Exhibit A by amending this Ordinance. Additionally, as of September 1, 2019, the rate shall automatically revert back to the rate in existence as of August 31, 2017." In addition, City Attorney Hensley clarified Section 2.C of both the proposed Water Ordinance and Wastewater Ordinance setting the Amount of Rates and Charges provision to state, "The Council shall meet at least thirty days in advance of each annual rate increase to receive a detailed presentation

from staff regarding the expenditures made from the fund for the prior year and the projected expenditures for the next twelve month period. The Council shall discuss whether the rates should be increases, remain the same or decreased during this annual meeting."

1. PRESENTATIONS:
None.

ORAL AND WRITTEN COMMUNICATIONS

- Nancy Arcuri spoke of her concerns on the recent approved Measure A, allowing 80 residential housing developments at 2015 Portero Grande. She addressed the council recommending the City encourage developers to pay additional impact fees to collect additional funding revenue sources to support the city's library and parks and recreation services on behalf of the residents' and our "hometown."

- Emerald Tse introduced herself as a board member of Mark Keppel High School's Promoting Youth Advocacy (PYA) Club. She informed the council that PYA is continuing this year to further study and research environmental justice and the impact of air quality control and pollution.

- Amber Ho, President of Mark Keppel High School Promoting Youth Advocacy Club, informed the council stating PYA is continuing their dedication to further research the impact of ultrafine particles and the health and safety risks of the students and faculty at Mark Keppel High School.

- Timothy Tran spoke on behalf of Mark Keppel High School Promoting Youth Advocacy Club informing the council of recent community events and research that members of PYA have conducted with South Coast Air Quality Management District to study the impact of ultrafine particles and air quality and environmental health. He also spoke of PYA's dedication to educate the public with Bike San Gabriel Valley to organize public events to encourage bike usage and promote bike infrastructure improvements.

- Brian Yeo, Historian for Mark Keppel High School Promoting Youth Advocacy Club, addressed the council stating members of PYA are continuing this year to further research and explore possible solutions to protecting the health and safety risks of the students and faculty members at Mark Keppel High School. He spoke of his recommendations on behalf of PYA to: (1) install air filters in classrooms and hallways to reduce the health risks associated with ultrafine particles; (2) promote awareness and public outreach with Bike SGV to encourage bike usage and public transportation and (3) invest in the city's infrastructure to build bike-friendly lanes to improve the city's environmental impact and air quality control.

- Jim Smith, Police Chief of Monterey Park Police Department invited the council and the residents' to attend the city's Annual National Night Out Event on Tuesday, August 5, 2014 from 6:00 p.m. - 8:00 p.m. The Monterey Park Police Department will be serving free hot dogs and refreshments at the City Hall front lawn.

- Rainbow Yeung spoke on behalf of the South Coast Air Quality Management District (SQAMD) updating the council and residents of SCAQMD's new app features and encouraged the council and residents' to visit their website to receive daily updates and news alerts.

- Sarkis Antonian made brief comments to the previous speaker's recommendations and expressed his support to the Mark Keppel High School Promoting Youth Advocacy Club students and their outreach to improve air quality.

- Damian Orozco addressed the council as the newly elected President of the Monterey Park Chamber of Commerce and thanked the council and city staff for their continued support and looks forward to building a stronger relationship with the community and its members. He also informed the council and residents' of upcoming calendar events: (1) Multi-Chamber Dinner and Mixer on July 23, 2014 from 6:00 p.m. - 8:00 p.m. at Mr. M's Hot Wings and Things located at 886 North Garfield Avenue in Montebello; (2) Chamber Installation and Awards Dinner on July 30, 2014 from 6:00 p.m. - 9:00 p.m. at the Chamber of Commerce; and (3) Multi-Chamber Breakfast on August 13, 2014 from 7:30 a.m. - 9:30 a.m. at Double Tree Hotel located at 5757 East Telegraph Road in Commerce.

- Rafael G. Salazar from the Monterey Park Chamber of Commerce invited the council and residents' to attend the First Monterey Park Night Market on Friday, July 25, 2014 from 5:30 p.m. - 10:30 p.m. at Barnes Park. He encouraged the community to enjoy the food trucks/food booths, art exhibit and free entertainment featuring a "Tribute to the Beatles."

2. SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA) CONSENT CALENDAR ITEM NOS. 2A - 2C

2A. WARRANT REGISTER FOR SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY OF JULY 16, 2014

It is required that the City Council (acting on behalf of the Successor Agency) approve all disbursements.

See Successor Agency minutes.

2B. SUCCESSOR AGENCY INVESTMENT REPORT AS OF JUNE 2014

In accordance with the City's Investment Policy, a monthly investment report is presented to the City Council showing the types of investments, dates of maturities, amounts of deposits, rates of interest, and the current market values for securities with maturity more than 12 months.

See Successor Agency minutes.

2C.SUCCESSOR AGENCY MINUTES

Approval of Minutes from the regular meeting of June 18, 2014 of the Successor Agency to the former Monterey Park Redevelopment Agency.

See Successor Agency minutes.

NEW BUSINESS

2D.REQUEST BY THE MONTEREY PARK CHAMBER OF COMMERCE TO FORGIVE DEFERRED RENTAL MONIES OWED TO THE FORMER REDEVELOPMENT AGENCY FOR RENT

The Monterey Park Chamber of Commerce is requesting that past due deferred rent money in the amount of $29,400, be forgiven. (Exhibit A - Letter dated May 12, 2014). The deferred monies are owed to the Successor Agency through the former redevelopment agency. Funds received from repayment would be distributed to the County of Los Angeles for distribution to the various taxing entities.

Recommendation:

(1) None.
(2) Take such additional, related, action that may be desirable.

See Successor Agency minutes.

This is the end of Successor Agency (SA) items.

3. CITY OF MONTEREY PARK CONSENT CALENDAR CONSISTS OF ITEM NOS. 3A - 3N

Matters listed under consent calendar are considered to be routine, ongoing business and are enacted by one motion unless specified.

Action Taken: Council Members approved and adopted Item Nos. 3A - 3N except for Item Nos. 3G, 3J, 3K, and 3N which was pulled for separate discussion and Item No. 3E which was pulled and continued to a Regular Council Meeting in September 2014 and reading resolutions and ordinances by title only and waiving further reading thereof.

Motion: Moved by Council Member Chan and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

3A.WARRANT REGISTER FOR THE CITY OF MONTEREY PARK OF JULY 2, 2014

It is required that the City Council approve all disbursements.

Action Taken: The City Council approved payment of warrants and adopted **Resolution No. 11669** allowing certain claims and demands per Warrant Register dated **July 16, 2014 Totaling $1,038,877.89** and specifying the funds out of which the same are to be paid on Consent Calendar.

Resolution No. 11669, entitled:
A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MONTEREY PARK, CALIFORNIA ALLOWING CERTAIN CLAIMS AND DEMANDS PER WARRANT REGISTER DATED **July 16, 2014 Totaling $1,038,877.89** AND SPECIFYING THE FUNDS OUT OF WHICH THE SAME ARE TO BE PAID

3B.INVESTMENT REPORT AS OF JUNE 2014

In accordance with the City's Investment Policy, a monthly investment report is presented to the City Council showing the types of investments, dates of maturities, amounts of deposits, rates of interest, and the current market values for securities with maturity more than 12 months.

Action Taken: The City Council received and filed the investment report as of June 2014 on Consent Calendar.

3C.CITY COUNCIL MINUTES

Approval of minutes from the regular meeting of June 18, 2014.

Action Taken: The City Council approved the minutes from the regular meeting of June 18, 2014 on Consent Calendar.

3D.FIRE APPARATUS PURCHASE -- AUTHORIZATION TO EXECUTE AGREEMENT WITH THE CONSOLIDATED FIRE PROTECTION DISTRICT OF LOS ANGELES COUNTY

Fire Engine E-61 was placed on the City's Five Year Capital Improvement Program for replacement in Fiscal Year 2012-2013. Due to economic constraints, the replacement was deferred. Recent circumstances have necessitated immediate replacement and the Consolidated Fire Protection District of Los Angeles County ("District") possesses a new 2014 KME Predator Engine ("Fire Apparatus") available for purchase. Staff seeks Council approval for their purchase and authorization to execute an agreement with the Consolidated Fire Protection District.

Action Taken: The City Council (1) authorized the City Manager, or designee, to execute an agreement, in a form approved by the City Attorney to purchase a 2014 KME Predator in the amount of $464,416 plus any additional amount due to the Consolidated Fire Protection District of Los Angeles County. Funding was approved in the FY 2014-2015 budget, (Account No. 001-801-5002-99725); (2) approved additional

expenditures for all applicable fees, sales tax and transfer fees due to the California Department of Motor Vehicles, (DMV) from (Account No. 0010-801-5002-99725); and (3) approved additional expenditures from (Account No. 0010-801-5002-99725) to outfit and place in operation, the new KME Predator purchased from the Consolidated Fire Protection District and include fire hose, equipment replacement and mounting brackets on Consent Calendar.

3E. LEASE OF EL ENCANTO TO THE MONTEREY PARK CHAMBER OF COMMERCE

At the July 3, 2013 City Council meeting, the Council approved an agreement that allowed the Chamber of Commerce to lease El Encanto from the City at a cost of $250 per month for the period of year (Attachment A). The proposed agreement (Attachment B) would be identical to the current agreement, except the term would be for three years.

This item was pulled for separate discussion.

Recommendation:

(1) Authorize the City Manager to execute a lease, in a form approved by the City Attorney, to lease El Encanto to the Monterey Park Chamber of Commerce for $350 per month for the term of three years; and
(2) take such additional, related action that may be desirable.

Action Taken: The City Council approved to continue this item to a Regular Council Meeting in September 2014.

Motion: Moved by Mayor Wong and seconded by Council Member Real Sebastian, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

3F. PARCEL MAP NO. 72276 (306 N. HUNTINGTON AVENUE) - APPROVAL OF FINAL MAP

The final map has been reviewed by the City's consultant surveyor, Boghossian & Associates, for mathematical accuracy, survey analysis, title information, compliance with the Subdivision Map Act, Conditions of Approval and applicable Monterey Park Municipal Code provisions. As required, new curb, gutter, sidewalk and driveway aprons were constructed in the street right-of-way. All utility services were placed underground, and new trees, parkway landscaping and irrigation system were installed.

This item was pulled for separate discussion only.

Action Taken: The City Council adopted **Resolution No. 11670** approving the Final Parcel Map No. 72276 on Consent Calendar.

Resolution No. 11670, entitled:
A RESOLUTION APPROVING TENTATIVE PARCEL MAP NO. 072276 (PM-13-01) TO SUBDIVIDE AIR RIGHTS FOR A TWO-UNIT RESIDENTIAL CONDOMINIUM DEVELOPMENT AT 306 NORTH HUNTINGTON AVENUE

3G.RENEW CONTRACT WITH WORLD JOURNAL LA, LLC, AS CO-PRODUCER OF THE MONTEREY PARK FOR 2015, 2016, AND 2017 LUNAR NEW YEAR FESTIVAL

The BIDAC and City staff have been pleased with the 2012, 2013, and 2014 Lunar New Year Festivals. World Journal has successfully increased the number of booths at the festival and provided cultural entertainment that can be enjoyed by everyone.

This item was pulled for separate discussion.

Public Speakers:

- Johnny Thompson spoke on behalf of the Business Improvement District Advisory Committee (BIDAC) and read aloud a written communication submitted to the City Clerk that was received, distributed, and filed. He spoke of BIDAC's concerns of the proposal agreement between the City and World Journal, LLC and encouraged the council to reject staff's proposal and accept BIDAC's recommendations to amend the agreement with World Journal, LLC and split the potential 20% profit share received from World Journal, LLC evenly between the City and BIDAC.

Action Taken: Mayor Wong declared a potential conflict of interest; recused himself; and left the council chambers during discussion as his business is within 500 feet of the Business Improvement District. The City Council (1) authorized the City Manager to execute a three (3) year agreement as amended to include the council's recommendation the agreement is presented to the City Council annually for review and subject to council's approval, in a form approved by the City Attorney, with World Journal LA, LLC and (2) directed staff to distribute the commission received from the 2014 Lunar New Year Festival in the amount of $1,949.08 from the City to the Business Improvement District to be reinvested in the area.

Motion: Moved by Council Member Real Sebastian and seconded by Council Member Ing, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang
Noes:	Council Members:	None
Absent:	Council Members:	Wong
Abstain:	Council Members:	None

3H.IDENTIFYING A TAX RATE FOR COLLECTING VOTER AUTHORIZED PROPERTY TAXES FOR EMPLOYEE RETIREMENT BENEFITS BASED ON THE ASSESSED VALUATION ESTABLISHED BY THE COUNTY ASSESSOR'S OFFICE

The City of Monterey Park's retirement costs are funded by a special voter-approved property tax. Each year the City is required to establish a tax rate to generate the

retirement property tax based on the assessed valuation established by the County Assessor's Office.

Action Taken: The City Council adopted **Resolution No. 11671** identifying the amount of tax revenue required to fulfill the voters' intent in funding the City's retirement system on Consent Calendar.

Resolution No. 11671, entitled:
A RESOLUTION IDENTIFYING THE AMOUNT OF TAX REVENUE REQUIRED TO FULFILL THE VOTERS' INTENT IN FUNDING THE CITY'S RETIREMENT SYSTEM DURING FISCAL YEAR 2014-2015 AND AUTHORIZING THE LEVY OF APPROPRIATE TAXES

3I. AT-RISK YOUTH EMPLOYMENT PLAN FOR TREE PLANTING PROJECT

The Los Angeles County Regional Park and Open Space District approved an award of $86,554 in grant funds to the City of Monterey Park to plant trees in designated areas. A provision of the Safe Neighborhood Parks Proposition of 1996 (Proposition A) funds is the approval of a Youth Employment Plan.

Action Taken: The City Council approved the at-Risk Youth Employment Plan and authorized the City Manager to execute an agreement, in a form approved by the City Attorney, with the San Gabriel Valley Conservation Corps to help implement the Plan on Consent Calendar.

3J. ADOPTING A RESOLUTION CERTIFYING THE RESULTS OF THE JUNE 3, 2014 SPECIAL MUNICIPAL ELECTION

The City held a special election on June 3, 2014 regarding a proposal placed on the ballot by the City Council for a specific plan regulating development at 2015 Potrero Grande. This proposal was identified as Measure A. Based upon the results provided by the Los Angeles County Elections Division, voters approved Measure A. When adopted by the City Council, the draft resolution will certify the results of the June 3, 2014 election.

This item was pulled for separate discussion.

Action Taken: The City Council (1) adopted **Resolution No. 11672** certifying the results of the June 3, 2014 special municipal election and (2) ratified **Ordinance No. 2108**.

Resolution No. 11672, entitled:
A RESOLUTION DECLARING THE RESULTS OF THE SPECIAL MUNICIPAL ELECTION HELD TUESDAY, JUNE 3, 2014

ORDINANCE NO. 2108, entitled:
A PROPOSITION APPROVING ORDINANCE NO. 2104 ADOPTED BY THE CITY COUNCIL ON FEBRUARY 19, 2014 CHANGING THE GENERAL PLAN AND ZONING MAP DESIGNATION FROM A COMMERCIAL LAND USE TO A RESIDENTIAL LAND USE AND APPROVING AN 80 UNIT RESIDENTIAL SUBDIVISION AT 2015 POTRERO GRANDE DRIVE

Motion: Moved by Council Member Chan and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes: Council Members: Chan, Liang, Wong
Noes: Council Members: None
Absent: Council Members: None
Abstain: Council Members: Real Sebastian, Ing

3K. JANITORIAL SERVICES CONTRACT FOR BUSINESS IMPROVEMENT DISTRICT NO. 1 (BID)

Prior to 2012, the downtown area of the city was experiencing visible distress due to greater amounts of trash in the area. The Business Improvement District Advisory Committee (BIDAC) and the City combined efforts to address the issues and alleviate the problem. In response to maintenance problems present in the BID area, staff solicited proposals for porter services for additional maintenance. In 2012, the City contracted for porter services to Chrysalis Enterprises who has been very successful in maintaining cleanliness in the BID area. To ensure good quality services at the best price is obtained for the residents and businesses, staff issued another Request for Proposals for janitorial services in May 2014. Proposals received support re-contracting with Chrysalis Enterprises.

This item was pulled for separate discussion.

Action Taken: Mayor Wong declared a potential conflict of interest; recused himself; and left the council chambers during discussion as his business is within 500 feet of the Business Improvement District. The City Council (1) awarded Chrysalis Enterprises a contract for services of the porter services (2) directed the City Manager to enter into a contract with Chrysalis Enterprises, in a form approved by the City Attorney.

Motion: Moved by Council Member Chan and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes: Council Members: Real Sebastian, Ing, Chan, Liang
Noes: Council Members: None
Absent: Council Members: Wong
Abstain: Council Members: None

3L. SERVICE AGREEMENT WITH THE LOS ANGELES COUNTY ANIMAL CARE AND CONTROL DEPARTMENT FOR ANIMAL CARE AND CONTROL SHELTERING, LICENSING, AND AFTER HOURS SERVICES.

The City of Monterey Park has contracted for Animal Control sheltering, licensing, and after hours service with the Los Angeles County Animal Care and Control Department (LACACCD) since July 1, 2012. The initial service agreement expired June 30, 2014. L.A. Co. is continuing service but a new contract covering the period of July 1, 2014 through June 30, 2019 is needed.

Action Taken: The City Council authorized the City Manager to execute a service agreement in a form approved by the City Attorney with the Los Angeles County Animal Care and Control Department, not to exceed $10,000.00 of the estimated rates on Consent Calendar.

3M. MONTEREY HIGHLANDS PARK AND ELEMENTARY SCHOOL PARKING LOT IMPROVEMENTS – AWARD OF CONTRACT

The Engineering Division prepared bid specifications for the Monterey Highlands Park and Elementary School Parking Lot Improvements. Staff has completed the bidding process and is recommending the award of contract to Excel Paving Company in the amount of $127,737.00. The City Council adopted a resolution which authorized solicitation of this project on May 21, 2014.

Action Taken: The City Council (1) awarded the contract for the Parking Lot Improvements at Monterey Highlands Park and Elementary School to the lowest responsible bidder, Excel Paving Company of Long Beach, in the amount of $127,737.00; (2) authorized the Public Works Director to approve construction change orders up to $12,774 (up to ten percent of construction contract amount) for this project; and (3) authorized the City Manager to execute a standard public works contract, in a form approved by the City Attorney, with Excel Paving Company on Consent Calendar.

3N. SECOND READING AND ADOPTION OF ORDINANCES INCREASING THE AMOUNT OF WATER, WASTEWATER AND SOLID WASTE RATES AND CHARGES

At the meeting on July 2, 2014, the City Council reviewed options for setting/increasing water, and wastewater rates for a five year period commencing on September 1,2014. Additionally, the Council reviewed options for setting/increasing rates for solid waste (trash) service that is provided by Athens Disposal pursuant to a franchise agreement with the City. The proposed solid waste rates would take effect September 1,2014 and would only be increased during the term of the Contract with Athens which expires in June 2017. The first reading and public hearing occurred on July 2, 2014. The ordinances are now ready for second reading and adoption by the City Council.

This item was pulled for separate discussion.

Public Speakers:

- Larry Sullivan, Chairman of the Monterey Park Planning Commission, informed the council he wished to clarify a comment expressed at a Planning Commission meeting stating he supports new developments and projects in the City, but also stated his concerns of the proposed water and wastewater rate increases. He strongly encouraged the council to consider reviewing the city's fee schedule,

development agreements and that the developers share the expenses to support the city's infrastructure.

- J.B. Abajian spoke against the proposed water and wastewater rate increases stating his concerns that the proposed rates and charges were inaccurately calculated and strongly recommended that the council reject staff's proposal.

Action Taken: The City Council (1) waived the second reading and adopted **Ordinance No. 2109** increasing the amount of Water Rates and Charges; (2) waived the second reading and adopted **Ordinance No. 2110** increasing the Wastewater Rates and Charges; and (3) waived the second reading and adopted **Ordinance No. 2111** increasing the amount of Solid Waste Rates and Charges.

Ordinance No. 2109, entitled:
AN ORDINANCE SETTING THE AMOUNT OF WATER RATES AND CHARGES PURSUANT TO HEALTH AND SAFETY CODE § 5471 AND MONTEREY PARK MUNICIPAL CODE CHAPTER 14.12

Ordinance No. 2110, entitled:
AN ORDINANCE SETTING THE AMOUNT OF WASTEWATER RATES AND CHARGES PURSUANT TO HEALTH AND SAFETY CODE § 5471

Ordinance No. 2111, entitled:
AN ORDINANCE SETTING THE AMOUNT OF SOLID RATES AND CHARGES PURSUANT TO HEALTH AND SAFETY CODE § 5471

Motion: Moved by Council Member Real Sebastian and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Chan, Liang, Wong
Noes:	Council Members:	Ing
Absent:	Council Members:	None
Abstain:	Council Members:	None

4. PUBLIC HEARING

Mayor Wong opened the public hearing at 9:50 p.m. and closed the public hearing at 9:51 p.m. with no registered speakers.

4A. A PUBLIC HEARING TO CONSIDER THE ADOPTION OF THE DRAFT 2014-2015 ONE YEAR ACTION PLAN AS REQUIRED BY THE COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG) AND HOME INVESTMENT PARTNERSHIP ACT (HOME) PROGRAMS

The U.S. Department of Housing and Urban Development provides funding to states, counties and cities in the form of Community Development Block Grant (CDBG) and Home Investment Partnerships (HOME) funds. Before Monterey Park can receive these funds, federal regulations require that a Consolidated Plan (i.e., five year plan) be adopted by the City that serves as the federal planning document for those jurisdictions

receiving Community Development Block Grant (CDBG) and HOME Investment Partnerships (HOME) Program funds. In addition, federal regulations also require the adoption of a One Year Annual Plan to the Consolidated Plan that operates on a single program year established by the City (July 1, 2014 through June 30, 2015).

Action Taken: The City Council opened the public hearing, received and filed all public comment and closed the public hearing and (2) adopted the One Year Action Plan for Program Year 2014-2015 and authorized the City Manager to implement the adopted Action Plan including, without limitation, to execute appropriate agreements in a form approved by the City Attorney.

Motion: Moved by Council Member Real Sebastian and seconded by Council Member Ing, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

PUBLIC HEARING

Mayor Wong opened the public hearing at 9:52 p.m. and closed the public hearing at 9:53 p.m. with no registered speakers.

4B.PUBLIC HEARING -- CONSIDERATION OF COSTS RESULTING FROM ABATING WEED NUISANCES AND AUTHORIZING COLLECTION VIA THE TAX ROLL

The County of Los Angeles Department of Agriculture Commissioner and Weights and Measures submitted the annual Weed Abatement Charge List to the City of Monterey Park for abating noxious or dangerous weeds and rubbish. Confirmation of the List by the City Council will authorize the Agricultural Commission/Weights and Measure to place abatement costs resulting from the County's efforts onto the tax roll. It should be noted that these charges are from work performed by the County of Los Angeles during Fiscal Year 2013-2014.

Action Taken: The City Council opened the public hearing, received and filed all public comment and closed the public hearing and (2) adopted **Resolution No. 11673** approving Weed Abatement Clearance Charge List and authorizing the collection of such costs through the property tax rolls.

Resolution No. 11673, entitled:
A RESOLUTION CONFIRMING THE ITEMIZED WEED ABATEMENT CHARGE LIST OF WEED ABATEMENT COSTS AND DIRECTING THE LOS ANGELES COUNTY AGRICULTURAL COMMISSIONER TO COLLECT THESE COSTS THROUGH PROPERTY TAX BILLINGS

Motion: Moved by Council Member Real Sebastian and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes:	Council Members:	Real Sebastian, Ing, Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	None
Abstain:	Council Members:	None

5. UNFINISHED BUSINESS
None.

6. NEW BUSINESS
None.

7. COUNCIL COMMUNICATIONS AND MAYOR/COUNCIL AND AGENCY MATTERS

Council communications and committee reports from Council Representatives of specific organizations.

The City Council announced that the August 6, 2014 regular council meeting is cancelled and that the next regular scheduled council meeting will be on August 20, 2014 at 7:00 p.m. in the Council Chambers. Council Member Real Sebastian spoke of her attendance with the council to the 710 Freeway Close the Gap campaign event on July 10, 2014 in Alhambra. She also encouraged the residents to attend upcoming community-wide events: (1) the city's first "Monterey Park Night Market" on Friday, July 25, 2014 from 5:30 p.m. - 10:30 p.m. at Barnes Park and (2) the Monterey Park Police Department's "National Night Out" event on Tuesday, August 5, 2014 from 6:00 p.m. - 8:00 p.m. at City Hall. Council Member Ing announced his attendance with the council, City Manager Talbot, City Attorney Hensley, Assistant City Attorney Berger, and Assistant City Manager/Public Works Director Bow at the Independent Cities Association Seminar on July 10 - 13, 2014 at Rancho Bernardo Inn in San Diego. He also spoke of his concerns and directed the City Manager and City Attorney to research and present a ordinance proposal banning E-cigarettes in the city at a future council meeting. Council Member Real Sebastian and Mayor Wong echoed their support to Council Member Ing's request to the City Manager and City Attorney for further discussion and council direction.

8. CLOSED SESSION
None.

ADJOURNMENT
There being no further business for consideration, the meeting was adjourned at 10:00 p.m.

_____
Vincent D. Chang
City Clerk

MINUTES
MONTEREY PARK CITY COUNCIL
SUCCESSOR AGENCY (SA)
SPECIAL MEETING
JULY 2, 2014

The City Council of the City of Monterey Park held a Special Meeting of the Council in Room 266, Second Floor of City Hall, located at 320 West Newmark Avenue in the City of Monterey Park, Wednesday, July 2, 2014 at 6:00 p.m.

CALL TO ORDER:
Mayor Wong called the meeting to order at 6:00 p.m.

ROLL CALL:
City Manager Talbot called the roll:
Council Members Present: Real Sebastian, Ing, Chan, Liang, Wong
Council Members Absent: None
Also Present: City Manager Talbot, City Attorney Hensley

ORAL & WRITTEN COMMUNICATIONS
None.

NEW BUSINESS

1. **APPOINT REAL PROPERTY NEGOTIATORS:**

Action Taken: The City Council appointed the City Manager and City Attorney, as real property negotiators for Closed Session Item No. 1.

Motion: Moved by Mayor Pro Tem Liang and seconded by Council Member Chan, motion carried by the following vote:

Ayes: Council Members: Real Sebastian, Ing, Chan, Liang, Wong
Noes: Council Members: None
Absent: Council Members: None
Abstain: Council Members: None

CLOSED SESSION- The City Council adjourned to Closed Session at 6:05 p.m.

1. **CONFERENCE WITH REAL PROPERTY NEGOTIATORS - GOVERNMENT CODE § 54956.8**

Property:	APN 5273-010-015 (2000 South Isabella Avenue)
Agency Negotiators:	Paul Talbot, City Manager; Mark Hensley, City Attorney
Negotiating Parties:	Ellen Baca (Beneficiary of Estate)
Under Negotiation:	Price and terms of payment

2. CONFERENCE LEGAL COUNSEL, POTENTIAL LITIGATION - Significant exposure to litigation pursuant to Government Code § 54956.9 (b) - 4 Matters. Facts and Circumstances:

Claim filed April 21, 2014 by Jiamin Zhu (Claim No. 1918-CL);
Claim filed April, 24, 2014 by Xu Yang (Claim No. 1919-CL);
Claim filed April 25, 2014 by Long Long Chen (Claim No. 1921-CL); and
Claim filed April 25, 2014 by Neng Ping Lin (Claim No. 1922-CL).
Copies of all claims are available in the City Clerk's Office.

RECONVENE & ANNOUNCED - The City Council reconvened from Closed Session with all Council Members present at 6:40 p.m. and announced that Council Member Chan declared a potential conflict of interest for Closed Session Item No. 3; recused himself; and left the room during discussion as his residence is within 300 feet of the Garvey Reservoir.

CLOSED SESSION- The City Council adjourned to Closed Session except for Council Member Chan at 6:42 p.m. to hear Closed Session Item No. 3.

3. CONFERENCE WITH LEGAL COUNSEL, ANTICIPATED LITIGATION- GOVERNMENT CODE § 54956.9(d) - 1 case.

RECONVENE & ADJOURNMENT
The Council reconvened from Closed Session with all Council Members present and the meeting was adjourned at 7:00 p.m.

Action Taken: No reportable action taken during Closed Session.

_____
Vincent D. Chang
City Clerk

MINUTES
MONTEREY PARK CITY COUNCIL
SUCCESSOR AGENCY (SA)
SPECIAL MEETING
JULY 7, 2014

The City Council of the City of Monterey Park held a Special Meeting of the Council in Room 266, Second Floor of City Hall, located at 320 West Newmark Avenue in the City of Monterey Park, Monday, July 7, 2014 at 6:00 p.m.

CALL TO ORDER:
Mayor Wong called the meeting to order at 6:05 p.m.

ROLL CALL:
City Clerk Chang called the roll:
Council Members Present: Real Sebastian, Chan, Liang, Wong
Council Members Absent: Ing
Also Present: City Manager Talbot, Human Resources Director Cody, City Librarian Arvizu, Deputy City Clerk Trang

ORAL & WRITTEN COMMUNICATIONS
None.

NEW BUSINESS

1. **REQUEST FOR THE CITY COUNCIL TO MAKE AN APPOINTMENT TO THE PERSONNEL BOARD**

   Action Taken: The City Council interviewed and appointed community member, Frank Robles, to serve on the Personnel Board.

   Motion: Moved by Council Member Real Sebastian and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

   Ayes: Council Members: Real Sebastian, Chan, Liang, Wong
   Noes: Council Members: None
   Absent: Council Members: Ing
   Abstain: Council Members: None

2. **REQUEST FOR THE CITY COUNCIL TO MAKE TWO APPOINTMENTS TO THE LIBRARY BOARD OF TRUSTEES**

   Discussion: Invitation letters were sent to the following Library Board of Trustee applicants: Lisa Sun, Por Hsyu, Randall Avila, Michael W. Lopez, Sophie Quach Dao, Neal R. Alvaraz, David Barron, Dolores Seidman, Maria-Elena Yepes. The City Council interviewed Kevin Tong, Maria-Elena Yepes and David Barron.

Action Taken: The City Council interviewed and appointed community member Maria-Elena Yepes, to serve on the Library Board of Trustees.

Motion: Moved by Council Member Real Sebastian and seconded by Mayor Pro Tem Liang, motion carried by the following vote:

Ayes: Council Members: Real Sebastian, Chan, Liang, Wong
Noes: Council Members: None
Absent: Council Members: Ing
Abstain: Council Members: None

Action Taken: The City Council interviewed and appointed community member David Barron, to serve on the Library Board of Trustees.

Motion: Moved by Mayor Pro Tem Liang and seconded by Mayor Wong, motion carried by the following vote:

Ayes: Council Members: Real Sebastian, Chan, Liang, Wong
Noes: Council Members: None
Absent: Council Members: Ing
Abstain: Council Members: None

CLOSED SESSION
None.

ADJOURNMENT
There being no further business for consideration, the meeting was adjourned at 6:45 p.m.

_____
Vincent D. Chang
City Clerk

MINUTES
MONTEREY PARK CITY COUNCIL
SUCCESSOR AGENCY (SA)
SPECIAL MEETING
JULY 16, 2014

The City Council of the City of Monterey Park held a Special Meeting of the Council in Room 266, Second Floor of City Hall, located at 320 West Newmark Avenue in the City of Monterey Park, Wednesday, July 16, 2014 at 6:00 p.m.

CALL TO ORDER:
Mayor Wong called the meeting to order at 6:00 p.m.

ROLL CALL:
City Manager Talbot called the roll:
Council Members Present: Real Sebastian, Ing, Chan, Liang, Wong
Council Members Absent: None
Also Present: City Manager Talbot, City Attorney Hensley, Human Resources Director Cody

AGENDA ADDITIONS, DELETIONS, CHANGES AND ADOPTIONS
None.

ORAL & WRITTEN COMMUNICATIONS
None.

CLOSED SESSION- The City Council adjourned to Closed Session at 6:05 p.m.

1. **CONFERENCE WITH LABOR NEGOTIATORS, PURSUANT TO CALIFORNIA GOVERNMENT CODE § 54957.6**

City Negotiators:	Paul L. Talbot, City Manager, Tom Cody, Human Resources Director
Employee Organizations:	Bargaining Units Monterey Park Firefighters' Association (MPFFA); Monterey Park Police Officers' Association (MPPOA); Monterey Park Professional Chief Officers' Association (PCOA), POA/Captains' Unit, Police Officer's Mid-Management Association (POMMA.)

RECONVENE & ADJOURNMENT
The Council reconvened from Closed Session with all Council Members present and the meeting was adjourned at 6:40 p.m.

Action Taken: No reportable action taken during Closed Session.

_____
Vincent D. Chang
City Clerk

MINUTES
CITY COUNCIL ACTING ON BEHALF OF THE SUCCESSOR AGENCY OF THE FORMER MONTEREY PARK REDEVELOPMENT AGENCY, OVERSIGHT BOARD TO THE CITY OF MONTEREY PARK SUCCESSOR AGENCY ACTING ON BEHALF OF THE FORMER REDEVELOPMENT AGENCY AND MONTEREY PARK CITY COUNCIL
SPECIAL JOINT MEETING
JULY 24, 2014

The City Council Acting on Behalf of the Successor Agency of the former Monterey Park Redevelopment Agency, Oversight Board to the City of Monterey Park Successor Agency Acting on Behalf of the former Redevelopment Agency and The City Council of the City of Monterey Park held a Special Joint Meeting of the Council/Board Members in Room 266, Second Floor of the City Hall, located at 320 West Newmark Avenue in the City of Monterey Park, Thursday, July 24, 2014 at 9:00 a.m.

CALL TO ORDER:
Mayor Anthony Wong called the meeting to order at 9:05 a.m.

ROLL CALL:
City Clerk Chang called the roll:
Council Members Present: Chan, Liang, Wong
Council Members Absent: Real Sebastian, Ing
Oversight Board Members Present: Robert Lee Gin, Michael D. Hamner, Cheryl Plotkin, Annie Yaung, John Leung
Oversight Board Members Absent: Paul Talbot, Katherine Hennigan
Also Present: City Attorney Hensley (via conference call), Public Works Director/Assistant City Manager Bow, Community and Economic Development Director Huntley, Economic Development Specialist Ramirez

AGENDA ADDITIONS, DELETIONS, CHANGES AND ADOPTIONS
None.

ORAL & WRITTEN COMMUNICATIONS
None.

SUCCESSOR AGENCY TO THE FORMER COMMUNITY REDEVELOPMENT AGENCY (SA)

NEW BUSINESS

1. **A REVISED RESOLUTION APPROVING ENTERING INTO A PURCHASE AND SALES AGREEMENT BY AND BETWEEN JOINT WIN DEVELOPMENT LLC FOR THE PURCHASE OF REAL PROPERTY LOCATED AT 700 CORPORATE CENTER DRIVE (APN 5237-022-902)**

   Staff submitted the Purchase and Sale Agreement (PSA) and resolution approving the Oversight Board action taken on May 21, 2014 to the Department of Finance, as directed. The Department of Finance reviewed the documents and directed staff to revise the resolution to include the parcel number of the property referenced. Note that

the Department of Finance did not provide any legal reason for the requested change; it appears that this was simply an arbitrary decision.

See Successor Agency minutes.

2. AN AMENDMENT TO THE PURCHASE AND SALES AGREEMENT BETWEEN THE SUCCESSOR AGENCY AND JOINT WIN DEVELOPMENT LLC

The buyer, Joint Win Development LLC, has submitted a request to extend the closing date of escrow related to Buyer's acquisition of the Successor Agency property at 700 Corporate Center Drive (APN5237-022-902). Such a request requires review and approval by the Successor Agency first, followed by the review and approval by the Oversight Board.

See Successor Agency minutes.

This is the end of Successor Agency (SA) items.

OVERSIGHT BOARD TO THE CITY OF MONTEREY PARK SUCCESSOR AGENCY TO THE MONTEREY PARK REDEVELOPMENT AGENCY CONSENT CALENDAR ITEM NO. 3

3. APPROVAL OF MINUTES FOR THE MAY 22, 2014 SPECIAL MEETING

Approval of Minutes from the May 22, 2014 Monterey Park Oversight Board meeting.

See Oversight Board minutes.

NEW BUSINESS

4. A REVISED RESOLUTION APPROVING ENTERING INTO A PURCHASE AND SALES AGREEMENT BY AND BETWEEN JOINT WIN DEVELOPMENT LLC FOR THE PURCHASE OF REAL PROPERTY LOCATED AT 700 CORPORATE CENTER DRIVE (APN 5237-022-902)

Staff submitted the Purchase and Sale Agreement (PSA) and resolution approving the Oversight Board action taken on May 21, 2014 to the Department of Finance, as directed. The Department of Finance reviewed the documents and directed staff to revise the resolution to include the parcel number of the property referenced. Note that the Department of Finance did not provide any legal reason for the requested change; it appears that this was simply an arbitrary decision.

See Oversight Board minutes.

5. AN AMENDMENT TO THE PURCHASE AND SALES AGREEMENT BETWEEN THE OVERSIGHT BOARD AND JOINT WIN DEVELOPMENT LLC

The buyer, Joint Win Development LLC, has submitted a request to extend the closing date of escrow related to Buyer's acquisition of the Successor Agency property at 700 Corporate Center Drive (4PN5237-022-902). Such a request requires review and approval by the Successor Agency first, followed by the review and approval by the Oversight Board.

See Oversight Board minutes.

This is the end of Oversight Board (OB) items.

CITY OF MONTEREY PARK CONSENT CALENDAR CONSISTS OF ITEM NO. 6

Matters listed under consent calendar are considered to be routine, ongoing business and are enacted by one motion unless specified.

Action Taken: Council Members approved and adopted Item No. 6 and reading resolutions and ordinances by title only and waiving further reading thereof.

Motion: Moved by Mayor Pro Tem Liang and seconded by Council Member Chan, motion carried by the following vote:

Ayes:	Council Members:	Chan, Liang, Wong
Noes:	Council Members:	None
Absent:	Council Members:	Real Sebastian, Ing
Abstain:	Council Members:	None

6. GEORGE ELDER PARK PARKING LOT IMPROVEMENTS -- AWARD OF CONTRACT

On May 21, 2014, the City Council approved solicitation of bids for the George Elder Park Parking Lot Improvements. Bid opening occurred on July 10, 2014. Following the bid opening, Ben's Asphalt was determined to be the lowest responsible bidder with an amount of $46,050.00. The Engineer's estimate for this project was $100,000.

Action Taken: The City Council (1) awarded the contract for the Parking Lot Improvements at George Elder Park to the lowest responsible bidder, Ben's Asphalt of Santa Ana, in the amount of $46,050.00; (2) authorized the Public Works Director to approve construction change orders up to $4,605.00 (up to ten percent of construction contract amount) for this project; and (3) authorized the City Manager to execute a contract, in a form approved by the City Attorney, on behalf of the City on Consent Calendar.

CLOSED SESSION
None.

ADJOURNMENT
There being no further business for consideration, the meeting was adjourned at 9:52 a.m.

_____
Vincent D. Chang
City Clerk

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-D.**

TO: The Honorable Mayor and City Council

FROM: Joseph Leon, City Treasurer
Annie Yaung, Controller

SUBJECT: 2013-2014 Annual Investment Report

RECOMMENDATION: It is recommended that the City Council:

(1) Receive and file the 2013-14 Annual Investment report; and

(2) Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

The City's Investment Policy requires an annual investment report and a statement of investment policy to be submitted to the City Council for review within 60 days of the fiscal year-end. The attached annual report shows that all investment activities during 2013-14 were conducted according to the City's Investment Policy.

BACKGROUND:

The City Investment Policy was created in 1989 to establish guidelines for investment operations (including City of Monterey Park, Monterey Park Public Financing Authority, and Monterey Park Housing Authority). The investment priorities are in the order of safety, liquidity, and yield. The Policy establishes allowable investments and the maximum maturity for each. The allowable investments include U.S. Treasury securities, State LAIF, LA County pooled investment fund; certificates of deposit, bankers' acceptances, mutual funds and money market mutual funds, federal agency securities, commercial papers, and collateralized savings funds. Additionally, the Policy prescribes an internal control system, which delineates duties and responsibilities for City personnel handling investment operations.

The City's investment operations are under the direction of the City Treasurer. The City's Investment Policy provides the creation of a Treasury Committee, which is comprised of the City Treasurer, City Manager, Director of Management Services, and the Controller to implement the Investment Policy and related procedures. The Treasury Committee proposes recommended changes for the City's investment policy to the City Council for approval.

Investment Activities – City

All investment activities during 2013-14 were made according to the Policy. During the year, funds were invested in the Local Agency Investment Fund, certificates of deposits, bank collateralized savings account, and LA County Pooled Investment Fund.

Local Agency Investment Fund (LAIF) was created by statute in 1977. It is a pooled investment program for local agencies and special districts to participate. LAIF is managed by the State and investment securities are purchased in accordance with the Government Code Sections 16430 and 16480.4. Funds invested with LAIF are backed 100% by the State and can be withdrawn with a 24-hour notice without penalty. LAIF has 2,541 participants and $21.2 billion in its portfolio. As of June 30, 2014, the City has $2.3 million invested with LAIF.

Certificates of Deposits (CD) Certificates of Deposits are time deposits with banks or savings and loans. Federal Depository Insurance Corporation (FDIC) insures each depositor up to $250,000. The City invests CDs with California State or nationally chartered financial institutions. As of June 30, 2014, the City has twenty-four CDs (see Exhibit A).

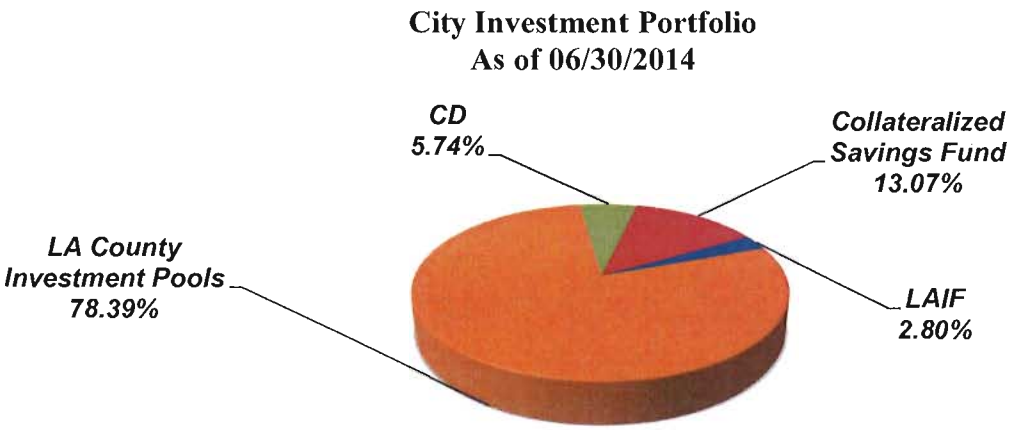
Bank Collateralized Savings Account The bank collateralized savings (aka money market savings account) is a Public Funds savings account that is collateralized in accordance with Government Code § 53652. All California public depository accounts are collateralized 110% and pooled under the California Local Agency. As of June 30, 2014 the City has $10.5 million invested with the Bank of the West savings.

Los Angeles County Pooled Investment Fund (LACPIF) allows local agencies in the County of Los Angeles to deposit excess funds in the Los Angeles County Treasury Pool for the purpose of investment by the Treasurer and Tax collector of the County. The interest rate for the City's LACPIF account was the highest among all other city investments. As of June 30, 2014, the City has $63.2 million invested with LACPIF.

Investment Composition

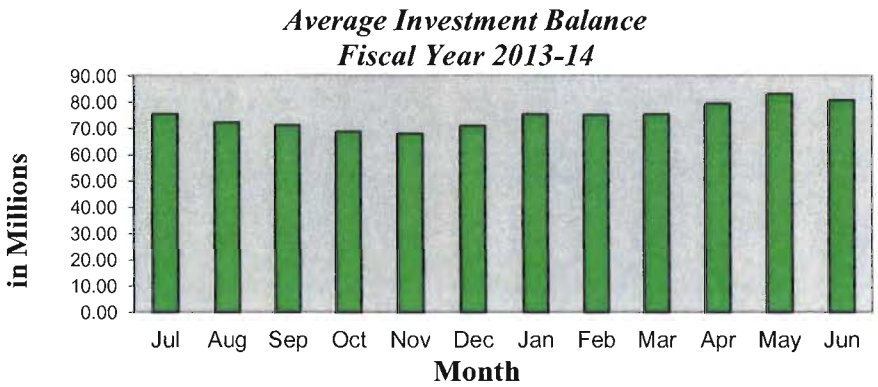
The City invests its idle cash from all operating funds on a pooled basis to maximize returns. Earnings are allocated to each fund based on the average cash balance. Total investment balance for the City as of June 30, 2014 was $80,613,179.

Instruments	Balance	Interest Rate	Maturity
LAIF	$ 2,259,531	0.24%	1-day
LACPIF	63,193,301	0.79%	1-day
CDs	4,629,109	0.55% - 1.14%	8/13 - 10/15
Collateralized Savings Funds	10,531,238	0.29%	1-day
Total	$ 80,613,179		



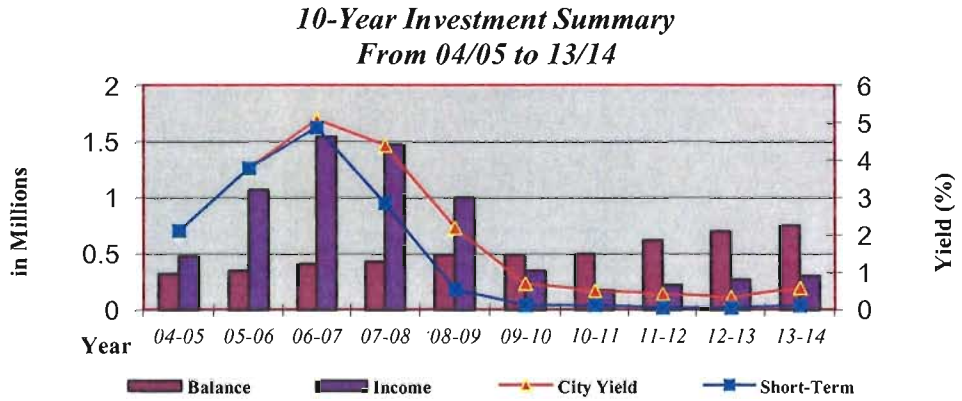
Investment Balance

Timing of revenue collections, such as property tax, business licenses, and franchise tax, affects the monthly investment balance during the year. In 2013-14, monthly investment varied from $68 million to $83 million. The average balance was $75 million.



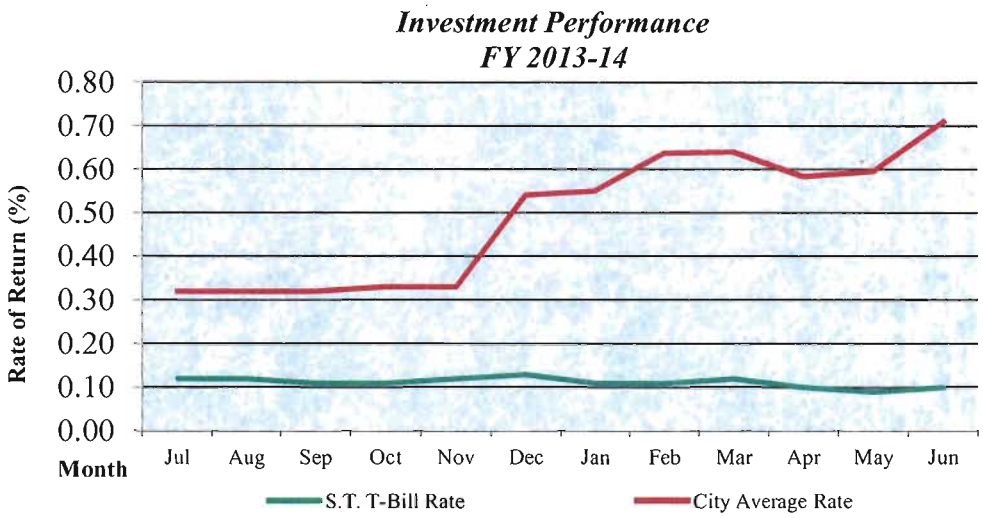
10-Year City Investment Summary

The chart below shows the City's investment balance, interest income, yield, and the short-term investment rate during the past 10 years (for the purpose of comparison, short-term investment rate shown is the three-month treasury bill rate). The City's average investment yield has exceeded the three-month treasury yield in each of the past 10 years.



Investment Performance

The 2013-14 interest earning for the City was approximately $300,000 and the average yields were 0.49%. The City invested 2.80% of its funds into local government investment pools (LAIF), 78.39% into Los Angeles County Pooled Fund (LACPIF), 13.07% into the bank collateralized savings funds, and 5.74% into certificates of deposits, which all can be effective mechanisms for obtaining liquidity, diversified portfolios, and competitive yields. Specifically, this year, the better performance from the investment in the County pooled funds has provided the City higher investment earnings. The following graph exhibits City investment rates vs. the three-month T-bill rates for 2013-14.



Investment Policy

The City's investment policy provides the ideal framework to itemize investment alternative, to detail the benefits and risks of these alternatives, and to recommend the maximum percentage allocation, the selection process, the risk framework and the allowable maturities of the investment alternatives. The Investment Policy requires the Treasury Committee to annually review the Investment Policy and present changes (if any) to the City Council as part of the Annual Investment Report. The Treasury Committee has reviewed the City's investment priorities, the permitted investment instruments, and the maximum amounts and terms for each and the Committee has no proposed recommended changes to the Investment Policy this time.

The vast majority of public-sector cash management operations are governed by state laws and provisions that determine the type of investment product and manner in which the City manages its funds. Moreover, the City's allowable investments are more conservative and restricted than those of the state types.

Investment Policy Certification Award

The City has always received recognition from the Municipal Treasurers' Association (MTA) of United States & Canada for Investment Policy Certification. The certification award represents the highest level of investment policy guidelines and confirms that the City's investment operations, as guided by the Investment Policy, effectively safeguard its capital while providing operating liquidity and market-rate earnings. MTA recommends re-certification of the investment policy every three years to ensure the policy contains updated practices and/or laws pertaining to investment. **The latest certification award was received in March 2014.**

Conclusion

The US economy has grown at the modest pace and labor market conditions improved, with the unemployment rate continuing to decline further. The Federal Reserve continues its purchases of Treasury and agency mortgage-backed securities and will continue assessing progress toward its objectives of maximum employment and 2 percent inflation in determining how long to maintain the current 0 to 1/4 percent target range for the federal funds rate.

For the Fiscal Year 2014-2015, the Committee will seek permitted investment instruments according to the investment policy, and take a balanced approach consistent with the guidelines of safety, liquidity, and yield as established by the Council adopted Investment Policy. The ultimate goal is to enhance the economic status of the City while protecting its pooled cash.

Respectfully submitted by:

Joseph Leon
City Treasurer

Prepared by:

Annie Yaung, CPFO
Controller

Approved by:

Paul L. Talbot
City Manager

Reviewed by:

Karl H. Berger
Assistant City Attorney

Chu Thai
Director of Management Services

ATTACHMENT 1
Exhibit A

EXHIBIT A

CITY OF MONTEREY PARK
CERTIFICATES OF DEPOSIT
AS OF JUNE 30, 2014

INSTITUTION NAME	AMOUNT	INTEREST RATE
INVESTMENTS:		
AMERICAN PLUS BANK	140,000.00	0.80%
ASIAN PACIFIC NATIONAL BANK	200,000.00	0.65%
CATHAY BANK	100,000.00	0.80%
CATHAY BANK	150,000.00	0.80%
EAST WEST BANK	250,000.00	1.14%
EVERTRUST BANK	100,000.00	0.80%
EVERTRUST BANK	150,000.00	0.80%
FIRST CHOICE BANK	240,000.00	0.80%
FIRST GENERAL BANK	240,000.00	1.00%
PREFERRED BANK	100,000.00	0.90%
PREFERRED BANK	140,000.00	0.95%
TOMATO BANK, N.A.	100,000.00	0.80%
TOMATO BANK, N.A.	140,000.00	0.80%
ROYAL BUSINESS BANK	250,000.00	0.70%
BEAL BANK USA	240,000.00	0.60%
GE CAPITAL RETAIL BANK	240,000.00	1.05%
EVERBANK	240,000.00	0.70%
DISCOVER BANK	240,000.00	0.55%
GOLDMAN SACHS BANK USA	240,000.00	0.65%
COMENITY BANK	200,000.00	0.55%
STATE BANK OF INDIA	200,000.00	0.60%
BMW BANK NORTH AMERI	240,000.00	0.75%
AMERICAN EXPR CENT BANK	240,000.00	1.10%
BLUE HILLS BANK	240,000.00	0.95%
TOTAL CDs	$ 4,620,000.00	

ATTACHMENT 2
Investment Policy

City of Monterey Park

Investment Policy

June 2014

CITY OF MONTEREY PARK
INVESTMENT POLICY

I. PURPOSE

This Statement is intended to provide guidelines for prudent investment of the City's temporary idle cash (including City of Monterey Park, Monterey Park Public Financing Authority, and Monterey Park Housing Authority) and outline the policies for maximizing the efficiency of the City's cash management system. The ultimate goal is to enhance the economic status of the City while protecting its pooled cash.

The Investment Policy is in conformance with the California State Government Code Sections 53600 et seq. However, to meet the City's needs, the investment parameters set forth in the City's policy are more conservative than those allowed by the State Code.

II. SCOPE

The policy shall direct the investment of the City's temporarily idle monies for all funds that are accounted for in the City's Comprehensive Annual Financial Report, including the general fund, special revenue funds, fiduciary funds, and proprietary funds. Employee deferred compensation and pension are not managed by the City and are not subject to the City's Investment Policy.

The policy shall also direct all investments related to the Monterey Park Public Financing Authority and the Monterey Park Housing Authority. For purposes of investments made for the Monterey Park Public Financing Authority and the Monterey Park Housing Authority, all references made to the City Treasurer shall also mean the appointed Treasurer(s) of each respective entity.

III. INVESTMENT OBJECTIVES

Criteria for selecting investments and the order of priority are:

1. Safety. The safety and risk associated with an investment refers to the potential loss of principal, interest or a combination of these amounts.

Safety of Principal is the foremost objective of the City's investment program. To attain this objective, the City will select only those investments that seek to ensure the preservation of capital in the overall portfolio and to mitigate credit risk and market risk.

2. Liquidity. This refers to the ability to "cash in" at any moment in time with a minimal chance of losing principal or interest. Liquidity is an important investment quality, especially when the need for unexpected funds occurs. The objective is to remain sufficiently liquid to meet all operating requirements that may be reasonably anticipated within one-hundred and eighty (180) days.

3. Yield. Yield is the potential dollar earnings an investment can provide, also referred to as the rate of return. The objective is to attain a rate of return that equals or exceeds the yield for the three-month Treasury Bill.

IV. TREASURY COMMITTEE

The Policy provides for the creation of a Treasury Committee ("The Committee"). The Committee is comprised of the City Treasurer, the City Manager, Director of Management Services, and the City Controller. The Committee shall meet periodically and perform the following:

- Development and implementation of investment policy
- Development and implementation of investment procedures to establish internal controls, investment reporting, recordkeeping, accounting and processes for movement of funds
- Formulation of investment strategy
- Evaluation of financial institutions
- Development and implementation of controls to ensure compliance with the State Code and the City's Investment Policy
- Selection of investment managers, when appropriate

V. INVESTMENT PROCEDURES AND RESPONSIBILITY

- An Investment Procedures Manual is established to guide staff with day-to-day investment operations. The Manual includes procedural elements such as cash position review, investment selection, investment transaction, investment recording, and investment reporting.

- Within the constraints set forth in this policy, the City Treasurer has the authority to oversee the citywide investment operations.

- The City Council delegates to the City Treasurer, Director of Management Services, and the City Controller the authority to open new bank accounts, investment and cash management accounts, and other credit enhancement products, close bank accounts, investment and cash management accounts, and sign all documents related thereto.

- The Controller is responsible for the following implementation and supervision of investment controls: approving daily investment transactions, developing the projections of the City's cash requirements for operating needs, reviewing the liquidity position of the investment portfolio, ensuring that the citywide cash position is consistent with operating requirements, preparing appropriate investment reports for review by the Committee, and developing, implementing and monitoring controls over investments.

- The Senior Accountant and the Account Clerk assist the Controller in the report preparation, execution of and recordkeeping for investment transactions.

ETHICS AND CONFLICTS OF INTEREST

VI. ALLOWABLE INVESTMENTS

- All investments shall conform to the California State Government Code Sections 53600 et. Seq. and this investment policy.

- See the list of allowable investments in the matrix provided in Attachment A. It should be noted that any newly developed derivative of an allowable investment that is not specifically mentioned in the policy must be recommended by the City Treasurer for inclusion in the policy and any

amendments to the policy must be submitted to the City Council for approval.

VII. SELECTION OF FINANCIAL INSTITUTIONS AND DEALERS

- The Treasury Committee shall maintain an approved list of primary security dealers and brokers and government-sponsored investment pools. The Committee will review and amend the approved list periodically to ensure that the institutions continue to meet the selection criteria.

- A copy of the City's Investment Policy shall be submitted to all dealers, investment managers and fiscal agents who manage City monies. The City shall obtain an annual certification evidencing that they (1) have reviewed the City's investment policies and objectives, (2) are familiar with the City's investment constraints and (3) have complied with the provisions contained in this policy.

- Purchases of investments shall, whenever practical, be made directly from the issuer, from a member of a federally regulated securities exchange, from a national or state-chartered bank, or from a brokerage firm.

- Only commercial banks and savings and loan associations that demonstrate financial strength and are insured by the federal government may be selected to provide investment services.

- Only primary dealers registered with the Federal Reserve Bank of New York shall be used for Broker/Dealer instrument transactions.

- Other financial institutions shall be selected using the following selection criteria: financial strength, reputation, area of expertise and ability to conform to the City and state-mandated investment parameters.

VIII. SAFEKEEPING AND CUSTODY

- Investments evidenced by physical or book-entry securities shall be secured through third-party custody and safekeeping procedures or under a tripartite agreement (Does not apply to insured C.D.'s, money market funds and the Local Agency Investment Fund).

- All transactions described above shall be executed on a delivery versus payment basis.

- The custodian shall hold assets until the investments mature or the bank receives a request from the City to dispose of the securities.

- Bearer instruments shall be held only through third-party institutions.

INVESTMENT POOLS/MONEY MARKET MUTUAL FUNDS/BANK SAVINGS FUNDS

The City will conduct a thorough investigation prior to investing in the State Local Agency Investment Fund (LAIF), the Los Angeles County Pool Investment Fund (LACPIF) and/or any money market mutual fund. Annually, LAIF, LACPIF and all mutual funds will be required to respond to an investment pool questionnaire to ensure that the criteria as qualified investment vehicles for the City remain unchanged.

IX. COLLATERALIZATION

Certificates of Deposits (CD) - The City shall require any commercial bank or savings and loan association to deposit eligible securities with an Agent of a Depository approved by the Department of State Banking to secure any uninsured portion of a non-negotiable certificate of deposit:

- The value of eligible securities as defined pursuant to Government Code Section 53651, pledged against a certificate of deposit shall be equal to 150% of the face value of the CD if the securities are classified as mortgages and 110% of the face value of the CD for all other classes of security.

- Repurchase Agreements - The City requires that repurchase agreements shall be collateralized by securities authorized by this policy.

- A master repurchase agreement is required for all repurchases.

- The market value of securities which collateralize the repurchase agreement shall be valued at 102% of the funds borrowed against those securities, plus a margin. This margin shall be related to the risk inherent in the underlying securities and shall vary depending upon type of collateral and maturity dates.

- Financial Institutions shall mark the value of the collateral to market monthly and increase or decrease the collateral to satisfy the ratio requirement described above.

X. MATURITY

- The City shall not make any new investments in instruments with stated remaining maturities that exceed the terms specified in Attachment A ("Allowable Investments") at the time of purchase. Overall, all investments will be followed the City's Investment Policy.

- Maturities of investment instruments in the portfolio shall be staggered as much as practical and shall be consistent with projected cash requirements.

XI. LIQUIDITY

- All forecasted operating requirements shall be satisfied by maintaining an adequate level of liquidity in the portfolio.

- Maturities shall be selected to mature prior to or match the timing of the City's projected cash needs.

- The marketability of a security shall be an important criterion in selecting an investment.

- A liquidity base equal to the forecasted cash needs for one-hundred and eighty (180) days should be maintained whenever practical.

XII. DIVERSIFICATION

- Within the parameters established by Section Ill., Investment Selection Criteria, and Section VI., Allowable Investments, investments should be diversified by security type and institution.

XIII. COMPETITIVE BIDDING

- The purchase or sale of securities should be made on the basis of competitive bids. A minimum of three bids, from a list of eligible dealers and/or banks should be obtained and documented. Exceptions to this policy may be granted by two (2) members of The Committee when competitive bids are not practical. Reasons for granting exceptions to the competitive bid process should be stated.

XIV. REPORTING

- The Treasurer shall report to the City Council on a monthly and annual basis.

- The monthly investment report submitted to the City Council will contain the following:

  - An investment inventory including types and amounts of investments, issuing financial institutions and maturities

  - Average maturity of the portfolio

  - Average total yield to maturity of the portfolio

  - Current market value of investments with maturities of more than 12 months

  - A statement indicating that the City can meet its expenditure requirements for the upcoming 180 days

  - A statement indicating that the portfolio complies with the City's Investment Policy

  - Percent of portfolio invested by type of instrument

  - Comparison of portfolio performance to the average yield rate for the three-month treasury bill

  - Written explanations for any variances to policy

- On a quarterly basis, a description of funds, investments, or programs that are under the management of contracted parties, including current market values as

of the date of the report and source of valuation, shall be submitted to the City Council.

- The Annual Investment Report shall provide a summary of the year's investment activities and shall include a proposed statement of Investment Policy to be approved by the City Council during the first sixty days of the fiscal year.

XV. PRUDENCE

- The City of Monterey Park will follow the prudent investor standard of Government Code Section 53600.3. Prudent Investor Standard: Investments shall be made with judgment and care – under circumstances then prevailing, which persons of prudence, discretion and intelligence exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived.

- Investment officers acting in accordance with this Investment Policy and written procedures and exercising due diligence shall be relieved of personal responsibility and liability for an individual security's credit risk or market price changes, provided that deviations from expectations are reported in a timely and accurate fashion as required by this Policy and procedures and appropriate action is taken to control adverse developments.

XVI. INTERNAL CONTROLS

- Internal controls shall be established and documented in writing. The controls shall be designed to prevent losses of public funds arising from fraud, employee error, and misrepresentation by third parties, or imprudent actions by employees and officers of the City. Controls deemed most important include: separation of duties, separation of transaction authority from accounting and recordkeeping, custodial safekeeping, clear delegation of authority, specific limitations regarding securities losses and remedial action, control over wire transfers such as dual authorization, minimizing the number of authorized investment officials, documentation of transactions and strategies, and a code of ethics standard.

- The City's investment procedures Manual shall establish and maintain an internal control structure designed to ensure that the assets managed under the scope of the Policy are protected from loss, theft, or misuse. The internal control structure shall provide reasonable assurance that these objectives are met.

- As part of the City's annual audit, the City's external auditor shall review the City's investment activities to ensure compliance with the Investment Policy.

XVII. INVESTMENT GUIDELINES POLICY ADOPTION

- At the direction of the Treasurer, the City's Investment Policy shall be reviewed and updated annually by the Committee to reflect changes in the California State Codes, general market conditions or to provide further clarification of the City's policies. The Investment Policy shall be adopted by the City Council annually.

Glossary of Terminology

Allowable Investments: A list of permitted investments by investment type maintained as a component to an investment policy. Allowable investment listings will generally include descriptions or parameters for investment diversification ratios, terms of maturity, and quality ratings.

Bankers' Acceptance (BA): A draft or bill of exchange accepted by a bank or trust company. The accepting institutions guarantee payment of the bill, as well as the issuer.

Broker: A broker brings buyers and sellers together for a commission.

Certificate of Deposit (CD): A time deposit with a specific maturity evidenced by a certificate. Large-denomination CD's are typically negotiable.

Collateral: Securities, evidence of deposit, or other property which a borrower pledges to secure repayment of a loan. Also refers to securities pledged by a bank to secure deposits of public monies.

Collateralized Bank Deposits: Non-negotiable Certificate of Deposit issued by a nationally or state - charted bank or association or a State - licensed branch or a foreign bank (insured by the federal government); Bank Collateralized Savings.

Commercial Paper (CP): An unsecured short-term promissory note issued by corporations, with maturities ranging from 2 to 270 days.

Coupon: (a) The annual rate of interest that a bond's issuer promises to pay the bondholder on a bond's face value. (b) A certificate attached to a bond evidencing interest due on a payment.

Credit Risk: The risk of loss of principal and interest due to failure of the security issuer or broker.

Dealer: A dealer, as opposed to a broker, acts as a principal in all transactions, buying and selling for his own.

Debenture: A bond secured only by the general credit of the issuer.

Delivery versus Payment: There are two methods of delivery of securities: delivery versus payment and delivery versus receipt. Delivery versus payment is delivery of

securities with an exchange of money for the securities. Delivery versus receipt is delivery of securities with an exchange of a signed receipt for the securities.

Derivatives: (1) Financial instruments whose return profile is linked to, or derived from, the movement of one or more underlying index or security, and may include a leveraging factor, or (2) financial contracts based upon notional amounts whose value is derived from an underlying index or security (interest rates, foreign exchange rates, equities or commodities).

Discount: The difference between the cost price of a security and its maturity when quoted at lower than face value. A security selling below original offering price shortly after sale also is considered to be at a discount.

Discount Securities: Non-interest bearing money market instruments that are issued a discount and redeemed at maturity for full face value, e.g. U.S. Treasury Bills.

Diversification: Dividing investment funds among a variety of securities offering independent returns.

Federal Credit Agencies: Agencies of the Federal government set up to supply credit to various classes of institutions and individuals, e.g., S&L's, small business firms, students, farmers, farm cooperatives, and exporters.

Federal Deposit Insurance Corporation (FDIC): A federal agency that insures bank deposits, currently up to $ 250,000 per deposit for anyone issuer with maturity on or before 12/31/2013.

Liquidity: A liquid asset is one that can be converted easily and rapidly into cash without a substantial loss of value. In the money market, a security is said to be liquid if the spread between bid and asked prices is narrow and reasonable size can be done at those quotes.

Los Angeles County Pooled Investment Fund (LACPIF): California Government Code Section 53684 allows local agencies in the County of Los Angeles to deposit excess funds in the Los Angeles County Treasury Pool for the purpose of investment by the Treasurer and Tax Collector of the County.

Local Agency Investment Pool (LAIF): The aggregate of all funds from California political subdivisions that are placed in the custody of the State Treasurer for investment and reinvestment.

Market Risk: The risk that the market value and interest earnings of an investment or a portfolio will fall due to changes in general interest rates.

Market Value: The price at which a security is trading and could presumably be purchased or sold.

Master Repurchase Agreement: A written contract covering all future transactions between the parties to repurchase--reverse repurchase agreements that establish each party's rights in the transactions. A master agreement will often specify, among other things, the right of the buyer lender to **liquidate** the underlying securities in the event of default by the seller-borrower.

Maturity: The date upon which the principal or stated value of an investment becomes due and payable.

Money Market: The market in which short-term debt instruments (bills, commercial paper, bankers' acceptances, etc.) are issued and traded.

Portfolio: Collection of securities held by an investor.

Primary Dealer: A group of government securities dealers who submit daily reports of market activity and positions and monthly financial statements to the Federal Reserve Bank of New York and are subject to its informal oversight. Primary dealers include Securities and Exchange Commission (SEC)-registered securities broker-dealers, banks, and a few unregulated firms.

Prudent Person Rule: An investment standard. In some states the law requires that a fiduciary, such as a trustee, may invest money only in a list of securities selected by the custody state-- the so called legal list. In other states the trustee may invest in a security if it is one which would be bought by a prudent person of discretion and intelligence who is seeking a reasonable income and preservation of capital.

Qualified Public Depositories: A financial institution which does not claim exemption from the payment of any sales or compensating use or ad valorem taxes under the laws of this state, which has segregated for the benefit of the commission eligible collateral having a value of not less than its maximum liability and which has been approved by the Public Deposit Protection Commission to hold public deposits.

Rate of Return: The yield obtainable on a security based on its purchase price or its current market price. Or income earned on an investment, expressed as a percentage of the cost of that investment.

Repurchase Agreement (RP or REPO): A holder of securities sells these securities to an investor with an agreement to repurchase them at a fixed price on a fixed date. The security "buyer" in effect lends the "seller" money for the period of the agreement, and the terms of the agreement are structured to compensate him for this. Dealers use RP extensively to finance their positions. Exception: When the Fed is said to be doing RP, it is lending money that is, increasing bank reserves.

Safekeeping: A service to customers rendered by banks for a fee whereby securities and valuables of all types and descriptions are held in the bank's vaults for protection.

Secondary Market: A market made for the purchase and sale of outstanding issues following the initial distribution.

Securities & Exchange Commission: Agency created by Congress to protect investors in securities transactions by administering securities legislation.

See Rule 15C3-1: See Uniform Net Capital Rule.

Treasury Bills: A non-interest bearing discount security issued by the U.S. Treasury to finance the national debt. Most bills are issued to mature in three months, six months, or one year.

Treasury Bonds: Long-term coupon-bearing U.S. Treasury securities issued as direct obligations of the U.S. Government and having initial maturities of more than 10 years.

Treasury Notes: Medium-term coupon-bearing U.S. Treasury securities issued as direct obligations of the U.S. Government and having initial maturities from two to 10 years.

Uniform Net Capital Rule: Securities and Exchange Commission requirement that member firms as well as non-member broker-dealers in securities maintain a maximum ratio of indebtedness to liquid capital of 15:1; also called net capital rule and net capital ratio. Indebtedness covers all money owed to a firm, including margin loans and commitments to purchase securities, one reason new public issues are spread among members of underwriting syndicates. Liquid capital includes cash and assets easily converted into cash.

Weighted Average Rate of Return: Rate of return calculated based on interest earnings and the length of actual holding for each individual security.

Yield: The rate of annual income return on an investment, expressed as a percentage. (a) INCOME YIELD is obtained by dividing the current dollar income by the current market price for the security. (b) NET YIELD OR YIELD TO MATURITY is the current income yield minus any premium above par or plus any discount from par in purchase price, with the adjustment spread over the period from the date of purchase to the date of maturity of the bond.

Zero Coupons: Securities that have no periodic interest payments and are sold at a deep discount from face value. For the purposes of the Monterey Park Investment Policy, zero coupons reference U.S Treasury issues.

CITY OF MONTEREY PARK
FINANCIAL INSTITUTIONS

Section I – Certificates of Deposit and Collateralized Bank Deposits

All California State or nationally chartered banks and savings and loans covered by the Federal Deposit Insurance Corporation.

Section II – Government Investment Pools

Local Agency Investment Fund (State of California) Investment Pools (LAIF)
Los Angeles County Pooled Investment Fund (LACPIF)

Section III - Primary Security Dealers

Name	Address
Bank of the West/BNP Paribas (City's Servicing Bank)	300 S. Grand Avenue, 7th Floor Los Angeles, CA 90017 (213) 972-0606
Bank of America Securities Inc.	300 S. Grand Avenue, 19th Floor Los Angeles, CA 90071
Morgan Stanley	245 Lytton Avenue, #200 Palo Alto, CA 94301 (800) 755-8081
Wells Fargo Bank, N.A	333 S. Spring Street Los Angeles, CA 90013 (213) 972-0828
Merrill Lynch Government Securities, Inc.	350 S. Grand Avenue, 28th Fl. Los Angeles, CA 90071 (213) 236-2047

ATTACHMENT A

ALLOWABLE INVESTMENTS

Investment Types	CITY AUTHORIZED Maximum % of Portfolio	CITY AUTHORIZED Maximum Maturity	CITY AUTHORIZED Minimum Quality	STATE CODE Maximum % of Portfolio	STATE CODE Maximum Maturity	STATE CODE Minimum Quality
Local Agency Bonds Bonds issued by the City, including bonds payable solely out of revenues from a revenue producing property owned, controlled, or operated by the City or authority of the City	None	5 years	None	None	5 years	None
U.S. Treasury Obligations · United States Treasury Notes, Bonds, Bills or other certificates of indebtedness backed by the US government · U.S. Treasury Zero Coupons	None	5 years	None	None	5 years	None
State Obligations - CA and Others Bonds, notes or other evidence of indebtedness of any local agency within this state	None	5 years	None	None	5 years	None
U.S. Agency Obligations Discount notes or notes issued by Agencies of the Federal Government	None	5 years	None	None	5 years	None
Collateralized Bank Deposits Non - negotiable Certificate of Deposit issued by a nationally or state - charted bank or association or a State - licensed branch or a foreign bank (insured by the federal government); Bank Collateralized Savings.	None	5 years	None	None	5 years	None
Medium-term notes issued by corporations	30%	5 years	"A" or better ranking by nationally recognized rating service U.S. domiciled corporations or U.S. licensed depository	30%	5 years	"A" or better ranking by nationally recognized rating service U.S. domiciled corporations or U.S. licensed depository
Local Agency Investment Fund (LAIF) State of California Local Agency Investment Fund (LAIF) or other Local Government Investment Pools established by public entities	None	Not applicable	None	None	Not applicable	None

ALLOWABLE INVESTMENTS

	CITY AUTHORIZED			STATE CODE		
Investment Types	Maximum % of Portfolio	Maximum Maturity	Minimum Quality	Maximum % of Portfolio	Maximum Maturity	Minimum Quality
Los Angeles County Pooled Investment Fund California Government Code Section 53684 allows local agencies in the County of Los Angeles to deposit excess funds in the Los Angeles County Treasury Pool for the purpose of investment by the Treasurer and Tax Collector of the County	10% of LACPIF pool balance	None	None	Not applicable	None	None
Mutual Funds and Money Market Mutual Funds	20%	Not applicable	Highest ranking by not less 2 largest rating services Have an SEC registered investment advisor with more than 5 years' experience Assets under management greater than $500 million	20%	Not applicable	Highest ranking by not less 2 largest rating services Have an SEC registered investment advisor with more than 5 years' experience Assets under management greater than $500 million
"Banker's acceptance"	40% of portfolio (no more than 30% in any one commercial bank)	180 days	None	40% of portfolio (no more than 30% in any one commercial bank)	180 days	None
Commercial Paper	40% of portfolio for counties, cit and other local agencies (No more than 10% of agency's money in the commerical paper of any one corporate issuer)	270 days	"A" or higher rating for issuer's debt within U.S. corporations and have assets in excess of $500 million.	40% of portfolio for counties, c and other local agencies (No more than 10% of agency's money in the commerical paper of any one corporate issuer)	270 days	"A" or higher rating for issuer's debt within U.S. corporations and have assets in excess of $500 millic
Repurchase Agreements	None	1 year	None	None	1 year	None
Negotiable Certificates of Deposit Negotiable Certificates of Deposit issued by a nationally or State - charted Bank, a federal association, or a State - licensed branch of a foreign - owned bank (Insured by the federal government).	30%	5 years	None	30%	5 years	None

ALLOWABLE INVESTMENTS

	CITY AUTHORIZED			STATE CODE		
Investment Types	Maximum % of Portfolio	Maximum Maturity	Minimum Quality	Maximum % of Portfolio	Maximum Maturity	Minimum Quality
Financial Futures and Financial option contracts.	None	5 years	None	None	5 years	None
Reverse Repurchase Agreements and Securities Lending Agreements	20% of the base value of the portfolio	92 days	None	20% of the base value of the portfolio	92 days	None
Mortgage Pass-Through Securities · Mortgage-backed securities '(Corporate issued)	Not specified			Not specified		
· Diversified Management Companies	20%	5 years	"A" or better ranking by nationally recognized rating service	20%	5 years	"A" or better ranking by nationally recognized rating service

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-E.**

TO: The Honorable Mayor and City Council

FROM: Ron Bow, Director of Public Works/Assistant City Manager

SUBJECT: Irrigation System Improvements at Sunnyslope and George Elder Parks – Award of Contract

RECOMMENDATION:

It is recommended that the City Council:

1. Waive a minor irregularity and award the contract for the Irrigation System Improvements at Sunnyslope and George Elder Parks to the lowest responsible bidder, Martinez Landscape, Co., of Sylmar, in the amount of $463,651.00;
2. Authorize the Public Works Director to approve construction change orders up to $46,365 (up to 10% of construction contract amount) for this project;
3. Authorize the City Manager, to execute a contract, in a form approved by the City Attorney, on behalf of the City; and
4. Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

On April 2, 2014, the City Council approved solicitation of bids for the Irrigation System Improvements at Sunnyslope and George Elder Parks. Bid opening occurred on July 10, 2014. Following the bid opening, Martinez Landscape, Co., was determined to be the lowest responsible bidder with an amount of $463,651. The Engineer's estimate for this project is $490,000.

BACKGROUND:

The project involves the complete replacement of the irrigation systems at Sunnyslope and George Elder Parks. In addition, each park will receive new landscape plantings and turf reseeding.

On July 10, 2014, staff received a total of five bids. A summary of the bids is as follows:

RANK	BIDDER	BID AMOUNT
1	MARTINEZ LANDSCAPE CO.	$463,651.00
2	MG ENTERPRISES	$509,208.00

3	GREEN GIANT LANDSCAPE	$510,738.87
4	LOS ANGELES ENGINEERING	$600,000.00
5	MALIBU PACIFIC TENNIS COURTS	$1,288,503.00

The bid submitted by Martinez Landscape Co. is the lowest responsive bid from a responsible bidder. There was a minor mathematical error in Martinez Landscape's bid resulting in an adjustment of their total bid amount from $463,781 to $463,651. Since this is, in light of the overall contract amounts, a *de minimis* amount and does not otherwise give Martinez Landscape, Co. an economic advantage, staff recommends that the City Council waive this minor irregularity.

Martinez Landscape's license was verified with the California State Contractor's License Board to be current, active and in good standing. Staff also checked the contractor's references and received positive feedback. Martinez Landscape has performed landscape and irrigation work for numerous public agencies including the City of Hawthorne, Los Angeles County Department of Public Works, and San Gabriel Unified School District.

CEQA (California Environmental Quality Act):

As a minor alteration to an existing public facility, this project is a Class 1 Categorical Exempt project pursuant to the California Environmental Quality Act (CEQA).

FISCAL IMPACT:

This project is funded with General Fund Capital Improvement Reserves (Account No. 0010-5002-96048). Adding a 10% contingency for any unforeseen changes, the estimated total project cost is $510,016.00.

Respectfully submitted,

Ron Bow by CG

Ron Bow
Director of Public Works/
Assistant City Manager

Prepared by:

Rey Alfonso by CG

Rey Alfonso
Assistant City Engineer

Approved By:

Paul L. Talbot
City Manager

Reviewed by:

Karl H. Berger
Assistant City Attorney

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-F.**

TO: The Honorable Mayor and City Council

FROM: Ron Bow, Director of Public Works/Assistant City Manager

SUBJECT: Irrigation System Improvements at Cascades and Highlands Parks – Award of Contract

RECOMMENDATION:

It is recommended that the City Council:

1. Award the contract for the Irrigation System Improvements at Cascades and Highlands Parks to the lowest responsible bidder, Green Giant Landscape, Inc. of La Habra, in the amount of $385,826.24;
2. Authorize the Public Works Director to approve construction change orders up to $38,583 (up to 10% of construction contract amount) for this project;
3. Authorize the City Manager, to execute a contract, in a form approved by the City Attorney, on behalf of the City; and
4. Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

On April 2, 2014, the City Council approved solicitation of bids for the Irrigation System Improvements at Cascades and Highlands Parks. Bid opening occurred on July 10, 2014. Following the bid opening, Green Giant Landscape Inc. was determined to be the lowest responsible bidder with a proposal of $385,826.24. The Engineer's estimate for this project is $410,000.00.

BACKGROUND:

The project involves the complete replacement of the irrigation systems at Cascades and Highlands Parks. In addition, each park will receive new landscape plantings and turf reseeding.

On July 10, 2014, staff received a total of eight bids. A summary of the bids is as follows:

RANK	BIDDER	BID AMOUNT
1	GREEN GIANT LANDSCAPE, INC.	$385,826.24

2	YAKAR	$388,598.00
3	MG ENTERPRISES	$433,334.00
4	MARTINEZ LANDSCAPE	$465,537.25
5	LANDSCAPE SUPPORT SERVICES	$478,490.00
6	LOS ANGELES ENGINEERING	$490,000.00
7	FS CONSTRUCTION	$666,311.50
8	MALIBU PACIFIC TENNIS COURTS	$870,897.50

The bid submitted by Green Giant Landscape, Inc. is the lowest responsive bid from a responsible bidder. Green Giant Landscape's license was verified with the California State Contractor's License Board to be current, active and in good standing. Staff also checked the contractor's references and received positive feedback. Green Giant Landscape has performed landscape and irrigation work for a number of public agencies including the City of Long Beach and Los Angeles County Department of Public Works.

CEQA (California Environmental Quality Act):

As a minor alteration to an existing public facility, this project is a Class 1 Categorical Exempt project pursuant to the California Environmental Quality Act (CEQA).

FISCAL IMPACT:

This project is funded with General Fund Capital Improvement Reserves (Account No. 0010-5002-96048). Adding a 10% contingency for any unforeseen changes, the estimated total project cost is $424,409.24.

Respectfully submitted,

Ron Bow
Director of Public Works/
Assistant City Manager

Prepared by:

Rey Alfonso
Assistant City Engineer

Approved By:

Paul L. Talbot
City Manager

Reviewed by:

Karl H. Berger
Assistant City Attorney

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-G.**

TO: The Honorable Mayor and City Council

FROM: Ron Bow, Director of Public Works/Assistant City Manager

SUBJECT: Award Used Oil Asian Marketing Campaign Contract to John L. Hunter and Associates for a marketing campaign providing education regarding used oil recycling and disposal

RECOMMENDATION:

It is recommended that the City Council consider:

1. Awarding the Used Oil Asian Marketing Campaign contract to John L. Hunter and Associates;
2. Authorize the City Manager to execute an agreement, in a form approved by the City Attorney, with John L. Hunter and Associates; and
3. Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

In April 2014, CalRecycle awarded the City of Monterey Park a Used Oil Competitive grant in the amount of $360,750 to launch a media campaign that focuses on the Asian community. The City's storm water consultant, John L. Hunter and Associates, prepared and submitted the application for the grant funding on behalf of the City. Staff requests that the City Council award a contract to John L. Hunter & Associates to implement the Used Oil Asian Marketing Campaign.

BACKGROUND:

At its February 5, 2014 meeting, City Council adopted a resolution authorizing the City to submit a grant application to CalRecycle to launch a regional marketing campaign to recycle used oil that focuses on the Asian community. The City of Monterey Park is the lead agency for this project that includes the Cities of Rosemead, San Gabriel, South Pasadena, Temple City and Walnut which have significant Asian populations.

Staff commissioned the City's stormwater consultant, John L. Hunter and Associates, to design a marketing campaign that would reach out to an audience that has been untapped by mainstream media due to language barriers. The consultant's staff prepared and submitted the application on behalf of the City and was successful in securing award of funding by CalRecycle.

Staff released a request for proposal (RFP) to five companies that provide consulting services for community outreach and education specifically in the field of used oil and recycling programs. These five companies currently serve the Southern California area. Of the five, only one company submitted a proposal. The proposal was $2,623 higher than John L. Hunter's proposal/application to CalRecycle of $34, 200.

Through their previous outreach campaigns for many other San Gabriel Valley cities, the consultant's staff developed working relationships with Chinese television, radio and newspapers. The Used Oil competitive grant funds would allow the consultant to

expand the City's current used oil and stormwater program that includes bi-annual publications in Chinese newspapers. The new grant funds would pay for television productions that are too expensive for any one city to purchase on its own. Television coverage would span the San Gabriel Valley region and demonstrate a cost effective measure to reach the Asian audience.

FISCAL IMPACT:
The Used Oil Asian Marketing Campaign is fully funded by the CalRecycle grant of $360,750. Of this amount, $5,377 will be reimbursed to the City for staff time to administer the project. The contract with John L. Hunter & Associates is $355,373 of which $301,423 will go toward media costs: television, radio and newspaper production and publications and $19,750 toward an educational booklet. The consultant's staff time to implement the program is $34,200.

City Staff Time		$5,377
	John Hunter Staff Time	$34,200
	Media Campaign	$301,423
	Educational Booklet	$19,750
	Sub-total (John Hunter)	$355,373
Total Grant		$360,750

Attachment 2, Budget, of the agreement provides details of the costs associated with the project. No local match is required.

Respectfully submitted by:

Ron Bow
Director of Public Works/
Assistant City Manager

Prepared by:

Amy Ho
Principal Management Analyst

Approved by:

Paul L. Talbot
City Manager

Reviewed by:

Karl H. Berger
Assistant City Attorney

ATTACHMENTS:
1. Consultant Agreement
2. Budget

ATTACHMENT 1
Consultant Agreement

PROFESSIONAL SERVICES AGREEMENT
BETWEEN
THE CITY OF MONTEREY PARK AND
JOHN L. HUNTER AND ASSOCIATES

This AGREEMENT is entered into this 16th day of July 1, 2014, by and between the CITY OF MONTEREY PARK, a municipal corporation and general law city ("CITY") and John L. Hunter and Associates, Inc., ("CONSULTANT").

1. **CONSIDERATION**.

A. As partial consideration, CONSULTANT agrees to perform the work listed in the SCOPE OF SERVICES, below;

B. As additional consideration, CONSULTANT and CITY agree to abide by the terms and conditions contained in this Agreement;

C. As additional consideration, CITY agrees to pay CONSULTANT a sum not to exceed Three Hundred Fifty-Five Thousand, Three Hundred Seventy-Three Dollars ($355,373.00) for CONSULTANT's services. CITY may modify this amount as set forth below. Unless otherwise specified by written amendment to this Agreement, CITY will pay this sum as specified in the attached Exhibit "A," which is incorporated by reference.

2. **SCOPE OF SERVICES**.

A. CONSULTANT will perform services listed in the attached Exhibit "B," which is incorporated by reference.

B. CONSULTANT will, in a professional manner, furnish all of the labor, technical, administrative, professional and other personnel, all supplies and materials, equipment, printing, vehicles, transportation, office space and facilities, and all tests, testing and analyses, calculation, and all other means whatsoever, except as herein otherwise expressly specified to be furnished by CITY, necessary or proper to perform and complete the work and provide the professional services required of CONSULTANT by this Agreement.

3. **PERFORMANCE STANDARDS**. While performing this Agreement, CONSULTANT will use the appropriate generally accepted professional standards of practice existing at the time of performance utilized by persons engaged in providing similar services. CITY will continuously monitor CONSULTANT's services. CITY will notify CONSULTANT of any deficiencies and CONSULTANT will have fifteen (15) days after such notification to cure any shortcomings to CITY's satisfaction. Costs associated with curing the deficiencies will be borne by CONSULTANT.

4. **PAYMENTS**. For CITY to pay CONSULTANT as specified by this Agreement, CONSULTANT must submit a detailed invoice to CITY which lists the hours worked and hourly rates for each personnel category and reimbursable costs (all as set forth in Exhibit "A") the tasks performed, the percentage of the task completed during the billing period, the cumulative percentage completed for each task, the total cost of that work during the preceding billing month and a cumulative cash flow curve showing projected and actual expenditures versus time to date.

5. **NON-APPROPRIATION OF FUNDS**. Payments due and payable to CONSULTANT for current services are within the current budget and within an available, unexhausted and unencumbered appropriation of the CITY. In the event the CITY has not appropriated sufficient funds for payment of CONSULTANT services beyond the current fiscal year, this Agreement will cover only those costs incurred up to the conclusion of the current fiscal year.

6. **ADDITIONAL WORK**.

A. CITY's city manager ("Manager") may determine, at the Manager's sole discretion, that CONSULTANT must perform additional work ("Additional Work") to complete the Scope of Work. If Additional Work is needed, the Manager will give written authorization to CONSULTANT to perform such Additional Work.

B. If CONSULTANT believes Additional Work is needed to complete the Scope of Work, CONSULTANT will provide the Manager with written notification that contains a specific description of the proposed Additional Work, reasons for such Additional Work, and a detailed proposal regarding cost.

C. All Additional Work will be subject to all other terms and provisions of this Agreement.

7. **FAMILIARITY WITH WORK**.

A. By executing this Agreement, CONSULTANT agrees that it has:

i. Carefully investigated and considered the scope of services to be performed;

ii. Carefully considered how the services should be performed; and

iii. Understands the facilities, difficulties, and restrictions attending performance of the services under this Agreement.

B. If services involve work upon any site, CONSULTANT agrees that CONSULTANT has or will investigate the site and is or will be fully acquainted with the conditions there existing, before commencing the services hereunder. Should CONSULTANT discover any latent or unknown conditions that may

materially affect the performance of the services, CONSULTANT will immediately inform CITY of such fact and will not proceed except at CONSULTANT's own risk until written instructions are received from CITY.

8. **TERM**. The term of this Agreement will be from 07/16/2014 to 07/31/2016. Unless otherwise determined by written amendment between the parties, this Agreement will terminate in the following instances:

A. Completion of the work specified in Exhibit "A";

B. Termination as stated in Section **16**.

9. **TIME FOR PERFORMANCE**.

A. CONSULTANT will not perform any work under this Agreement until:

i. CONSULTANT furnishes proof of insurance as required under Section 23 of this Agreement; and

ii. CITY gives CONSULTANT a written notice to proceed.

B. Should CONSULTANT begin work on any phase in advance of receiving written authorization to proceed, any such professional services are at CONSULTANT's own risk.

10. **TIME EXTENSIONS**. Should CONSULTANT be delayed by causes beyond CONSULTANT's control, CITY may grant a time extension for the completion of the contracted services. If delay occurs, CONSULTANT must notify the Manager within forty-eight hours (48 hours), in writing, of the cause and the extent of the delay and how such delay interferes with the Agreement's schedule. The Manager will extend the completion time, when appropriate, for the completion of the contracted services.

11. **CONSISTENCY**. In interpreting this Agreement and resolving any ambiguities, the main body of this Agreement takes precedence over the attached Exhibits; this Agreement supersedes any conflicting provisions. Any inconsistency between the Exhibits will be resolved in the order in which the Exhibits appear below:

A. Exhibit A: Workplan; and

B. Exhibit B: Budget;

12. **CHANGES**. CITY may order changes in the services within the general scope of this Agreement, consisting of additions, deletions, or other revisions, and the contract sum and the contract time will be adjusted accordingly. All such changes must be authorized in writing, executed by CONSULTANT and CITY. The cost or credit to CITY resulting from changes in the services will be determined in accordance with written agreement between the parties.

13. **TAXPAYER IDENTIFICATION NUMBER**. CONSULTANT will provide CITY with a Taxpayer Identification Number.

14. **PERMITS AND LICENSES**. CONSULTANT, at its sole expense, will obtain and maintain during the term of this Agreement, all necessary permits, licenses, and certificates that may be required in connection with the performance of services under this Agreement.

15. **WAIVER**. CITY's review or acceptance of, or payment for, work product prepared by CONSULTANT under this Agreement will not be construed to operate as a waiver of any rights CITY may have under this Agreement or of any cause of action arising from CONSULTANT's performance. A waiver by CITY of any breach of any term, covenant, or condition contained in this Agreement will not be deemed to be a waiver of any subsequent breach of the same or any other term, covenant, or condition contained in this Agreement, whether of the same or different character.

16. **TERMINATION**.

A. Except as otherwise provided, CITY may terminate this Agreement at any time with or without cause.

B. CONSULTANT may terminate this Agreement at any time with CITY's mutual consent. Notice will be in writing at least thirty (30) days before the effective termination date.

C. Upon receiving a termination notice, CONSULTANT will immediately cease performance under this Agreement unless otherwise provided in the termination notice. Except as otherwise provided in the termination notice, any additional work performed by CONSULTANT after receiving a termination notice will be performed at CONSULTANT" own cost; CITY will not be obligated to compensate CONSULTANT for such work.

D. Should termination occur, all finished or unfinished documents, data, studies, surveys, drawings, maps, reports and other materials prepared by CONSULTANT will, at CITY's option, become CITY's property, and CONSULTANT will receive just and equitable compensation for any work satisfactorily completed up to the effective date of notice of termination, not to exceed the total costs under Section 1(C).

E. Should the Agreement be terminated pursuant to this Section, CITY may procure on its own terms services similar to those terminated.

F. By executing this document, CONSULTANT waives any and all claims for damages that might otherwise arise from CITY's termination under this Section.

17. **OWNERSHIP OF DOCUMENTS.** All documents, data, studies, drawings, maps, models, photographs and reports prepared by CONSULTANT under this Agreement are CITY's

property. CONSULTANT may retain copies of said documents and materials as desired, but will deliver all original materials to CITY upon CITY's written notice. CITY agrees that use of CONSULTANT's completed work product, for purposes other than identified in this Agreement, or use of incomplete work product, is at CITY's own risk.

18. **PUBLICATION OF DOCUMENTS.** Except as necessary for performance of service under this Agreement, no copies, sketches, or graphs of materials, including graphic art work, prepared pursuant to this Agreement, will be released by CONSULTANT to any other person or public CITY without CITY's prior written approval. All press releases, including graphic display information to be published in newspapers or magazines, will be approved and distributed solely by CITY, unless otherwise provided by written agreement between the parties.

19. **INDEMNIFICATION.**

A. CONSULTANT agrees to the following:

i. ***Indemnification for Professional Services.*** **CONSULTANT will save harmless and indemnify and at CITY's request reimburse defense costs for CITY and all its officers, volunteers, employees and representatives from and against any and all suits, actions, or claims, of any character whatever, brought for, or on account of, any injuries or damages sustained by any person or property resulting or arising from any negligent or wrongful act, error or omission by CONSULTANT or any of CONSULTANT's officers, agents, employees, or representatives, in the performance of this Agreement, except for such loss or damage arising from CITY's sole negligence or willful misconduct.**

ii. ***Indemnification for other Damages.*** **CONSULTANT indemnifies and holds CITY harmless from and against any claim, action, damages, costs (including, without limitation, attorney's fees), injuries, or liability, arising out of this Agreement, or its performance, except for such loss or damage arising from CITY's sole negligence or willful misconduct. Should CITY be named in any suit, or should any claim be brought against it by suit or otherwise, whether the same be groundless or not, arising out of this Agreement, or its performance, CONSULTANT will defend CITY (at CITY's request and with counsel satisfactory to CITY) and will indemnify CITY for any judgment rendered against it or any sums paid out in settlement or otherwise.**

B. For purposes of this section "CITY" includes CITY's officers, officials, employees, agents, representatives, and certified volunteers.

C. It is expressly understood and agreed that the foregoing provisions will survive termination of this Agreement.

D. The requirements as to the types and limits of insurance coverage to be maintained by CONSULTANT as required by Section 23, and any approval of said insurance by CITY, are not intended to and will not in any manner limit or qualify the liabilities and obligations otherwise assumed by CONSULTANT pursuant to this Agreement, including, without limitation, to the provisions concerning indemnification.

20. **ASSIGNABILITY**. This Agreement is for CONSULTANT's professional services. CONSULTANT's attempts to assign the benefits or burdens of this Agreement without CITY's written approval are prohibited and will be null and void.

21. **INDEPENDENT CONTRACTOR.** CITY and CONSULTANT agree that CONSULTANT will act as an independent contractor and will have control of all work and the manner in which is it performed. CONSULTANT will be free to contract for similar service to be performed for other employers while under contract with CITY. CONSULTANT is not an agent or employee of CITY and is not entitled to participate in any pension plan, insurance, bonus or similar benefits CITY provides for its employees. Any provision in this Agreement that may appear to give CITY the right to direct CONSULTANT as to the details of doing the work or to exercise a measure of control over the work means that CONSULTANT will follow the direction of the CITY as to end results of the work only.

22. **AUDIT OF RECORDS.** CONSULTANT will maintain full and accurate records with respect to all services and matters covered under this Agreement. CITY will have free access at all reasonable times to such records, and the right to examine and audit the same and to make transcript therefrom, and to inspect all program data, documents, proceedings and activities. CONSULTANT will retain such financial and program service records for at least three (3) years after termination or final payment under this Agreement.

23. **INSURANCE**.

A. Before commencing performance under this Agreement, and at all other times this Agreement is effective, CONSULTANT will procure and maintain the following types of insurance with coverage limits complying, at a minimum, with the limits set forth below:

Type of Insurance	Limits
Commercial general liability:	$1,000,000
Professional Liability	$1,000,000
Business automobile liability	$1,000,000
Workers compensation	Statutory requirement

B. Commercial general liability insurance will meet or exceed the requirements of the most recent ISO-CGL Form. The amount of insurance set forth above will be a combined single limit per occurrence for bodily injury, personal injury, and property damage for the policy coverage. Liability policies will be endorsed to name CITY, its officials, and employees as "additional insureds" under said insurance coverage and to state that such insurance will be deemed "primary" such that any other insurance that may be carried by CITY will be excess thereto. Such endorsement must be reflected on ISO Form No. CG 20 10 11 85 or 88, or equivalent. Such insurance will be on an "occurrence," not a "claims made," basis and will not be cancelable or subject to reduction except upon thirty (30) days prior written notice to CITY.

C. Professional liability coverage will be on an "occurrence basis" if such coverage is available, or on a "claims made" basis if not available. When coverage is provided on a "claims made basis," CONSULTANT will continue to renew the insurance for a period of three (3) years after this Agreement expires or is terminated. Such insurance will have the same coverage and limits as the policy that was in effect during the term of this Agreement, and will cover CONSULTANT for all claims made by CITY arising out of any errors or omissions of CONSULTANT, or its officers, employees or agents during the time this Agreement was in effect.

D. Automobile coverage will be written on ISO Business Auto Coverage Form CA 00 01 06 92, including symbol 1 (Any Auto).

E. CONSULTANT will furnish to CITY duly authenticated Certificates of Insurance evidencing maintenance of the insurance required under this Agreement and such other evidence of insurance or copies of policies as may be reasonably required by CITY from time to time. Insurance must be placed with insurers with a current A.M. Best Company Rating equivalent to at least a Rating of "A:VII."

F. Should CONSULTANT, for any reason, fail to obtain and maintain the insurance required by this Agreement, CITY may obtain such coverage at CONSULTANT's expense and deduct the cost of such insurance from payments due to CONSULTANT under this Agreement or terminate pursuant to Section 16.

24. **USE OF SUBCONTRACTORS.** CONSULTANT must obtain CITY's prior written approval to use any consultants while performing any portion of this Agreement. Such approval must approve of the proposed consultant and the terms of compensation.

25. **INCIDENTAL TASKS.** CONSULTANT will meet with CITY monthly to provide the status on the project, which will include a schedule update and a short narrative description of progress during the past month for each major task, a description of the work remaining and a description of the work to be done before the next schedule update.

26. **NOTICES**. All communications to either party by the other party will be deemed made when received by such party at its respective name and address as follows:

If to CONSULTANT:
John L. Hunter & Associates, Inc.
Attn: Anne Chang
6131 Orangethorpe Avenue, Suite 350
Buena Park, CA 90620

If to CITY:
Ron Bow, Dir of Public Works/
Asst City Manager
City of Monterey Park
320 W Newmark Avenue
Monterey Park, CA 91754

Any such written communications by mail will be conclusively deemed to have been received by the addressee upon deposit thereof in the United States Mail, postage prepaid and properly addressed as noted above. In all other instances, notices will be deemed given at the time of actual delivery. Changes may be made in the names or addresses of persons to whom notices are to be given by giving notice in the manner prescribed in this paragraph.

27. **CONFLICT OF INTEREST**. CONSULTANT will comply with all conflict of interest laws and regulations including, without limitation, CITY's conflict of interest regulations.

28. **SOLICITATION**. CONSULTANT maintains and warrants that it has not employed nor retained any company or person, other than CONSULTANT's bona fide employee, to solicit or secure this Agreement. Further, CONSULTANT warrants that it has not paid nor has it agreed to pay any company or person, other than CONSULTANT's bona fide employee, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. Should CONSULTANT breach or violate this warranty, CITY may rescind this Agreement without liability.

29. **THIRD PARTY BENEFICIARIES**. This Agreement and every provision herein is generally for the exclusive benefit of CONSULTANT and CITY and not for the benefit of any other party. There will be no incidental or other beneficiaries of any of CONSULTANT's or CITY's obligations under this Agreement.

30. **INTERPRETATION**. This Agreement was drafted in, and will be construed in accordance with the laws of the State of California, and exclusive venue for any action involving this agreement will be in Los Angeles County.

31. **COMPLIANCE WITH LAW**. CONSULTANT agrees to comply with all federal, state, and local laws applicable to this Agreement.

32. **ENTIRE AGREEMENT.** This Agreement, and its Attachments, sets forth the entire understanding of the parties. There are no other understandings, terms or other agreements expressed or implied, oral or written. There are two (2) Attachments to this Agreement. This Agreement will bind and inure to the benefit of the parties to this Agreement and any subsequent successors and assigns.

33. **RULES OF CONSTRUCTION.** Each Party had the opportunity to independently review this Agreement with legal counsel. Accordingly, this Agreement will be construed simply, as a whole, and in accordance with its fair meaning; it will not be interpreted strictly for or against either Party.

34. **SEVERABILITY.** If any portion of this Agreement is declared by a court of competent jurisdiction to be invalid or unenforceable, then such portion will be deemed modified to the extent necessary in the opinion of the court to render such portion enforceable and, as so modified, such portion and the balance of this Agreement will continue in full force and effect.

35. **AUTHORITY/MODIFICATION.** The Parties represent and warrant that all necessary action has been taken by the Parties to authorize the undersigned to execute this Agreement and to engage in the actions described herein. This Agreement may be modified by written amendment. CITY's executive manager, or designee, may execute any such amendment on behalf of CITY.

36. **ACCEPTANCE OF FACSIMILE SIGNATURES.** The Parties agree that this Agreement, agreements ancillary to this Agreement, and related documents to be entered into in connection with this Agreement will be considered signed when the signature of a party is delivered by facsimile transmission. Such facsimile signature will be treated in all respects as having the same effect as an original signature.

37. **CAPTIONS.** The captions of the paragraphs of this Agreement are for convenience of reference only and will not affect the interpretation of this Agreement.

38. **TIME IS OF ESSENCE.** Time is of the essence for each and every provision of this Agreement.

39. **FORCE MAJEURE**. Should performance of this Agreement be prevented due to fire, flood, explosion, acts of terrorism, war, embargo, government action, civil or military authority, the natural elements, or other similar causes beyond the Parties' reasonable control, then the Agreement will immediately terminate without obligation of either party to the other.

40. **STATEMENT OF EXPERIENCE.** By executing this Agreement, CONSULTANT represents that it has demonstrated trustworthiness and possesses the quality, fitness and capacity to perform the Agreement in a manner satisfactory to CITY. CONSULTANT represents that its financial resources, surety and insurance experience, service experience, completion ability, personnel, current workload, experience in dealing with private consultants, and experience in dealing with public agencies all suggest that CONSULTANT is capable of performing the proposed contract and has a demonstrated capacity to deal fairly and effectively with and to satisfy a public CITY.

[Signatures on next page]

IN WITNESS WHEREOF the parties hereto have executed this contract the day and year first hereinabove written.

CITY OF MONTEREY PARK

_____
Paul Talbot,
City Manager

John L. Hunter & Associates, Inc.

_____
_____

ATTEST:

_____
Vincent D. Chang,
City Clerk

APPROVED AS TO FORM:
MARK D. HENSLEY, City Attorney

By: _____
Karl H. Berger, Assistant City Attorney

ATTACHMENT 2
Budget

UOC 1 - Grant budget spreadsheet-reviesed 4/15/2014

Administration Costs				
Amy Ho (4hrs/month) x$56.01/hr = $224.04	$	5,377.00		
Anne Chang (program manager) Grant day-to-day administration; obtaining report & monitoring results, etc.	$	34,200.00	15hrs/monx24 mos	City's uo in-kind support kick in
Total:	**$**	**39,577.00**		

Education Budget									
Media campaign		**Media cost**		**Production cost**	**Duration**	**# of outlets**	**Total run**		**Note**
TV	$	89,281.86	$	30,000.00	12 months	10		3 versions	
News story series			$	18,400.00			3-5 stories		
Print	$	76,289.44	$	5,175.00	6 months	5		3 versions	
Radio	$	61,127.10	$	6,900.00	6 months	2		3 versions	
Meeting & interfacing with the production crew to go over ideas for TV, news, radio, print production			$	9,500.00				May-August 2014: 100 hrs	
Program information research, gathering for the production (TV, Radio, Print, Online)			$	4,750.00				May-August 2014: 50 hrs	
Subtotal	$	226,698.40	$	74,725.00					

Education Booklet (design & printing)			**Production cost**	
Program booklet developing			$ 4,750.00	50 hrs
Program booklet printing			$ 15,000.00	60,000 copies
Subtotal	$	19,750.00		

Grand application total $ 360,750

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-H.**

TO: The Honorable Mayor and City Council

FROM: Norma Arvizu, City Librarian

SUBJECT: Annual Library Report to Council from the Library Board of Trustees

RECOMMENDATION:

It is recommended that the City Council:

1. Receive and File this staff report regarding the 2013/14 Library Annual Report

FISCAL IMPACT:

None

Respectfully submitted by:

Norma Arvizu
City Librarian

Prepared by:

Gwen Kishida
Administrative Secretary

Approved by:

Paul L. Talbot
City Manager

Reviewed by:

Karl H. Berger
Assistant City Attorney

ATTACHMENT(S):

1. Monterey Park Bruggemeyer Library Annual Board Report

Illustration by David Cutler
from School Library Journal

127
128
133

Monterey Park
Bruggemeyer
Library
Annual
Report
2013 /14

TO: Library Board of Trustees
FROM: Norma Arvizu, City Librarian
SUBJECT: ANNUAL REPORT FOR 2013 - 2014

Message from the City Librarian

The Monterey Park Bruggemeyer Library is a community based organization that serves the City of Monterey Park and surrounding communities in the San Gabriel Valley. The mission of the library is to meet the cultural, educational, and informational needs of the residents of the City of Monterey Park by providing free and open access to its resources and services.

The Monterey Park Bruggemeyer Library operates under the provisions of Chapter 2.80 of the Monterey Park Municipal Code and serves the residents, city employees and the business community of the City of Monterey Park and surrounding communities.

The primary sources of revenue are 5.3% contributions from the City's General Fund, the Library Tax and various State and Federal government grants and donations. Overall, the library had a $2.6 million budget for the 2013/14 fiscal year that included funding from all these resources. These revenues were used to help with the operations of the library, fund salaries and benefits of full time and provide for part time staffing, support operational expenses, comply with debt payment, and expand the library's collection. Altogether, these funding sources helped significantly to improve the delivery of diversified library services that enhanced the lives of people around the community by providing educational, knowledgeable and entertaining information through reading, visual, audio, learning and interactive cultural programs and materials.

With over 51,715 active library card holders and **321,752** patrons who visited the Monterey Park Bruggemeyer Library, the library remained robust and vibrant with activities that complemented patrons of all ages from infants to seniors with innovative, educational and intriguing events and presentations in such areas as literacy, learning, reading, researching resources, cultural arts and entertainment, creative crafts and computer classes.

City Librarian Goals

The focus and concentration of the librarian's goals targeted 5 areas:

1. Opening the library seven days
2. Increasing part time staffing
3. Securing financial integrity
4. Expanding technology support and services
5. Promoting positive school and community relations through outreach efforts

The base data used to procure these goals was acquired from the organization of information disclosed during meetings at local schools, needs from the community through patron surveys, reference assistance in answering patron questions, the State Library Edge Initiative Survey as

well as contacts with businesses, discussions with lifelong learners, and listening to and viewing opportunities for professional growth done by staff to promote services that would enhance services in technology, collection of local information and materials of significance both current and historical.

Opening the Library Seven Days

The library opened seven days a week with Saturday hours reinstated in February from 10:00 a.m. to 1:00 p.m. On average for every hour of opening, 125 people entered the library on Saturdays. With an average of 1,750 patron visits monthly for Saturdays only, patron visits increased by 15%. Opening seven days also offered flexibility for use of library services for the full weekend to residents who have a continuous work week from Mondays to Fridays.

Increasing Part Time Staffing

To open and sustain the opportunity to provide seven days of service, additional Part Time Staffing was recruited. With the addition of two Part Time Librarians, two Part Time Clerks and one Library Technician, the library was able to expand by opening on Saturdays and adding three hours of services to the public. The library budget was stretched to provide funding for these extremely necessary part time employees in support of the seven day opening and some operational expenditures had to be streamlined to necessitate the coverage of this need.

Securing Financial Integrity

The goal was to secure additional revenue anywhere from $30,000 to $50,000 annually. Staff researched grants and formed partnerships with non-profit agencies to generate and secure a revenue base that would support continued services with no cost to local government. With revenue from the Target 1000 Books Before Kindergarten grant, Early Learning with Families (ELF) State Library grant and Workforce Investment Act Title II grant increases, the library secured $41,500 in additional revenue. The tremendous financial support provided by the Monterey Park Library Foundation and Friends of the Library also secured revenue through fundraisers and book sales to cover decreased allocations in the library budget that allowed coverage for part time staffing. With an annual donation of over $19,000 from the Foundation and $10,221 from the Friends of the Library, expenditures for databases, additions to the collection, eBooks and programming needs became accessible. The new partnership formed with AAEDE (Asian American Economic Development Enterprise) supported the Reading Rockets Tutors salaries which provided a high quality afterschool intervention reading program with no cost to the library. With this new established partnership, the library now has gained a stronger connection with local educational institutions and national recognition by the Public Library Association (PLA).

Expanding Technology Support and Services

The City Librarian worked with staff to increase communication with patrons, students, and community members on the use of technology. Staff was encouraged to find ways to efficiently and effectively enhance services and programming using technology by expanding their knowledge base through professional technical courses online and onsite. With the purchases of 13 secured iPads, three upgraded and additional Wi-Fi Access points, the replacement of all Computer Lab computers, two new projectors and Apple TVs to connect wireless devices for

displays and projections and 27 new public computers, the library's technology infrastructure was enhanced to access information through technology effectively.

Promoting Positive School and Community Relations through Outreach Efforts

The education of children is a joint responsibility, one the library shares with parents and schools. To ensure that the best interests of the child are served in this process, a strong effort to open the lines of communication between schools and the library must be maintained. School visits were made district-wide at local pre-school agencies to elementary, middle and high schools informing educators about the library's alignment with materials that support and promote school curriculum for STEM and the Core Standards. The library staff believes parents have the right to participate in the education of their children as well as the ultimate responsibility for their children's in-school and library behavior, including the behavior of students who have reached the legal age of majority, but are still, for all practical purposes, under parental authority. For these reasons, promoting acceptable behavior within the library was also addressed in the discussions between schools, parents and staff, reiterating the role of the library not acting as loco parentis.

Conclusion

Many of the goals discussed in this report shed a spotlight on dedicated library staff that provided research to achieve and implement these goals. The long-term success of these concentrated areas and the strategies involved regarding their implementation will become the basis for the assessment on how to evaluate the effectiveness of these goals as they evolve in the public sector of the library and the impact it makes on the community. Staff will continue to find ways in maintaining a high quality level of services to the community through innovative technology updates, financial procurement strategies, enhanced customer services and programming. The comprehensive final analysis across all five targeted areas will also be part of a performance analysis for the final assessment after all systems have completed their full cycles of implementation. However, it is important to remember that any innovation introduced into any existing system - including new technology – requires time and support from staff, the public sector and community to be fully implemented.

Norma Arvizu, M.Ed
City Librarian

ADMINISTRATION

Fundraising

The annual **Monterey Park Library Foundation Gala**, held on June 6, was an enormous success. Supported by corporate sponsors, community organizations and individual donors, the event raised close to **$15,000** in net proceeds for the library! This money will go towards the purchase of new books and other materials to meet the needs of the over 51,715 active library cardholders and 308,662 patrons who visit the library annually.

The Gala was also a success in drawing a diverse and distinguished audience. Over 250 people attended including dignitaries U.S. Congresswoman Judy Chu, State Assembly member Ed Chau, Los Angeles Community College Board member Mike Eng, Monterey Park Mayor Anthony Wong and City Council members Hans Liang, Peter Chan, Mitchell Ing and Teresa Real Sebastian (the first time in recent history that all five Council members have attended a library Gala) and City Clerk Vincent Chang. Also attending were Library Board members Phil Smith, Nancy Ishino-Gilmore, Kathryn Foster and Janet Yu and Friends of the Library Board members Lilian Kawaratani and Ellen Johannsen.

Included in the Gala was the **Tribute to the Women of Monterey Park** ceremony, as five extremely talented and civic-minded women including Marian Hallin (Education), Patricia Reichenberger (Government), Mary Wong (Business), Shirley Hwong (Community Service) and Cici Lau (the Arts) were honored for their work in this community.

The Monterey Park Library Foundation was able to organize such a successful event due to its dedicated members including several vibrant newcomers with innovative ideas. Foundation members include Peter Chan (President), Joan Merino (Vice President), Virginia Greene (Secretary), Richard Gorman (Treasurer), Theresa Amador, David Barron, Joyce Chan, Robert Gin, Doris Lau, Alicia Martinez and Deana Sewell. With Mr. Chan having been elected to the City Council, Robert Gin will be the Foundation President beginning in July 2014.

The Library Foundation **Recycling for Reading** campaign, spearheaded by then Foundation member and current Library Board Trustee Janet Yu, collected over $4,000 in sponsorships, donations and recycling earnings. The campaign had the added benefit of increasing awareness of library activities and needs in the community. The Foundation **Essay Contest** received 117 eligible essay entries from entrants under the age of 18 and 27 eligible entries for the category age 18+ that were in English and 2 that were in Chinese. A first, second and third place winner were chosen for each category and announced at the Foundation's Holiday Gala.

The Library Foundation originally donated $300 to purchase newly released DVDs to rent to patrons for $2 for two days, $3 for a two-day loan period for BluRay DVDs. The Foundation later donated another $300. The library has purchased 404 DVDs including 199 BluRay DVDs from the Foundation donations and revenues from checkouts. For fiscal year 2013-2014, DVD and BluRay checkouts have generated revenue of **$1,553.60** beyond what was used to purchase new DVDs and BluRay DVDs.

Again, because the Library Foundation provided the original investment, all these rental fees belong to the Foundation/library. This is unlike the regular DVDs collection which was purchased with City funds – those rental fees go into the City's General Fund and the library only receives its usual 5.3% allocation from those monies. Not only does the library receive all of the revenue generated by the Foundation DVDs, because the system is self-supporting, funds in the budget that would otherwise have to be spent to purchase new DVDs can be spent elsewhere to build the library's collections.

The Library Foundation also donated the funds in June 2011 to purchase two color copiers/printers – one for the public and one to be used by staff. This allowed the library to offer better quality copying and printing to patrons and created a new revenue stream for the library. This fiscal year, the Foundation received $**7,376.95** in revenue from public copying and printing. Of course, the availability and convenience to the public and staff as well as the money saved by staff printing in-house instead of sending jobs out are tremendous advantages.

Due to its outstanding fundraising efforts, the Monterey Park Library Foundation has been able to donate close to **$20,000** to the library this past year to purchase new books and materials including e-books for the use and enjoyment of library visitors.

The Friends of the Library continues to raise funds through its on-site bookstore and sponsor library programs and activities. The **Friends of the Library Bookstore**, staffed by a core group of dedicated volunteers, continues to offer discounted books, magazines and DVDs for the education and enjoyment of library patrons. Their efforts raised **$7,324.82** in sales from July 2013 – June 2014. Additional volunteers meant that the Bookstore is now open seven days a week and almost the entire time that the library is open to the public. The Friends made efforts to revamp the Bookstore to run more efficiently and be a better experience for patrons, including alphabetizing the Fiction section by author, allowing both patrons and bookstore volunteer staff to browse the shelves more efficiently and find specific selections more easily, and marking when items enter the Bookstore so older items can be culled and the collection kept current.

The Friends helped sponsor the Summer Reading Program by funding the prizes children received for reading and reporting on what they read and also funded refreshments for programming throughout the year including cake for Dr. Seuss' birthday and popcorn for the International Film series. The Friends also sponsored a staff appreciation lunch for Library Workers Day during National Library Week.

Volunteers

Volunteer hours for fiscal year 2013-2014 totaled 10,872 hours with 1,720 enthusiastic and dedicated volunteers offering their time and talents to the library.

According to Independent Sector, a nonpartisan leadership network for nonprofits, foundations and other organizations, the estimated value of volunteer time as of 2013 is $22.55 per hour. Carrying out that calculation would mean that volunteers provided over $245,164 worth of work for the library! Even if the value of volunteer time was calculated only at California's minimum wage of $8 per hour (prior to July 1, 2014), it would mean that this past year volunteers provided $86,976 worth of work to the library.

Volunteers help schoolchildren with homework, sort and shelve books, read stories, tutor those who need help with speaking, reading or writing English, mend and process books, help check in books, operate the Friends of the Library Bookstore, sort donated items, do miscellaneous office tasks and assist with library special events. Administrative Secretary/Volunteer Coordinator Gwen Kishida continued to place volunteers where needed in the library.

Sincere thanks to these volunteers who contributed their time, talents and energy to assist the library, generously giving back to their community, and to the library staff members who directed their efforts. Especially with the reductions in staffing coupled with expanded hours of service, the library could not function without its volunteers!

Employee of the Month

The library instituted an Employee of the Month program in April 2010 wherein staff members nominate others for recognition for outstanding performance. Those recognized in 2013-2014 include:

July 2013	Denise Tang
August 2013	Otto Ly
September 2013	Diana Garcia
October 2013	Angelica Marquez
November 2013	Darren Braden
December 2013	Louie Morales
January 2014	Amy Wu
February 2014	Lina Nguyen
March 2014	Eric Rebollo
April 2014	José Garcia
May 2014	Denise Tang
June 2014	Michael Bathan

Staffing / Staff Development

City Librarian Norma Arvizu continues to serve as the Literacy Program Administrator in conjunction with her responsibilities as City Librarian. Norma hosted the LAMP Tutor Recognition Award Ceremony to honor the Tutor of the Year Paul Perez. She conducted a Best Practices Training to LAMP Tutors and ESL Instructors. She met with Professor Todd Honn from Claremont College Technology Department to establish a new partnership with Claremont to gain teachers for the LAMP program. She conducted a literacy assessment of the Covina and Monrovia libraries at the request of their literacy coordinators and finalized discussions with Reading Horizons Developer Bill Miller to bring the online ESL program onboard for the literacy program in the fall.

Norma was selected to be a member of the California Department of Education Field Partnership Team. As part of this cadre of professional educators, Norma will be representing perspectives from community based adult education agencies placed in library settings. She attended online Webinars for the Department of Education Field Representative Team discussion on AB 86 which focuses on Community College Districts and K-12 School Districts coming together to improve Adult education.

Norma attended the ELF Preconference Training and the California Library Association conference. The ELF training was part of the competitive grant prerequisite that was extended

to the 32 libraries chosen to participate. During the CLA Conference, Norma also attended the Legislative Luncheon and was host at the CLA Gala Ball where the Outstanding Librarian in Support for Literacy was honored. Other workshops attended were Library Directors Successes where much knowledge was gained regarding how libraries should take the lead in City Departments in bringing public awareness to City residents. As the departing Literacy Interest Group Chair, Norma presented at the CLA Conference to the literacy groups on upcoming issues facing the literacy programs such as AB 86 Additional Adult Education funding as well as how to remain visible in their communities.

Norma attended the Directors Forum Conference in Sacramento. Discussions involved the CENIC Broadband for Libraries and Edge Initiative statistical library reports. She participated in the annual Day in the District meeting with State Assembly member Ed Chau and received a well-rounded education on the Senate Bill Amendment process. She hosted State Assembly member Chau's Asian American Heritage Month awards ceremony at the library.

Norma participated in the San Jose MLIS Open House webinar to begin her process of enrollment in the MLIS online program. She also attended a workshop on *Dealing with Difficult People* and attended *Staff Reports 101* training conducted by City Attorneys Mark Hensley and Karl Berger and City Manager Paul Talbot and attended the LCW workshops on *Public Sector Employment Law Updates and Employee Due Process Rights* and *'Skelly:' A Guide to Implementing Public Employee Discipline*. She was trained in *Mandated Court Reporting*. She participated in webinars on *Strengthening Your Library Partnerships* and *Assessing Your Community Needs*.

In addition to her regular responsibilities as the library's Administrative Secretary, as a member of the senior management team for the library, **Administrative Secretary Gwen Kishida** dealt with problems to be solved and new or revised policies or procedures as well as decision-making on personnel, programming and equipment. She was an integral part of the budget decision-making process.

Gwen continued to work with the Library Board of Trustees, Library Foundation and other library stakeholders in both administrative and promotional/fundraising aspects. Gwen created and printed the program for the Foundation's Holiday Gala which for the first time included fundraising advertisements and a message from Foundation President Peter Chan as well as the usual list of activities and acknowledgment of sponsors and donors. She also created the full-color, 20-page program for the annual Foundation Gala held in June. At that event, Gwen helped organize tables and displays and collected money from sponsors and the evening ticket and raffle purchases. Following the Gala, Gwen counted the funds raised, deposited the money and generated a revenue and expenditure report for the Foundation.

As the library's Volunteer Coordinator, Gwen recruited and coordinated the efforts of the almost 200 teens and adults who volunteer nearly 1,000 hours at the library every month. Along with many of the library's volunteers, Gwen attended the City's annual Volunteer Recognition BBQ. Gwen participated in an Infopeople webinar on *Teen Volunteer Programs: There's More Than Simply Shelving!*

Gwen is also the point person in charge of the two-story, 52,000 square feet building, including maintenance, equipment and supplies and supervises a crew of janitors. As such, Gwen was trained on the City's new Citizen Relationship Management (CRM) system, a new Cloud-based system that enables both citizens and City staff to submit service requests to City departments easily and allows organized tracking of requests, responses and resolutions.

Gwen attended workshops on *Dealing with Difficult People* and *The Five Concurrent Themes for Success,* learned new skills in training sessions on *Staff Reports 101, Preventing Workplace Harassment, Discrimination, and Retaliation* and *Independent Cities Risk Management Authority (ICRMA) Online Safety Training Resources* and participated in the webinar *No Thanks! I Don't Want to Learn Anything New!* Gwen also adapted existing job descriptions to write new job descriptions and create new employment opportunity flyers for Part-Time Librarian (Substitute), Part-Time Library Clerk, Part-Time Library Technician and Part-Time Janitor. She also wrote new Personnel Requisitions for these positions. She organized the interview process for these positions by contacting applicants, creating a Doodle poll to schedule interviews, setting up interview venues, supplying necessary forms and suggesting introductory material for the interviews. Gwen also participated in the interviews for Janitor as she supervises all library janitors. When the library needed to hire new Part-Time Library Pages, Gwen worked with staff during the recruitment process and served on the interview panel.

Hard-working part-time **Janitors Louie Morales, Victor Reyes, Gil Sanchez and Eric Rebollo** continued to do exemplary work despite being one staff member short for most of the year. Louie, Victor, Gil and Eric perform daily duties that most of us dread or at least would prefer to postpone – cleaning and sanitizing restrooms, mopping floors, vacuuming carpets, dusting shelves, hauling out trash, etc. They are responsible for maintaining a facility of 52,000 square feet including two floors and twelve restrooms – four multiple person restrooms with three stalls each, two with five stalls each and six single person restrooms! They also must deal with emergencies as well as the usual messes created by patrons – and 1,200 - 1,500 people visit the library every day! Despite this, Louie, Victor, Gil and Eric continue to be good-natured, efficient and willing to help out wherever needed. The library could not survive without them!

Two new part-time Librarians were hired to work at the public desks to assist patrons: Cynthia Serrano for Adult Reference and Ken Nolasco for Children's. Two new part-time Library Clerks were also hired: Mei-Lee Wan at Adult Reference and Jessica Flores at Children's. Part-time Library Page Heather Nguyen was reclassified as part-time Library Clerk to work on weekends and one part-time Library Page, Jamie Rivera, found a full-time position elsewhere, so two new part-time Library Pages, Guang Li and Alan Nguyen, were hired.

Ruben Chavez Poma, a participant in the National Asian Pacific Center on Aging (NAPCA) Senior Community Service Employment Program, worked in the library for 17 hours per week at no cost to the library. He assisted Administrative Secretary Gwen Kishida with various office tasks and worked in the Friends of the Library Bookstore.

2013 – 2014 ADMINISTRATION GOALS AND OBJECTIVES

GOALS AND OBJECTIVES	PROGRESS
1. Build the knowledge base of library staff in digital, print and other new technology devices so staff will be able to provide faster information delivery to library patrons.	**Completed.** Library staff trained themselves on the recently purchased tablets (iPad, iPad mini, Nook, Kindle) to be better able to serve patrons with questions about these devices. Staff participated in multiple conferences, training sessions and classes to learn about the latest technology for libraries. Teen Librarian Darren Braden attended the Infopeople webinar *When a Story is More than Paper: Transmedia and Young Adult Literature.* Technical Services Senior Librarian Evena Shu, Adult/Teen/Reference Senior Librarian Cindy Costales and Children's Senior Librarian Christina Yueh met with an EBSCO representative who went over its databases, showing staff the Help resources where patron can view tutorials on how to use the database, how to cite etc. as well as the use of the translator software to read articles. Teen Librarian Darren Braden learned how to create a basic app for a phone or mobile device and used this new skill to present a Teen Tech Program. He also developed a new computer lab lesson featuring Chrome apps. José Garcia, Acting Senior Library Literacy Clerk, attended the *Technology and Distance Learning Symposium*, discovering online Open Education Resources that can be

incorporated into a LAMP distance learning program. Senior Librarian Cindy Costales viewed an Infopeople webinar called *Embrace the Evolution Adapting Reference Services to New Technology* which provided useful information on how to improve customer service on the Reference Desk using new technology. Technical Services Senior Librarian Evena Shu attended the *Axis 360 Makeover* webinar, learning about enhancements that will improve the user experience. Technical Services Senior Librarian Evena Shu and Library Technicians Jessica Rodriguez and Michael Bathan reviewed the California Library Association Spring Fling Webinar: *Developing Web Technologies for Libraries*. Evena attended the SCLC Technology Subcommittee meeting to learn about *eReaders in your library.* Staff participated in WebOPAC training to learn the new features of My Millennium, which provides patrons with personalized accounts, including patron ratings for books, e-mail notification for preferred searches and My Lists, which saves books of interest to patrons (a version of a wish list). LAMP Acting Senior Library Clerk José Garcia attended the Infopeople webinar *Apps for All: Learning with Tablets and Smartphones.*

2. Improve visibility and awareness of library services, programs and collections by utilizing the media's content and services and expanding audience reach through collaborations with library organizations and projects with innovative ideas.

Completed. The Library Foundation continues to network with community organizations, businesses and leaders through its Recycling for Reading program. Reference staff did outreach to local schools including Mark Keppel High School as well as Langley Senior Center. Technical Services staff worked with City staff on the City website re-design and migration. The library presented workshops on writing college personal essays and financial aid in partnership with the Chinese American Citizens Alliance Youth Council. The library working in partnership with the Chinatown Service Center presented a small business workshop on social media in

Mandarin. Senior Librarian Cindy Costales worked with the Monterey Park Historical Society and American Legion Post #397 to offer a Veterans Day Program at the library. An Early Learning with Families (ELF) Ribbon Cutting Ceremony drew Channel 7, one Chinese TV station and local newspapers who came to do a feature report on the grant-funded new furniture and learning toy sets added to the existing "Play Time" area. The library offered a free legal assistance clinic co-sponsored by the Asian Pacific American Bar Association (APABA). Staff attended the 2014 Annual ALA Conference in Las Vegas June 27 - 29, attending workshops that taught new skill and offered networking opportunities.

3. Support the development of digital technology throughout the library to further transition into the 21st century.

Completed. The library purchased an adaptor and apps to use with the iPad for more interactive Children's storytimes and additional memory for the public printers to allow for larger patron print jobs. The library installed additional wireless access points to provide a greater range of wireless access for patrons. The library upgraded its Millennium integrated library system (ILS) from version 2009 to 2011, in the process also saving the library an increase in the annual maintenance fee. The Library participated in the California Audiovisual Preservation Project (CAVPP) to preserve historic Californian recordings through digitization. The library will be purchasing 29 computers to replace those on the first floor stations and in the Computer Lab. Circulation ordered and received a barcode scanner that will scan a patron's library card barcode from a smart phone. The State Library confirmed the award of $20,000 for the LSTA Pitch an Idea Grant Teacher in a Tablet idea submitted by LAMP Acting Senior Library Clerk José Garcia.

ADULT/REFERENCE/YA SERVICES

Highlights:

- 20, 228 Reference Questions
- 87,740 Adult and Teen Books Circulated
- 52 adult programs presented
- 1,100 adults attended programs including: film, author book talks, history, book clubs, healthy food demonstrations Lunar New Year, Asian Pacific Heritage Month, Hispanic Heritage Month, informational programs on earthquakes and senior safety, and more.

Common Core and the NonFiction Book Collection

$3,500 in Grant Awards Enhances Nonfiction Collection

Aligning the library's nonfiction collection to meet the needs of local high schools' Common Core Initiative was made possible by two grants. Reference staff applied for a Muslim Journey Bookshelf grant from the National Endowment for the Humanities and the American Library Association. The award, a bookshelf valued at $1,000 included 25 books and films on Muslim art, culture and history that were added to the adult nonfiction collection. The library also participated in the Books 4U: Common Core grant from the California State Library which enabled Reference staff to select and purchase 108 new nonfiction books in subject areas on World I, II, civil rights, 14th Century History, poetry, Greek, Roman and Eastern Myths, Hispanic History of the United States, Dante, Plato, art history, discrimination, race, affirmative action, biographies of authors, human rights, world religions and other Common Core subject areas that will help students completing research and homework assignments at the library.

Computer Classes

114 Classes Offered

1,707 Adult Students Attend Classes

Computer classes were the library's most popular adult service programs. These popular classes often with waiting lists introduced basic and intermediate computer skills to adults on Mondays and Tuesday nights and on Thursday mornings in Cantonese, Mandarin, Spanish and English. Adults wanting to create email accounts attended Email classes in the computer lab.

Teen Programs

73 Programs Presented
2,251 Teens Attended
YouTube, Create an App, Makerspace programs …
Teen programming incorporated technology by involving teens in makerspace activities where teens streamed videos from YouTube to access program instructions instead of printing out instructions. Teens used technology to follow YouTube video instructions to create food designs for an Iron Chef program. During Teen Tech Week teens learned how to create an app. In other programs, teens met with an engineer- special guest speaker on technology and learned how to select and download E-books from the library website using iPad applications.

Exhibits and Community Partnership Programs

Establishing library partnerships with local agencies, organizations, and clubs fostered a spirit of "community" at the library. Working together brought unique programming and exhibits to the library:

Partner: Taiwanese American Art Association
Art Exhibits: Hope and Peace Sculpture exhibit and Celebrating Tea Ceramic art exhibit

Partner: Chinese American Citizens Alliance
Programs: A Moment in Your Family History Youth Art Exhibit, College Financial Aid Workshop

Partners: Local Artists Gary Wong, Isabel Broy, Jen Tsung
Art Exhibits: The Year of the Horse; California Missions; Transitions

Partners: Historical Society of Monterey Park
Programs: Foster Hirsch Film Program; Veterans Day Program; Edwards Theater Exhibit

Partner: American Legion Post 397
Program & Exhibit: Presentation of the Colors Veterans Day Program and Iraq War Exhibit

Partner: Chinatown Service Center
Programs: Social Media Workshop, Financial Management Workshop

Partner: Housing Rights Center
Program: Fair Housing Workshop for Landlords

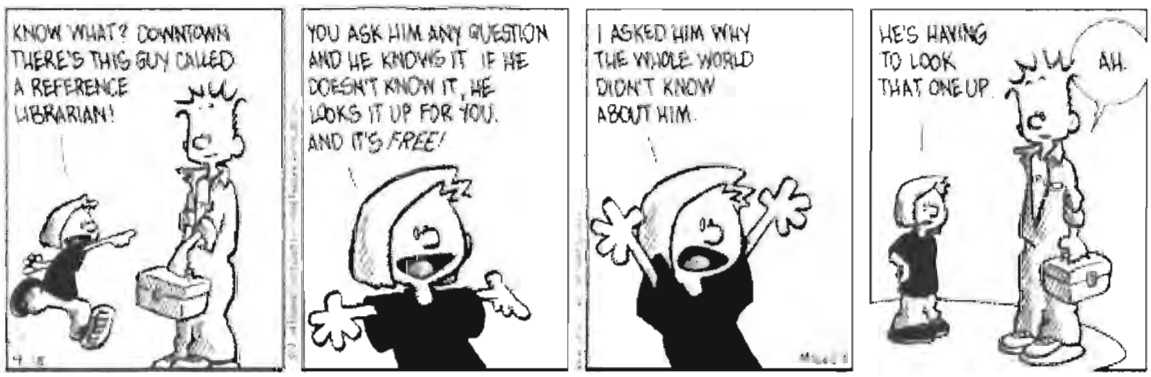
Partner: Asian Pacific American Bar Association
Program: Free Legal Clinic

Staffing / Staff Development

The library hired part-time Librarian Cynthia Serrano, who had previously worked at the library as an intern, in August 2013 to work in Reference. Cynthia found a full-time job in June 2014 and resigned. The library is looking to hire a new part-time Librarian or perhaps a part-time Senior Librarian. The library added Mei Lee Wan as a new part-time Library Clerk in Reference in February 2014.

Reference staff enhanced their library and technology skills throughout the year by attending webinars, conferences, and trainings. Staff training highlights include the following:

- **Reference Librarian Maggie Wang** attended the 2014 Annual ALA Conference in Las Vegas where she attended workshops focused on serving Chinese and multiethnic populations.
- **Senior Librarian Cindy Costales** attended the 2014 Conference on Rudolfo Anaya: *Tradition, Modernity, and the Literature of the U.S. Southwest* at California State University, Los Angeles. The conference provided insight to Hispanic authors and how the library can serve the needs of students studying the literature of the Southwest. Cindy also attended *The Latino Author Summit* at the University of La Verne in September. The summit included seminars and panel discussion with Latino authors and a session on STEM that provided an understanding on what STEM is and how the library can incorporate STEM into library programs.
- **Teen Librarian Darren Braden** viewed a Makerspace webinar that helped him to create teen programming.
- Reference staff attended a city professional training workshop on customer service with presenter Gordon Graham, a dynamic speaker focused on the importance of risk management within the workplace.
- Reference staff attended webinars to learn how to better assist the reading and informational needs of adults and teens, veterans, job seekers, and patrons seeking information on the Affordable Care Act through public library computers.



2013 - 2014 ADULT/REFERENCE/YA GOALS AND OBJECTIVES

GOALS AND OBJECTIVES	PROGRESS
1. Expand resources in the library collection on geography and history to meet the educational needs of adults and teens working on research and homework assignments.	**Completed.** Nonfiction books have been added to the collection. Adults and teens will find new resources to help with research and homework assignments.
2. Develop an adult summer reading program, *Novel Destinations: Muslim Journeys,* from a grant award from the National Endowment for the Humanities and the American Library Association that will engage the community in book and film discussions about Islamic culture.	**Completed.** The Muslim Journeys bookshelf has been added to the collection. Programs promoted the bookshelf and engaged the community to learn more about Islamic culture.
3. Implement and plan local history displays and programs at the library in partnership with the Monterey Park Historical Society to share the rich history of the people, places, and events of Monterey Park from its earliest beginnings to the present.	**Competed**. A film history program with Foster Hirsch, an exhibit on the Edwards Theater in Monterey Park, a Veterans Day Program and WWII exhibit were presented in partnership with the Historical Society. An upcoming film program is also planned.

TECHNICAL SERVICES

Internet: Usage of the library's webpage and webpac continued to increase. There were 70,064 user sessions for the public computers compared to 61,937 user sessions in the previous year i.e. 12% increase. The library has no figures on how many people use wireless in the library.

Computers/Wireless: Technical Services replaced 27 public computers for adults this fiscal year including those in the Computer Lab. The library also continues to deploy three wireless access points.

E-Rate: Technical Services Senior Librarian Evena Shu reapplied for the E-rate discount in February 2014. The Library was approved for E-rate with a funding of $27,532 (80% discount) for 75 mpbl internet use for 2013-14. To comply with CIPA (Child Internet Protection Act), the library continues to use Fortigate (firewall) and web filtering device which was leased from Charter Communications. The library also uses M86 so that the public can opt to unfilter the website. The library also gets the CTF discount, a total saving of $3,441.60 per year.

Library Website: Evena and Library Clerk Robert Liao attended the website kickoff meeting with the City's new vendor, CivicPlus, on August 14, 2013. There were five phases for the City website project. Evena served on the website core committee. She attended meetings on August 15 and August 22. The committee reviewed a Community Engagement Survey, website statistics and the Functionality and Design form. Each department shared three website designs that they liked and presented to the committee why they liked the design. Meanwhile, Evena submitted Library's Dept/Division Functionality and Design form. She gathered the photos for the website. Evena and City Librarian Norma Arvizu met with the CivicPlus Consultant to review the project goals and expectations. Evena discussed design, content and engagement of the library's website on October 7 and attended the Online Needs Assessment Meeting on October 8. CivicPlus offered two layouts for the website core committee to vote for. Evena worked with the AdCore management team to review library's FAQs. Evena attended the Website Reveal Meeting on December 10. CivicPlus provided a presentation of the functional website based on City's goals, recommendations and visions. The website committee felt that the new site could use more vibrant colors and more "personality." Committee members submitted a list of recommendations to the vendor. Evena, Robert and Library Technicians Jessica Rodriguez and Michael Bathan attended the website training on January 8-9, 2014. The new website was finally rolled out on April 8. Evena attended the Core Committee meeting on May 8. The committee's assignment was to review the City's and each Department's website and make comments. It is discussed that the website needed more photos for each department.

The quote for the Responsive Website Design for Mobile device was about $1,500. The City unveiled the new website www.montereypark.ca.gov on April 8, 2014. The library new website address is www.montereypark.ca.gov/Library. The new website features updated design and modern tools to help us communicate more effectively with residents and patrons. It also features calendar, spotlight, news flash, apps and social media.

Self-Checkout: The library continues to use 3M's self-check machine and purchased a new enhanced monitor at the end of the fiscal year.

Databases: The State Library has ended funding Bookflix for libraries since July 2013. With the help of funds from LAMP Literacy, the library was able to continue offering Bookflix until June 2014. After June 2014, the library will discontinue Bookflix. Children started subscribing to Tumblebooks, ebooks for kids, starting February 2014. The library discontinued Career Transitions in 2013. The Learning Express subscription will end by June 30, 2014. The Library was given a complementary one year subscription of the Older Americans Information Directory and Disabilities Resources GOLD Online Databases by Grey House Publishing in January 2013. The library continues to subscribe to Ebsco Host for online periodicals.

Collection: Technical Services staff added 5,903 items. There were 7,815 items weeded from the collection due to the item being outdated, in bad condition, no longer useful or lost. The number of item records decreased from 175,022 to 173,291. Staff made changes to 13,621 bibliographic records. Library staff members continue to work on weeding of the entire library collection. Library continues to use Baker and Taylor for their Ready Shelf services. Library continues to use McNaughton for the bestseller fiction and nonfiction. Technical Services staff ordered 330 books on common core topics for the Books4U grant ($5,000) awarded by the State Library.

E-Books: The library continues to provide ebooks using Baker and Taylor's Axis 360 service. The library currently offers 521 ebooks in its collection. Total checkout was 475. The top five circulation categories are children's fiction, adult fiction, children's non-fiction, business and economics, biography and autobiography. Axis 360 rolled out its enriched user features and administrative tools in April 2014. The most dramatic changes involve the Magic Wall and the use of flexible navigation and display features to design and manage "Staff Picks" and other collections to showcase for patrons. Patrons can now browse by subject, with results appearing in a visually appealing display that has less text. Other new features let patron create notifications and order parameters for patron holds and better manage publisher content license expirations for their ebook collections. Management options, reports, alerts and cart creation were also improved in this upgrade.

Technology: The library continues to use Sam/Comprise for timeout management and printing. The timeout management and printing software is paid for by the Library Foundation.

Security Cameras: Library replaced the security camera server on May 7, 2014. Instead of using two separate servers, the library now uses one server for internal and external cameras. The library will also need to replace exterior camera #2 which broke down in June 2014.

Donations: The library added 1,092 donated items with a value of $12,504.

Interlibrary Loan: The library borrowed 96 items from other libraries for our patrons and lent 36 items to other libraries for their patrons.

Mending: Staff and volunteers repaired 1,712 items. Staff cleaned 33 CDs and DVDs.

Government Publications: In 2013/14 the library received 704 documents in all formats and discarded 451 which were outdated. There were 362 new items added to the catalog.

Staffing / Staff Development

Technical Service's Senior Worker Wendy Hu replaced Letty Cheung from the Chinatown Services Center. Kevin Tamaki, part-time Library Page, continues to work 16 hours per week. Sherry Dai, part time Librarian, continues to provide limited consultation hours on Chinese cataloging. Edmund Bautista, part time Library Technician, was hired in May 2014 and works every Saturday.

Technical Services Senior Librarian Evena Shu participated several excellent workshops and conference including *Adding Value to Library Services with Outcome-Based Planning and Evaluation*, Southern California Innovative User Group SCIUG Conference, CLA Annual preconference on *Basic Cataloging with RDA*, *Resource Description and Access (RDA) training*, SCLC workshop on *Resilience: Thriving in Times of Change and Stress*, SCLC Technology Subcommittee (formerly Automated Services Committee) meeting and City's *Five Concurrent Themes for Success* by Gordon Graham. She attended Liebert Cassidy Whitmore workshops on *Difficult Conversations, Employee Due Process Rights* and *Skelly: A Guide to Implementing Public Employee Discipline*. She also attended Infopeople's online classes on *Winning Library Technology Grant and Effective Social Media Strategies.* In addition, Evena helped with the **Edge Assessment**. She attended Edge Initiative four highly interactive courses to strengthen library's efforts in the areas of community assessment, planning, technology management, advocacy and leadership. Evena trained staff on the new features of **My Millennium**, which provides patrons with personalized accounts, including patron ratings for books, e-mail notification for preferred searches and My Lists, which saves books of interest to patrons. My Millennium also offers new features for staff including allowing staff to toggle back and forth

between patron and staff records/public mode and staff mode and enabling staff to check item status. Evena served on the City's website core committee and worked with other City staff to develop the revised City website.

Library Technician Jessica Rodriguez attended online classes on *Information Technology Tools and Applications – Web Design and Web and Social Media Analytics* - focusing on Measuring the Effectiveness of Social Media Usage in Libraries with San Jose University. She also attended SCLC workshop *Resilience: Thriving in Times of Change and Stress* and OCLC ILL webinar on *WorldShare ILL Start Here.*

Library Technician Michael Bathan attended City's workshop on *Customer Services* and continued to be an asset in Technical Services. Michael usually leads in doing research for technology purchases and handling requests regarding security footage.

Library Clerk Robert Liao attended the City's *Five Concurrent Themes for Success* workshop by Gordon Graham. Robert reviewed online video tutorials and online documentation regarding the OCLC WorldShare Interlibrary Loan. He continued to train Library Page Kevin Tamaki, other Senior Workers and summer volunteers.

Evena, Michael, Jessica and Robert all participated in the City's Website training.

2013 - 2014 TECHNICAL SERVICES GOALS AND OBJECTIVES

GOALS AND OBJECTIVES	PROGRESS
1. Add the California Telecommunication Fund Service Discounts and continue to take advantage of the E-rate discount to maintain fast internet connections to meet the demands of library computer users.	**Completed.** The Library was awarded with the third year of the E-rate discount from July 2013 - June 2014, with a funding of $27,532.80 (80% discount) for 75 mbps of Internet service. Technical Services Senior Librarian Evena Shu applied for the California Telecommunication Fund Services. This would save another $3,441.60 per year for the Library. The Library put out a Request for Proposals as the contract with Charter Communications expired in June. Evena received several bids from the vendors. None will do a month to month contract. The library has signed a contract with Charter Communications. She also posted Form 471.

2. Restructure and enhance library webpage in preparation for the migration along with the city's webpage to improve access and visibility for the public.

Completed. Technical Services Senior Librarian Evena Shu and Library Clerk Robert Liao attended the webinar of the website kickoff meeting with new vendor CivicPlus on August 14. There are five phrases for the project. Evena serves on the website core committee. Evena attended the Website Reveal Meeting on December 10. It provided a presentation of the library's functional website based on City's goals, recommendations and visions. The committee submitted a list of recommendations to the vendor. Evena, Robert and Library Technicians Jessica Rodriguez and Michael Bathan attended the website training on January 8 and 9. The new website was finally rolled out on April 8. Evena attended the Core Committee meeting on May 8. The committee was to review the City's and each Department's webpages and make comments. It is discussed that the website needs more photos for each department. The City received a quote for the Responsive Website Design for Mobile device which would cost about $1,500.

CIRCULATION SERVICES

Circulation Changes

In August 2013 the self-checkout machine was upgraded. The installation went smoothly and quickly with very little disruption. Also in August the Children's International area was shifted to make it more accessible to patrons.

The library hours changed in February 2014 to include Saturday. Part-time staff are working these new hours.

At the end of February Circulation and Children's staff shifted three book collections to make room for the new ELF play area.

In June 2014 Circulation pages did major dusting and shifting to all areas of the library. This included the Chinese non-fiction collection, the YA fiction and graphic novel areas and Children's Easy section. The Circulation desk also received a new scanner that will read barcodes stored on smart phones.

Staffing / Staff Development

Jamie Rivera and Michelle Huang were hired in July 2013 to fill vacant part-time Library Page positions in Circulation and part-time Library Page Angelica Marquez transferred to the LAMP department.

In December 2013 full-time staff began working 38 hours a week with only two furlough hours.

In January 2014 Circulation hired Heather Nguyen as the part-time weekend Library Clerk. This opened up her Library Page position and Alan Nguyen was hired as the part-time Library Page.

In February 2014 Jamie Rivera left and Guang Li was hired to replace her as Library Page.

In April 2014 all full-time staff returned to 40 hours due to the furloughs ending.

All Circulation Library Clerks participated in the webinar by Infopeople *Handling Challenging Situations: What Do I Do Now*. It was a two-part webinar that discussed the importance of limit-setting with library patrons. Other workshops attended included *Tomorrow-From the Beginning, Dealing with Difficult People, What is Real Risk Management, The Five Concurrent Themes for Success, Creating Loyal Customers for your Organization and Resilience: Thriving in Times of Change and Stress*. As a supervisor, **Circulation Services Supervisor Julie Villanueva** needed to attend *Preventing Workplace Harassment, Discrimination and Retaliation and Employee Due Process Rights & Skelly*.

Circulation Library Clerks who received Employee of the Month honors included Otto Ly in August, Amy Wu in January and Lina Nguyen in February.

Guang Li and Alan Nguyen, part-time Library Pages, graduated from high school in June. Heather Nguyen, part-time Library Clerk, graduated from California State University Los Angeles with a B.S. in Food Science and Technology in June 2014.

CIRCULATION TRANSACTIONS

		ITEMS	PATRONS	HOURS
ITEMS CHECKED OUT AND IN				
Checked Out and/or Renewed		291,304		
Checked In		253,034		
EBOOKS CHECKED OUT		475		
ATTENDANCE			320,871	
HOURS OPEN				2,050
NEW CARDHOLDERS REGISTERED			3,915	
TOTAL LIBRARY CARDHOLDERS			51,715	
HOLDS				
Requested		1,768		
Filled		1,296		
Monterey Park		871		
Alameda County		3		
Alhambra		78		
Covina		1		
Long Beach		3		
Los Angeles County		268		
Montebello	18			
Rosemead	148			
Los Angeles (City)		35		
Monrovia		16		
Pasadena		2		
San Bernadino County		1		
Santa Fe Springs		6		
South Pasadena		3		
Whittier		1		
Other		8		
TOTAL		**1,296**		
SELF-CHECKOUT USAGE				

Patrons by Day of the Week

DAY	*OK*	*REFUSED*	*Total*
SUN	1,360	248	1,608
MON	1,460	254	1,714
TUE	1,491	273	1,764
WED	1,022	167	1,169
THUR	1,171	180	1,351
FRI	249	8	257
SAT	167	42	209
TOTAL	**6,900**	**1,172**	**8,072 Patrons**

Items By Day of the Week

DAY	*REFUSED*	*ISSUED*	*RENEWED*	*Total*
SUN	503	4,709	25	5,237
MON	528	3,810	32	4,370
TUE	507	4,105	25	4,637
WED	278	2,414	12	2,704
THU	274	3,007	21	3,302
FRI	35	432	0	467
SAT	49	500	0	549
TOTAL	***2,174***	***18,977***	***115***	***21,266 items***

NOTICES SENT

Overdue (7 days late)	5,997
Bills (21 days late)	1,128
E-mail	2,485

LONG OVERDUE LIBRARY MATERIALS– More than 5 weeks late:

# of library materials returned, fines not paid	127
# of library materials returned, fines paid	109
# of patrons sent to Collection Revenue Services	106
# of library materials sent to Collection Revenue Services	428
# of phone calls to patrons with items 5 weeks overdue	138

CLAIMED RETURNED LIBRARY MATERIALS – 2 month search for items patrons claimed to have returned:

# of library materials searched total		134
# of library materials found in library		9
Sensitized	2	
NOT Sensitized	7	
# of library materials returned by patron		34
# of library materials not found, marked Lost		20

MISSING ITEMS – Unable to locate in library, status changed to missing and searched for in library for 3 months:

# of library materials missing	212
# of library materials added	95
# of library materials found	102
# of library materials not found, marked Lost	49

2013 - 2014 CIRCULATION GOALS AND OBJECTIVES

GOALS AND OBJECTIVES	PROGRESS
1. Upgrade the self-checkout machine, improving the performance and effectiveness of the library checkout system allowing simpler, quicker checkout of materials by the public.	**Completed.** The Technical Services Librarian and Circulation Supervisor researched enhancements available to our current technology. Authorization to upgrade the self-checkout with the purchase of a new computer system for the machine has been received and installation was completed.
2. Design and develop a training manual for volunteers in Circulation to ensure consistency in training and proper representation of the library image. Volunteers are valuable resources that help enhance the services Circulation staff provides to the public.	**Completed.** Information from other departments is being compiled regarding the training of volunteers at the library. This information will be edited with our current training manual into a hand-book for use each time volunteers are trained ensuring a consistent standard of conduct by all volunteers.

LAMP LITERACY

LAMP ended the 2013/14 Fiscal year serving 1542 students and gaining 32,062 cumulative student hours. The amount of students served exceeds what most Adult Education programs normally serve on offsite adult campuses. The ability to sustain such an enormous population of students credits the quality of volunteers, staff and library commitment to provide services relevant to this immigrant community.

The Adult Office of Education informed City Librarian Norma Arvizu of an increase in next year's funding from $85,619 this past year to $135,000 for the 2014/15 fiscal year. According to the Adult Education Consultant, Diane Hurley, the LAMP Program earned the additional award based on high student gains and payment points and the fact the literacy program was doing such a great job! Although there had not been an enormous increase in students, the current existing students continued to demonstrate academic gains in Basic English skills in reading, writing and oral communications as well as passing the Citizenship Naturalization Exam. All ESL classes had full enrollment and flourished with the addition of new workbooks this year to align with the Adult ESL curriculum. Students were being challenged to make higher strides in their learning and were expected to cover all of the required standards and competencies required to transition to higher education and/or to enter the workforce.

Fundraising Events

Joyce Chan, a LAMP tutor and Foundation Member, worked with the literacy staff to plan and organize the 5th Annual Walkathon held on Saturday, October 12, 2013. The Walkathon event raised close to $4,700 in donations. With the new involvement of Library Foundation Member Joyce Chan steering the event, her campaign efforts brought additional local businesses to the walkathon as sponsors and supporters through her employment with the Chinatown Business Center. There were 73 walking participants with 25 volunteers who participated in helping coordinate and execute the walk. Four local banks became new sponsors for this year's event: Far East National Bank, East West Bank, U.S. Bank, First Choice Bank and Chinatown Business Center.

Claremont College School of Pitzer Partnership

The Claremont College School of Pitzer, Asian Pacific Political Studies in Claremont, collaborated with the literacy program staff and offered new volunteer services and classes this past fiscal year. One new class, titled: *ESL and Civics through Discussion,* promoted civic engagement as students continued to develop their

English language skills. Students explored and discussed U.S. History and Asian American History as a way to deepen their understanding of the country they now lived in. The Claremont College School of Pitzer also offered writing classes to intermediate to advanced ESL students in furthering their writing skills. Aside from the Citizenship coaching sessions these students provide quarterly as part of their curriculum credits, these students also created the LAMP Tutor of the Year video for extra credit for their Asian American Political Studies courses and created a new pre assessment 'app' to use with iPads to ease the registration of new students. New Adjunct Professor, Alex Margolin, also joined Dr. Kathleen Yep, Professor and Chair of the Asian Pacific Studies Department, as the Lead Instructor in this ongoing partnership program with LAMP.

Citizenship Preparation and ESL Classes

There were 13 ESL Classes in the literacy program which provided every level of ESL classes and two levels of Citizenship Preparations to the community with the inclusion of one additional conversation class that opened on Saturday mornings in March when the library went to seven days open to the public. Over 1,500 students were served through the LAMP literacy program this year. The average amount of students per semester was 469. The student hours and number of students exceeded the projections for the year with gains that also exceeded the past year students' scores. All classes continued with ESL and Citizenship Preparation courses and 1to1 Adult Basic English Skills instructions. The City Librarian provided training to the new Conversation ESL class instructor Carolyn Wong who will began the class on March 8 and also provided personal ongoing teaching instruction to tutors and volunteer instructors who needed assistance with implementing ESL lessons.

This year, the literacy program assisted 84 Citizenship Preparation students gain their New Citizenship status by passing their Naturalization Exams. The program remains one of the more popular ESL components of our literacy program and attracts students across several counties.

Tutors, Instructors and Citizenship Coaches

The LAMP Literacy Program gained 75 tutors for the 1to1 ABE program. Tutors were trained by the City Librarian throughout the year with follow up support from José Garcia, Acting Senior Library Clerk. Three additional volunteer teachers were added to the ESL team: Sam Fechenbach, Carolyn Wong and Diane Lee. These new additions were previous tutors with the LAMP Program and will continue their one to one tutoring sessions in addition to teaching ESL Classes.

One of the biggest challenges for the volunteer instructors this past year was adapting to the new curriculum workbooks and lesson plans. As part of the assessment and evaluation of all students at the beginning of the fiscal year, students' scores were used to designate the required reading grade level. However, many students found the reading material above their ability to orally read, or comprehend the content. The ESL instructors also struggled with

implementing the designated materials to their students. After careful analysis by the LAMP staff and City Librarian, it was decided to allow volunteer instructors to supplement their lessons with other language art resources creating a balance for students to transition into the more rigorous curriculum.

Outreach and Development

Acting as the Literacy Administrator, Norma Arvizu met with adult education field representatives in Sacramento to discuss the possibility of teaming with community colleges that also receive WIA II Funding for their programs. Norma Arvizu was selected at a representative for libraries having ESL programs in their facilities.

The LAMP Literacy Program celebrated its Annual Tutor Recognition Ceremony on Saturday, December 14, 2013 in Council Chambers. There were close to 100 attendees for the event. This year's Tutor of the Year recipient was Paul Perez who volunteers as a Citizenship Coach, ESL Beginning Literacy Substitute Instructor and all around volunteer for any LAMP student in need. The Harvey Elparin Tutor of the Year Award was presented by its originator, Mike Eng, Los Angeles Community College Trustee. Also present were Mayor Teresa Real Sebastian, Mayor Pro Tem Anthony Wong, Council Member Peter Chan, Honorable 49th District Assembly Member Ed Chau, City Clerk Vincent Chang, former City Clerk David Barron and members from the Library Board of Trustees, Friends of the Library and Library Foundation.

The *Comet* newspaper reporter, Nancy Martinez, visited the Monday night Citizenship class to observe the instructional process and later wrote an article on how the Monterey Park Library and literacy program is assisting students prepare for the Citizenship Examination. This was a two part series, (please see link) http://egpnews.com/index.php?s=monterey+park.

FFL (Family for Literacy) Programs

This December, the LAMP Program teamed up with the Children's Department to present the Santa Storytime with literacy based books given to children and provided candy bags and treats for all. This joint effort allowed for some of the adult literacy students to attend the program and consider the event part of the Family for Literacy event. There were close to 215 in attendance with over 65 books given out by LAMP for each family.

Reading Rockets

The PLA 2013 Award winning program, Reading Rockets, was also a priority for LAMP. New arrangements to secure the four tutor rooms and the small classroom on Mondays through Thursdays were arranged to continue providing literacy skills intervention to 40 students each semester.

The new arrangements allowed tutors to have their own meeting areas with their small cohorts of 5 children daily from 3:00 to 5:00 p.m. Parent orientations were given at the start of each semester and summer sessions to ensure parents cooperated with the program requirements for success of their children. Students demonstrated gains on average of 15% in reading scores and fluency.

New Grants

A new grant was awarded to the literacy program under the LSTA Pitch an Idea grant from the State Library. José Garcia, Acting Senior Library Clerk, authored the Pitch an Idea LSTA grant for a $20,000 award. This was the first time that José had attempted to write a grant! The grant project titled: *Teacher in a Tablet* will provide 10 iPads for checkout and use by literacy students with ESL curriculum loaded onto the iPads as part of a Long Distance ESL preparation course.

Staffing / Staff Development

Acting Senior Library Clerk José Garcia wrote an LSTA Pitch and Idea grant which was approved for $20,000 to develop a distance learning curriculum using iPads and iTunes U. José provided Citizenship Coaches training to 12 students from the Claremont Colleges at the request of the City Librarian while she was in Sacramento. José also substituted for the Intermediate High class instructor, thus learning the art of lesson planning and implementation on the spot. He improvised the lesson by reviewing the next chapter in the students' workbook and tied it into the library setting. José also attended the Technology and Distance Learning Symposium at Baldwin Park Adult and Community Education Center and attended the California (CA) Accountability for Experienced Users training. This training completes the California Department of Education (CDE) recertification requirements for this year for the Literacy Program. José gained skills in changes in Payment Point calculations which would affect future amount of funding received for the literacy program. José also attended the WIA Title II CBOs Network Meeting in which issues discussed detailed the new requirements for acquiring Payment Points and a few reminders about grant and data submission deadlines.

Part-time Library Clerk Denise Tang completed CASAS Citizenship Interview Test recertification training. She also began administering new History and Government for Citizenship Testing to students with upcoming interviews. By including this test, the LAMP agency will be able to gain additional payment points for increased funding from the California Department of Education. Denise also completed the rigorous CASAS Implementation Training which demonstrates how to administer CASAS appraisals and pre-and post-tests, interpret test results, and use curriculum support materials to enhance instruction. This training meets the California Department of

Education (CDE) recertification training requirement and is required for staff in the Adult Education field. Denise also attended a USCIS Training Seminar in which participants gained skills about the naturalization process and test, teaching strategies and objectives to prepare immigrants for the naturalization interview and test, and how to implement free USCIS products and publications.

Part-time Library Clerk Angelica Marquez attended the required training in the ASAP database software program. She learned how to input student registration information, add students into their appropriate classes and input material fees paid. Angelica also attended the California Accountability for New Users online training courses. This certification helps her become familiar with data requirements for adult agencies and teaches her how to assess a student's pre-test and assign them into an appropriate class.

2013 – 2014 LAMP GOALS AND OBJECTIVES

GOALS AND OBJECTIVES	PROGRESS
1. Develop online Adult ESL Tutoring Trainings and Long Distance ESL classes to meet the needs of students who cannot attend scheduled classes.	**Completed.** Long Distance ESL class will be added using New Horizons software. Online tutor training is in the development stage between the City Librarian and Acting Senior Clerk Jose Garcia.
2. Address the demand of second language high school students who need assistance with Basic English reading, writing and speaking skills by working with local high schools.	**Completed.** The literacy program will extend its services to high school students in the fall with the addition of the online software Reading Horizons.
3. Create an outreach literacy intervention program offsite at local schools with a community partner to serve at-risk students reading below grade levels.	**Completed.** New partnership with AAEDE and the Reading Rockets Program will begin discussions with offsite sites if possible.

CHILDREN'S SERVICES

Programs:

For the fiscal year 2013-2014, the Children's Services Department conducted 102 storytime programs to a total of 3,047 children and their accompanying parents. 2,476 babies, 1,559 preschoolers and their caregivers attended the 91 Thursday baby and preschool storytimes.

In addition to storytimes, the Children's Services Department conducted the following special programs:

In partnership with the LAMP program, the Children's Services Department on October 3 conducted a **Read for the Record** Jumpstart program. 50 preschoolers and 39 accompanying caregivers attended the program. Each participating preschooler received a free copy of a children's book *Otis* written by Loren Long.

On September 19, the Moon Festival (mid-Autumn) Day, Children's Senior Librarian Christina Yueh conducted a special children's program. It started with a reading of an e-book entitled *Little Rabbit Waits for the Moon* by Beth Shoshan from her iPad. She then shared the two most famous Moon poems both in English and in Mandarin Chinese versions. Children then stayed for a "Moon and Star" craft program and enjoyed hot tea and moon cakes funded by the Friends of the Monterey Park Library. Books on moons, moon cakes, and Chinese Moon Festival were on display during the program for children to check out. The program attracted a total of 69 children and their accompanying parents.

On October 31, the Children's Services Department conducted a special Halloween preschool storytime in the Storytime Room and a "Make Your Own Trick or Treat Bat Box" craft program in the Arts & Crafts Room. After the craft, 21 children and their accompanying parents had their "tricks or treats" at the public services desks. Patrons and staff all enjoyed this very first Halloween parade.

On November 14, a total of nine children and five accompanying adults attended a free hands-on computer class in the Computer Lab. Instructions included setting up a personal email account, accessing Magic wall, checking out E-books and downloading E-books onto reading tablets.

On December 17, the Children's Services Department and the LAMP Literacy Program jointly hosted the annual **Santa Storytime** program in the Friends Room. The program started with a reading of picture book *Merry Christmas, Big Hungry Bear!* written by Don and Audrey Wood. The illustrated pages were projected on the projection screen so that all the attendees could enjoy the story. Special guest Santa, arrived with his magic bag after the story. Each participating child had a chance to talk to Santa and received a special goodie bag. Each family

also received a copy of holiday books funded by the LAMP Literacy Program. The program attracted over 200 children and their accompanying adults.

To celebrate Chinese New Year, the Year of Horse, on January 23, the Children's Services Department presented a special New Year program to a total of 52 children and their accompanying parents in the Friends Room. The program started with a reading of *Chinese New Year* written by Grace Lin. After the story, each attendee was given a bilingual lyrics sheet and Christina projected a video clip from her iPad on the projection screen so that the audience could sing along a Chinese children's song," Happy New Year." Children then stayed for a "Horse Mask" paper craft program. Almond cookies, Chinese sweets and hot tea were served compliments of the Friends of the Monterey Park Library. At the end of the program, each child received a red envelope with a chocolate-flavored Chinese coin candy to get the "Gung Hay Fat Choy" spirit!

February 1 was the library's Saturday re-opening as well as the national **Take Your Child to the Library Day**. There were approximately 54 children visiting the Children's Department who received a complimentary copy of a colorful book cover. Most of them came because they received our children's promotional bookmarks at schools.

To celebrate Valentine's Day, the Children's Services Department conducted a Valentine's storytime and a "yarn heart" craft program on February 13. A total of 36 preschool aged children and their accompanying caregivers attended the program.

To celebrate the birthday of beloved children's author Theodore Geisel – also known as Dr. Seuss --on March 3, a total of 50 children and their accompanying parents attended a special film showing program and enjoying a piece of birthday cakes funded by the Friends of the Monterey Park Library.

On March 6, an Early Learning with Families play area Ribbon Cutting Ceremony was held. Mayor Anthony Wong was present to cut the ribbon and made a speech in English and Chinese Mandarin to 90 attendees. Local newspapers, Channel 7 and one Chinese TV station came to do a feature report and interview Acting Librarian Diana Garcia who wrote the ELF grant which enabled library to acquire more new furniture and learning toy sets for young children to play and learn.

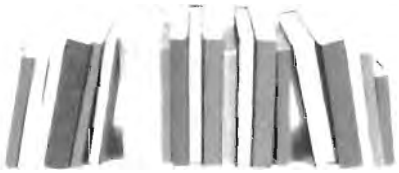
On March 27, Library intern Celia Mendelsohn and part-time Library Clerk Jessica Flores conducted a bilingual Spanish storytime in the Storytime Room. After the stories, there was a "make your own paper box" craft program.

To celebrate National Library Week, April 13-19, City Council member Teresa Real Sebastian was invited to read at the April 15th evening storytime, followed by Police Chief Jim Smith. Director of Recreation and Community Services Dan Costley read at the April 16th Wednesday afternoon storytime, followed by Human Resources Director Tom Cody. Tom's wife and their two children also came for the storytime.

On April 17, the Children's Services Department held a special Easter preschool storytime/craft program. Councilmember Hans Liang read an Easter-themed picture book to the attendees. After the stories, children and their parents stayed for an "Easter chick" paper craft program in the Arts and Crafts Room.

On April 24, Library intern Celia Mendelsohn and part-time Library Clerk Jessica Flores conducted a Spanish bilingual storytime in the Storytime Room. After the stories, there was a "Puppy Ears" pull and lift paper craft program.

On Monday, May 5, in the Friends Room, Library intern Celia Mendelsohn and part-time Library Clerk Jessica Flores conducted a Cinco de Mayo Spanish bilingual storytime and a "gods' eye" (ojo de dios) yarn and sticks craft project.



Tween Programs

Tween programs are for ages 9-12 and have been going steadily strong. On a monthly basis, there were book discussions, computer hands-on classes, film showing, food decoration project, trivia-pursuit, scrapbook and Makerspace projects. The program has attracted a total of an estimated 250 tweens and their accompanying parents. Drinks and light refreshments were served compliments of the Friends of the Monterey Park Library.

The Children's Services Department held free computer classes for tweens aged 9-12 and their accompanying parents on Thursdays, December 5 and February 13 in the Computer Lab. The classes covered online catalogs, library websites, online databases, and educational links that were helpful for their research and school assignments. In addition, children learned accessing, downloading and viewing e-books.

On February 20, the Children's Services Department conducted a "Brushbot" program for tweens aged 9-12. Brushbot is part of the Makerspace projects to help tweens learn how to use a new tool or material in a new way. There were 21 tweens and one accompanying parent participated in this fun and educational program. Pizzas and soft drinks were served

compliments of the Friends of the Library.

On May 22, the Children's Services Department presented a Makerspace project, "Build with gummy candies" for tweens ages 9-12. The program was well-received with 31 tweens and four accompanying adults in attendance.

2013 Summer Reading Program:

Reading is so delicious!

The 2013 Summer Reading Program ended on August 1, 2013. The program started on June 24, 2013 and was open to infants through sixth graders. During the six-week program, 695 children signed up for the program and 9,324 books have been reported. 353 certificates including an entry form to win a $529 ScholarShare scholarship were issued to the readers who finished reading 10 books. On November 6, 2013 the Children's Services Department received a $529 check from ScholarShare. This certainly was a great surprise, because the odds of winning were very slim. Throughout the entire California, only 40 such awards were given. This $529 would be used for 2014 Children's Summer Reading Program reading incentives.

In-N-Out Reading Program

This program was for children ages 4-12 and ran from October 7 to November 15, 2013. When the child read five books, he or she received an award certificate and a coupon good for a free hamburger or cheeseburger at any In-N-Out Burger. During the six-week program, 444 children signed up for the program, 4,005 books reported, and a total of 803 meal certificates had been awarded. Each participating reader could receive up to 3 meal certificates by reading 15 books.

1000 Books Before Kindergarten

This is an early literacy initiative to encourage parents and caregivers to begin reading to their children at an early age with a goal of 1,000 books before a child enters kindergarten.
75 families with children ages 0-4 attended the January 16 Kickoff program. Each child who signed up the program received a tote bag and a reading binder to record the books that their parents or caregivers have read to them. As of the end of this fiscal year, a total of 212 children signed up for the program and 16,500 books have been read to.

Children's Book Week Bookmark Contest:

Every Child a Reader

To celebrate Children's Book Week, May 12-18, the Children's Department hosted a bookmark contest with the theme of "Every Child a Reader" for preschoolers through sixth grade students. A total of 138 (60.5% increase compared to last year's 68) bookmark entries were received. Each participant was awarded with a colorful book cover and a coloring pencil compliment of the Academy of Arts for All. Entries were divided into three categories. The Friends of the Monterey

Park Library provided a prize of $50 to the first place winner and $25 for the second place winner for each category. Three volunteer judges reviewed and graded all the entries during the week of May 5-9. The award ceremony was held on May 12 at 7 p.m. Cakes, drinks and hot tea were served during the program. All the entries were on display in the Friends Room for the entire month of May. Mayor Anthony Wong, Councilmember Peter Chan and three board members attended the event. In June, the three first-place winning bookmarks were reproduced in color funded by the Academy of Arts for All. These bookmarks will be distributed to each participating club reader as part of Summer Reading incentives.

2014 Summer Reading Program:

Paws to Read!

The Program is for infants through sixth grade with a theme of "Paws to Read." The program started on June 23 and will end on August 2. A total of 293 children pre-registered during the week of June 16–June 22.

On June 23, at 5:00 p.m. the Children's Services Department kicked off its 2014 Summer Reading Program in the Barnes Park Amphitheatre featuring Michael Rayner's 45-minute fun-filled comedy juggling show. A total of 154 children and their accompanying adults enjoyed the program and each received a water bottle and a cherry and mango flavored popsicle.

As of June 30, a total of 497 children signed up and read a total of 1,567 books. 82 readers finished reading ten books and received a reading certificate, a water bottle, a LEGOLAND coupon, Yogurtland coupon, a Shakey's pizza coupon, a $500 ScholarShare scholarship entry form and a T-shirt chance ticket to participate in the "Win a T-shirt" raffle drawings.

Homework Assistance Program

For this fiscal year, 563 elementary school students received a total of 2,560 questions in math, English, science projects, and social science.

Reference Statistics

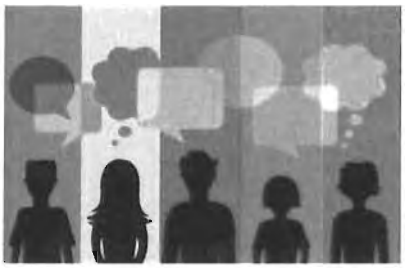
This fiscal year, the Children's Staff answered a total of 14,949 (a 17.2% increase over last year's 12,758) reference questions.

Circulation Statistics

Children's collection has maintained its great circulating records. During this year, a total of 201,413 Children's items have been checked out. In November 2013, 71.7% of the entire circulating materials were children's titles. In January 2014, the Children's circulation hit its record high! **71.9**% of the entire circulating materials were children's titles.

Staffing / Staff Development

During this fiscal year, to keep up with library trends and to better serve children and their caregivers in the community, the Children's staff attended several online classes and webinars. Children's staff attended an Infopeople webinar, *Common Core State Standards and Public Libraries*. Library Clerk Christi Chavez Garcia, intern Celia Mendelsohn and Senior Librarian Christina Yueh attended the online webinar *Foundations of Early Childhood Development*. Acting Librarian Diana, Christi, Christina and part-time Librarian Ken Nolasco attended a two hours long Liebert Cassidy Whitmore webinar, *Mandated Child Abuse/Neglect Reporting*. Christi and Christina attended an Infopeople ELF 2.0 webinar about creative spaces and family engagement in libraries.



The Children's staff attended the November 3-5 California Library Association convention held in Long Beach Convention Center. The conference helped staff network and keep up with library trends to better serve children and their caregivers in this community. Both Diana and Christi attended two service fairs to recruit potential teen volunteers at the two high schools – Westridge and Ramona Convent Schools.

Children's Senior Librarian Christina Yueh attended webinars on *Taking Your Library Back from Google, Talking Social, Mobile, Analytics and Cloud*. On November 3, Christina attended the *Paws to Read: California Summer Reading Program* preconference for programming ideas and bibliographic resources for the 2014 Summer Reading Program. On November 4, she attended a series of the workshops on children's services: *Paws to Read* featuring three children's authors, *Successful STEM Programming at the Library*, and *Children's Services in the Digital Age: Technology Competencies*. She attended the SCLC Children's Services meeting that discussed incorporating iPads into storytimes as well as a Library Makerspace workshop to learn about creating a Makerspace here to engage our tweens at the library. She also participated in the Infopeople online course, *Winning Library Technology Grants*. On October 30 Christina attended a Kiwanis Club Monterey Park business meeting to meet Mr. Sheng Chuan Lai, Lt. Governor of Kiwanis Club -Taiwan Division. Mr. Lai was the organizer and a major contributor of the Kiwanis Club donation of 116 books, CDs and DVDs to our library in May.

Acting Librarian Diana Garcia applied for the California State Library's ELF 2.0 grant and received a $4,500 grant to help expand services for young children from 0 to 5 years and their families. On March 10-15, Diana attended the 2014 Public Library Association in Indianapolis. The scholarship granted her to travel to the conference. From March 19-24 Diana attended the Eureka Leadership Institute, an intensive week-long residential leadership training event. Diana also attended the American Library Association conference in Las Vegas from June 27-29.

Library Clerk Christi Chavez participated in an Infopeople online course, *A Smart Partnership: Collaborating Successfully with Your Local Schools* in addition to those listed above.

This fiscal year, the Children's Services Department hired a part-time Librarian and a part-time Library Clerk and had trained two library interns from library science schools.

Ken Nolasco, part-time Librarian, was hired in July 2013. Ken had volunteered in Children's previously to gain experience, demonstrating his skills and dedication. He works Saturdays and some hours during the week, primarily offering guidance and expertise from the public desk.

Jessica E. Flores, part-time Children's Library Clerk, started Saturday, February 8. She is scheduled to work with Ken on Saturdays. She also works some weekdays. She speaks, reads and writes Spanish. This is a blessing to library and our Spanish-speaking families. She and library intern Celia Mendelsohn conducted the Spanish bilingual storytimes and a "gods' eye" (ojo de dios) yarn and sticks craft project.

Xuemin Zhong, a UCLA library science student, had her 10-week internship from October 3 to December 19. She is fluent in conversational Mandarin and Cantonese. Xuemin helped conduct tween programs. She had her solo preschool storytime on December 19 and received positive feedback from children and their caregivers.

Celia Mendelsohn is a library science student from San Jose State University who started her internship in February. Celia speaks, reads and writes Spanish fluently. She conducted three Spanish bilingual storytimes and craft programs. She earned her undergraduate degree in studio art from Cal State Long Beach and integrated her artistic skills into children's programs. She designed and hand-sewn finger puppets for her storytimes. Celia finished her internship on May 29.

2013 - 2014 CHILDREN'S GOALS AND OBJECTIVES

GOALS/OBJECTIVES	PROGRESS
1. Provide programs that instruct children and their caregivers on information literacy to enhance their research skills on homework topics, such as California Missions, Science Experiments, and Explorers.	**Completed.** In July staff compiled bibliographies on the frequently asked homework topics. In August Staff produced a 3x5 instructional sheet on how to access California Mission e-books on library's website for patrons to keep handy. In October instructional sheets were distributed to students on how to access a children's database BookFlix, and "Native American Tribes" bibliographic brochures were available at the Children's Desk counter. "Recommended websites for Tweens" lists were produced and distributed during the December 5th and February 13th computer classes in the Computer Lab. "Paws to Read" bibliographic brochures were produced and made available.

2. Incorporate e-books into preschool storytime to promote children's e-books collection, to model to caregivers how to engage their children with new technology and to extend the learning experience beyond storytime by offering a fun, educational application used in the storytimes.

Completed. On August 28, Acting Librarian Diana Garcia used "Felt Board" app during her Wednesday storytime. On September 5, Library Clerk Christi Chavez used her mini-iPad to read an e-book at her Thursday storytime in the Storytime Room. Senior Librarian Christina Yueh read an e-book, *Little Rabbit Waits for the Moon* on her iPad during the September 19th Moon Festival program in the Friends Room. On October 31, Christi used library iPad to introduce e-books *Bats in the Library* and *Five Little Pumpkins* with a "Felt Board" app during the Preschool Halloween special storytime in the Storytime Room. Christi read Valentine-themed electronic picture books on library's mini iPad at February 13th Valentine's preschool storytime.

3. Conduct hands-on classes to introduce and promote children's electronic resources including ebooks and database to tweens, preschoolers and their accompanying parents.

Completed. On November 14, a total of nine children and five accompanying adults attended a one-hour hands-on computer class which covered accessing library website, BookFlix database and California Missions e-books, setting up an email account, accessing Magic Wall, checking out e-books and viewing e-books on mobile devises. Tweens and accompanying parents attended the December 5th and February 13th computer classes on library website, library catalog search, California mission e-books, recommended websites for tweens, and accessing and viewing e-books.

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-I.**

TO: The Honorable Mayor and City Council

FROM: Chu Thai, Director of Management Services
Tim Shay, Support Services Supervisor

SUBJECT: Award of Contract with Municipal Auditing Services for Business License Audit Services and Adopt a Resolution designating Municipal Auditing Services as an authorized representative to examine sales and use tax records for the City

RECOMMENDATION:

It is recommended that the City Council:

1. Authorize the City Manager to execute an agreement, in a form approved by the City Attorney, with Municipal Auditing Services for Business License Auditing Services;
2. Adopt Resolution no. _____ establishing the Business Tax Amnesty Program;
3. Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

The City currently issues nearly 5,000 annual business licenses which generate approximately $950,000 for the General Fund. The Monterey Park Municipal Code ("MPMC") requires that any person (which includes businesses) transacting business in the City obtain a license. The License Division's Revenue Collections Officer processes new licenses and renewals and conducts field audits to enforce the City's requirements.

There are business transactions occurring in Monterey Park without a valid business license; it's difficult for the City to achieve 100% compliance with limited resources. To increase revenue recovery, the City issued a Request for Proposals ("RFP") for business tax audit services. Staff received three proposals and is recommending Municipal Auditing Services to conduct the audit for the City.

BACKGROUND:

The three firms that responded to the RFP were HDL Software, LLC; MuniServices, LLC; and Municipal Auditing Services ("MAS") (Attachment 1). The vendors submitting proposals were evaluated based on their experience, their level of service, experience, references, cost of services, as well as methods and processes used to provide the business tax audit services. During the evaluation, staff had detailed discussions with each of the vendors about their practices and methods. Each firm have similar fee structures (35%-40% of revenue recovered) and all enjoy a solid reputation for their services.

MAS has provided full-service business tax assistance to municipalities for over 25 years. Staff feels that MAS's practices and methods have the potential to deliver the highest quality of customer service, and yield the most discoveries and highest compliance rate. MAS will work closely with both City staff and the businesses owners to ensure fair compliance with the City's business tax rules. MAS agreed to a 35% revenue recovery fee, and staff recommends that MAS be awarded a contract for three years.

During the business license audit program, MAS will use its resources to discover businesses that are doing business in the City and have not obtained a current business license. It will notify the businesses that the MPMC requires a business license. For all licenses processed based on MAS's efforts, it will keep 35% of the fees and the City will retain 65%. MAS will be compensated only from the initial business license fee paid by a business; it will not be compensated for any business license renewal. Accordingly, the City will retain 100% of the revenue received from subsequent business license renewals.

Before MAS begins performing, it is recommended that the City establish an Amnesty Program by City Council Resolution (Attachment 2). The Amnesty Program will allow noncompliant businesses to obtain a business license between October 1, 2014 and October 31, 2014. During this time, businesses can pay owed business license fees and the City will waive any associated late fees. This amnesty effort is to strive to become more business-friendly yet also help encourage all businesses to obtain proper licensure.

The City will reinstate the application of penalties on November 1, 2014. Businesses that take advantage of the amnesty program will not have to pay the penalty fees (10% per month). Staff will work closely with MAS during the audit program and will continue to perform field audits to ensure continued compliance with the MPMC.

FISCAL IMPACT:

The total amount of tax revenue the City will recovery through MAS's efforts is difficult to predict. A conservative estimate is that MAS's services will result in a net gain of $250,000 in the City's General Fund during the first year of MAS's contract. Thereafter, once the Amnesty Program is complete and there is a greater compliance rate by businesses, this net revenue will continue being collected. Additionally, staff conservatively estimates that MAS's services will garner an additional $80,000 annual net gain following the 3 year MAS contract term. The net gains are calculated following payment to MAS in accordance with the payment terms.

Respectfully submitted by:

Chu Thai
Director of Management Services

Prepared by:

Tim Shay
Support Services Manager

Approved By:

Paul L. Talbot
City Manager

Reviewed by:

Karl H. Berger
Assistant City Attorney

ATTACHMENTS:

1. Municipal Auditing Services Proposal
2. Contract with Municipal Auditing Services
3. Resolution establishing Business Tax Amnesty Program

ATTACHMENT 1
RFP from Municipal Auditing Services

City of Monterey Park

Request for Proposal for Business Tax Audit Services

Municipal Auditing Services LLC reply:

City of Monterey Park
Management Services Department
Attn: Tim Shay, Support Services Manager
320 W Newark Ave
Monterey Park CA 91754

Greetings and thank you for including Municipal Auditing Services LLC (MAS) in the City of Monterey Park business license RFP.

MAS was founded in late 1999 with the clear and simple purpose of delivering a high quality customer service experience for our clients and their taxpayers as it relates to business license taxes. Business license tax is our only line of service. This allows MAS to focus on the ever changing legal environment and eliminate the typical conflicts of interests associated with providing multiple lines of service.

MAS has provided business tax services to communities as small as 600 licenses (City of Clayton) and as large as 27,000 licenses (City of Fresno). We position our services to accommodate our client's needs and to provide the quality of service you expect. MAS is prepared to dedicate ample resources and attention to insure the success of the City of Monterey Park project.

Municipal Auditing Services LLC is owned and operated by Kevin Weigant. We do not use sub contractors, or partnering firms. MAS works exclusively for California's Municipal jurisdictions.

MAS contact information:

Municipal Auditing Services LLC
PO Box 11866
Fresno CA 93775-1866
559-277-5990 (phone)
877-845-7371 (800)
559-277-5929 (fax)
kevin@mastax.org (email)
Kevin Weigant-President

Again, I would like to express my gratitude in being included in your project. If you have any questions or comments please feel free to contact me.

Sincerely,

Kevin Weigant
President

Programs defined:
There are two (2) primary projects contemplated: (1) Deficiency – the examination of your good corporate citizens (those with a current business license) for the purpose of deficiency determination, and (2) Discovery – the hunt for unlicensed business entities operating in your community, robbing your City of tax revenue and placing your good corporate citizens at a competitive disadvantage.

Discovery program:
The Discovery program represents the largest financial benefit to the City of Monterey Park. The City of Monterey Park's unlimited statute of limitations and associated uncapped penalties financial impact dwarfs that of the Deficiency program.

The real question is how do you go about discovering these unlicensed business entities? Sales tax data is limited to business entities located inside the City and then only covers about 1/3 of the total businesses. Phone directories are limited to entities located inside the city, and cell phones are increasingly being substituted for conventional lines. FTB data is limited to city specific filers. Other government license lists are limited to city specific entities. City canvassing is a poor use of resource and leads to in-the-field conflicts with the public. Each of these sources translates into highly limited performance.

The information you are seeking is not contained in any available data source. It is contained in the books and records of your licensed corporate citizens and can only be extracted during a Deficiency examination. Every single licensed business in your community conducts business with at least one (1) unlicensed business entity. This represents a potential of about 5000 unlicensed business entities – at minimum. Estimated recovery 3.5 – 7 million.

Deficiency program:
The Deficiency program seeks to examine the reported head count against the actual the DE6 of a licensed taxpayer. The financial impact is less than that of the Discovery program in that we are dealing with the delta between that which is owed and that which was paid. An MAS field auditor will be made available to any taxpayer who desires an in the field review of their records at a time and place of their choosing.

Statement of work – suggested execution points:
A typical MAS effort starts with the approval of the contract and approval of the SBOE and FTB resolution. The City will deliver the business tax data (entity and transactions). Subsequent business license data should be updated twice per year. The City will authorize the taxpayer contact letters.

MAS will contact every registered taxpayer to request a set of documents which will address both the deficiency and discovery programs objectives. The City of Monterey Park will be advised in writing 7 days prior to any mailing. This report will list the taxpayer name, mailing address, and reason for contact. This will allow the City time to remove any contact they find inconsistent with the program objectives.

All Discovery leads will be hand check by a human against the City of Monterey Park business license database to insure the lead is legitimate. Again, the City will be advised in writing 7 days prior to any mailing of a taxpayer contact letter.

Contacted taxpayers will respond to MAS by phone, fax, email, or USPS. Again, if the taxpayer desires a field audit, an auditor will be provided at a time and place of the taxpayer's choosing. MAS will handle all taxpayer contacts. MAS will interview the taxpayer as to their specific business operations and nexus with the City of Monterey Park. MAS will educate the taxpayer on the specifics of the Ordinance and how it applies to their business entity and operations. Non exposed Discovery and Deficiency cases will be closed. Discovery and Deficiency cases with findings will remain open and worked until completed. Non compliant taxpayer accounts will be referred to the City of Monterey Park for continued handling after three (3) taxpayer notification letters and/or billing letters.

The taxpayers will send MAS the various documents required for compliance (applications, payments, etc...). All payments will be made payable to the City of Monterey Park. MAS will never touch the taxpayer funds. MAS will quality control the documents and payments to insure they are accurate and acceptable to the City. Batches of completed cases will be sent to the City for processing. If the package is accepted and processed by the City, the MAS transmittal cover sheet is our billing statement which may be sent to AP for processing. MAS WILL ONLY BE PAID AFTER THE CITY HAS RECEIVED THE FUNDS.

A very small number of taxpayers will want to protest their findings. MAS will handle these cases on a validated protest process. In this process, the taxpayer will be required to (1) make their protest in writing, (2) complete all associated paperwork, and (3) make payment in full. The taxpayer protest package is sent to MAS. When received, MAS will close the case and forward the MAS case file and taxpayer protest package to the City for review and final determination.

In all taxpayer matters, MAS makes polite business document requests of City approved contacts using City authorized letters. Any taxpayer non compliance is referred to the City for review and continued handling. MAS is not a collection agency. MAS will not make outbound taxpayer collection phone calls. MAS does not report to any outside agencies.

The very best gift MAS has is to educate the taxpayer on the Ordinance and the concepts of fair and equal taxation which, hopefully, will lead to their continued compliance. Further, the simple interaction between MAS staff and City staff will cause a knowledge transfer that will leave the City staff in an enhanced position to do this important work.

City staff impact:
During program setup, City staff should be prepared to provide MAS with the business license data base. Approve and authorize eight (8) one page taxpayer contact letters. During program execution, staff should be prepared to review taxpayer targeting lists, re-direct taxpayer phone calls to MAS for handling, review taxpayer protests, and process new applications and payments.

All taxpayer contact and handing related tasks will be handled by MAS. Any taxpayer contacting staff should be re-directed to MAS. If a taxpayer arrives at the City counter for assistance, City staff should contact MAS by phone for a case briefing so that the taxpayer maybe handled correctly and efficiently.

Compensation:
MAS's normal fee for service is fifty percent (50%) of actual recovery.

In recognition, of the City's anticipated contribution to the success of this program, MAS is willing to conduct all required elements at a rate of thirty five (35%) of actual recovery (fees, tax, penalties,

interest). No forward years billing. No base fees. All additional consulting services are free of charge.

Recapitulation:
Municipal Auditing Services LLC has built its business on deploying the correct resource at the correct moment in the business tax process with a specific focus on limiting City resources to only those that are critical and irreplaceable.

The single most critical resource we (City/MAS) have is our taxpayers. In general, they will have difficulty with any business tax enforcement. We approach this with a calm, professional document requests and support the effort with an Ordinance educational experience that will generate compliance today and tomorrow.

I would like to personally thank you for the opportunity to be of service to the City of Monterey Park. Please let me know if you have any additional questions or comments.

Sincerely,

Kevin Weigant
President

Municipal Auditing Services LLC
PO Box 11866
Fresno CA 93775-1866
559-277-5990 (phone)
877-845-7371 (800)
559-277-5929 (fax)
kevin@mastax.org (email)

ATTACHMENT 2

Contract with Municipal Auditing Services

PROFESSIONAL SERVICES AGREEMENT
FOR BUSINESS TAX AUDIT SERVICES
BETWEEN
THE CITY OF MONTEREY PARK AND
MUNICIPAL AUDITING SERVICES, LLC.

This AGREEMENT is entered into this ____ day of ___, 2014, by and between the CITY OF MONTEREY PARK, a municipal corporation and general law city ("CITY") and Municipal Auditing Services, LLC ("CONSULTANT").

1. **CONSIDERATION**.

A. As partial consideration, CONSULTANT agrees to perform the work listed in the SCOPE OF SERVICES, below;

B. As additional consideration, CONSULTANT and CITY agree to abide by the terms and conditions contained in this Agreement;

C. As additional consideration, CITY agrees to pay CONSULTANT a fee of 35% of all fees received as a result of discovery and audit work performed. CONSULTANT's services. CITY may modify this amount as set forth below. Unless otherwise specified by written amendment to this Agreement, CITY will pay this sum as specified in the attached Exhibit "A," which is incorporated by reference.

2. **SCOPE OF SERVICES**.

A. CONSULTANT will perform services listed in the attached Exhibit "B," which is incorporated by reference.

B. CONSULTANT will, in a professional manner, furnish all of the labor, technical, administrative, professional and other personnel, all supplies and materials, equipment, printing, vehicles, transportation, office space and facilities, and all tests, testing and analyses, calculation, and all other means whatsoever, except as herein otherwise expressly specified to be furnished by CITY, necessary or proper to perform and complete the work and provide the professional services required of CONSULTANT by this Agreement.

3. **PERFORMANCE STANDARDS**. While performing this Agreement, CONSULTANT will use the appropriate generally accepted professional standards of practice existing at the time of performance utilized by persons engaged in providing similar services. CITY will continuously monitor CONSULTANT's services. CITY will notify CONSULTANT of any deficiencies and CONSULTANT will have fifteen (15) days after such notification to cure any shortcomings to CITY's satisfaction. Costs associated with curing the deficiencies will be borne by CONSULTANT.

4. **PAYMENTS**. For CITY to pay CONSULTANT as specified by this Agreement, CONSULTANT must submit a detailed invoice to CITY which lists the hours worked and hourly rates for each personnel category and reimbursable costs (all as set forth in Exhibit "A") the tasks performed, the percentage of the task completed during the billing period, the cumulative percentage completed for each task, the total cost of that work during the preceding billing month and a cumulative cash flow curve showing projected and actual expenditures versus time to date.

5. **NON-APPROPRIATION OF FUNDS**. Payments due and payable to CONSULTANT for current services are within the current budget and within an available, unexhausted and unencumbered appropriation of the CITY. In the event the CITY has not appropriated sufficient funds for payment of CONSULTANT services beyond the current fiscal year, this Agreement will cover only those costs incurred up to the conclusion of the current fiscal year.

6. **ADDITIONAL WORK**.

A. CITY's city manager ("Manager") may determine, at the Manager's sole discretion, that CONSULTANT must perform additional work ("Additional Work") to complete the Scope of Work. If Additional Work is needed, the Manager will give written authorization to CONSULTANT to perform such Additional Work.

B. If CONSULTANT believes Additional Work is needed to complete the Scope of Work, CONSULTANT will provide the Manager with written notification that contains a specific description of the proposed Additional Work, reasons for such Additional Work, and a detailed proposal regarding cost.

7. **FAMILIARITY WITH WORK**.

A. By executing this Agreement, CONSULTANT agrees that it has:

i. Carefully investigated and considered the scope of services to be performed;

ii. Carefully considered how the services should be performed; and

iii. Understands the facilities, difficulties, and restrictions attending performance of the services under this Agreement.

B. If services involve work upon any site, CONSULTANT agrees that CONSULTANT has or will investigate the site and is or will be fully acquainted with the conditions there existing, before commencing the services hereunder. Should CONSULTANT discover any latent or unknown conditions that may materially affect the performance of the services, CONSULTANT will

immediately inform CITY of such fact and will not proceed except at CONSULTANT's own risk until written instructions are received from CITY.

8. **TERM**. The term of this Agreement will be three years, from _____, 2014 to _____, 2017, with two optional one year extensions. Unless otherwise determined by written amendment between the parties, this Agreement will terminate in the following instances:

A. Completion of the work specified in Exhibit "A";

B. Termination as stated in Section **16**.

9. **TIME FOR PERFORMANCE**.

A. CONSULTANT will not perform any work under this Agreement until:

i. CONSULTANT furnishes proof of insurance as required under Section 23 of this Agreement; and

ii. CITY gives CONSULTANT a written notice to proceed.

B. Should CONSULTANT begin work on any phase in advance of receiving written authorization to proceed, any such professional services are at CONSULTANT's own risk.

10. **TIME EXTENSIONS**. Should CONSULTANT be delayed by causes beyond CONSULTANT's control, CITY may grant a time extension for the completion of the contracted services. If delay occurs, CONSULTANT must notify the Manager within forty-eight hours (48 hours), in writing, of the cause and the extent of the delay and how such delay interferes with the Agreement's schedule. The Manager will extend the completion time, when appropriate, for the completion of the contracted services.

11. **CONSISTENCY**. In interpreting this Agreement and resolving any ambiguities, the main body of this Agreement takes precedence over the attached Exhibits; this Agreement supersedes any conflicting provisions. Any inconsistency between the Exhibits will be resolved in the order in which the Exhibits appear below:

A. Exhibit A: Scope of Work;

B. Exhibit B: Budget; and

C. Exhibit C: Proposal for Services.

12. **CHANGES**. CITY may order changes in the services within the general scope of this Agreement, consisting of additions, deletions, or other revisions, and the contract sum and the contract time will be adjusted accordingly. All such changes must be authorized in writing,

executed by CONSULTANT and CITY. The cost or credit to CITY resulting from changes in the services will be determined in accordance with written agreement between the parties.

13. **TAXPAYER IDENTIFICATION NUMBER**. CONSULTANT will provide CITY with a Taxpayer Identification Number.

14. **PERMITS AND LICENSES**. CONSULTANT, at its sole expense, will obtain and maintain during the term of this Agreement, all necessary permits, licenses, and certificates that may be required in connection with the performance of services under this Agreement.

15. **WAIVER**. CITY's review or acceptance of, or payment for, work product prepared by CONSULTANT under this Agreement will not be construed to operate as a waiver of any rights CITY may have under this Agreement or of any cause of action arising from CONSULTANT's performance. A waiver by CITY of any breach of any term, covenant, or condition contained in this Agreement will not be deemed to be a waiver of any subsequent breach of the same or any other term, covenant, or condition contained in this Agreement, whether of the same or different character.

16. **TERMINATION**.

A. Except as otherwise provided, CITY may terminate this Agreement at any time with or without cause.

B. CONSULTANT may terminate this Agreement at any time with CITY's mutual consent. Notice will be in writing at least thirty (30) days before the effective termination date.

C. Upon receiving a termination notice, CONSULTANT will immediately cease performance under this Agreement unless otherwise provided in the termination notice. Except as otherwise provided in the termination notice (see Attachment C), any additional work performed by CONSULTANT after receiving a termination notice will be performed at CONSULTANT" own cost; CITY will not be obligated to compensate CONSULTANT for such work.

D. Should termination occur, all finished or unfinished documents, data, studies, surveys, drawings, maps, reports and other materials prepared by CONSULTANT will, at CITY's option, become CITY's property, and CONSULTANT will receive just and equitable compensation for any work satisfactorily completed up to the effective date of notice of termination, not to exceed the total costs under Section 1(C).

E. Should the Agreement be terminated pursuant to this Section, CITY may procure on its own terms services similar to those terminated.

F. By executing this document, CONSULTANT waives any and all claims for damages that might otherwise arise from CITY's termination under this Section.

17. **OWNERSHIP OF DOCUMENTS.** All documents, data, studies, drawings, maps, models, photographs and reports prepared by CONSULTANT under this Agreement are CITY's property. CONSULTANT may retain copies of said documents and materials as desired, but will deliver all original materials to CITY upon CITY's written notice. CITY agrees that use of CONSULTANT's completed work product, for purposes other than identified in this Agreement, or use of incomplete work product, is at CITY's own risk.

18. **PUBLICATION OF DOCUMENTS.** Except as necessary for performance of service under this Agreement, no copies, sketches, or graphs of materials, including graphic art work, prepared pursuant to this Agreement, will be released by CONSULTANT to any other person or public CITY without CITY's prior written approval. All press releases, including graphic display information to be published in newspapers or magazines, will be approved and distributed solely by CITY, unless otherwise provided by written agreement between the parties.

19. **INDEMNIFICATION.**

A. *Indemnification for Professional Services.* CONSULTANT will save harmless and indemnify and at CITY's request reimburse defense costs for CITY and all its officers, volunteers, employees and representatives from and against any and all suits, actions, or claims, of any character whatever, brought for, or on account of, any injuries or damages sustained by any person or property resulting or arising from any negligent or wrongful act, error or omission by CONSULTANT or any of CONSULTANT's officers, agents, employees, or representatives, in the performance of this Agreement, except for such loss or damage arising from CITY's sole negligence or willful misconduct.

B. *Indemnification for other Damages.* CONSULTANT indemnifies and holds CITY harmless from and against any claim, action, damages, costs (including, without limitation, attorney's fees), injuries, or liability, arising out of this Agreement, or its performance, except for such loss or damage arising from CITY's sole negligence or willful misconduct. Should CITY be named in any suit, or should any claim be brought against it by suit or otherwise, whether the same be groundless or not, arising out of this Agreement, or its performance, CONSULTANT will defend CITY (at CITY's request and with counsel satisfactory to CITY) and will indemnify CITY for any judgment rendered against it or any sums paid out in settlement or otherwise.

C. For purposes of this section "CITY" includes CITY's officers, officials, employees, agents, representatives, and certified volunteers.

D. It is expressly understood and agreed that the foregoing provisions are intended to be as broad and inclusive as is permitted by the law of the State of California and will survive termination of this Agreement.

E. The requirements as to the types and limits of insurance coverage to be maintained by CONSULTANT as required by Section 23, and any approval of said insurance by CITY, are not intended to and will not in any manner limit or

qualify the liabilities and obligations otherwise assumed by CONSULTANT pursuant to this Agreement, including, without limitation, to the provisions concerning indemnification.

20. **ASSIGNABILITY**. This Agreement is for CONSULTANT's professional services. CONSULTANT's attempts to assign the benefits or burdens of this Agreement without CITY's written approval are prohibited and will be null and void.

21. **INDEPENDENT CONTRACTOR.** CITY and CONSULTANT agree that CONSULTANT will act as an independent contractor and will have control of all work and the manner in which is it performed. CONSULTANT will be free to contract for similar service to be performed for other employers while under contract with CITY. CONSULTANT is not an agent or employee of CITY and is not entitled to participate in any pension plan, insurance, bonus or similar benefits CITY provides for its employees. Any provision in this Agreement that may appear to give CITY the right to direct CONSULTANT as to the details of doing the work or to exercise a measure of control over the work means that CONSULTANT will follow the direction of the CITY as to end results of the work only.

22. **AUDIT OF RECORDS.** CONSULTANT will maintain full and accurate records with respect to all services and matters covered under this Agreement. CITY will have free access at all reasonable times to such records, and the right to examine and audit the same and to make transcript therefrom, and to inspect all program data, documents, proceedings and activities. CONSULTANT will retain such financial and program service records for at least three (3) years after termination or final payment under this Agreement.

23. **INSURANCE**.

A. Before commencing performance under this Agreement, and at all other times this Agreement is effective, CONSULTANT will procure and maintain the following types of insurance with coverage limits complying, at a minimum, with the limits set forth below:

Type of Insurance	Limits
Commercial general liability:	$1,000,000
Professional Liability	$1,000,000
Business automobile liability	$1,000,000
Workers compensation	Statutory requirement

B. Commercial general liability insurance will meet or exceed the requirements of ISO-CGL Form No. CG 00 01 11 85 or 88. The amount of insurance set forth above will be a combined single limit per occurrence for bodily injury, personal injury, and property damage for the policy coverage. Liability policies will be

endorsed to name CITY, its officials, and employees as "additional insureds" under said insurance coverage and to state that such insurance will be deemed "primary" such that any other insurance that may be carried by CITY will be excess thereto. Such endorsement must be reflected on ISO Form No. CG 20 10 11 85 or 88, or equivalent. Such insurance will be on an "occurrence," not a "claims made," basis and will not be cancelable or subject to reduction except upon thirty (30) days prior written notice to CITY.

C. Professional liability coverage will be on an "occurrence basis" if such coverage is available, or on a "claims made" basis if not available. When coverage is provided on a "claims made basis," CONSULTANT will continue to renew the insurance for a period of three (3) years after this Agreement expires or is terminated. Such insurance will have the same coverage and limits as the policy that was in effect during the term of this Agreement, and will cover CONSULTANT for all claims made by CITY arising out of any errors or omissions of CONSULTANT, or its officers, employees or agents during the time this Agreement was in effect.

D. Automobile coverage will be written on ISO Business Auto Coverage Form CA 00 01 06 92, including symbol 1 (Any Auto).

E. CONSULTANT will furnish to CITY duly authenticated Certificates of Insurance evidencing maintenance of the insurance required under this Agreement and such other evidence of insurance or copies of policies as may be reasonably required by CITY from time to time. Insurance must be placed with insurers with a current A.M. Best Company Rating equivalent to at least a Rating of "A:VII."

F. Should CONSULTANT, for any reason, fail to obtain and maintain the insurance required by this Agreement, CITY may obtain such coverage at CONSULTANT's expense and deduct the cost of such insurance from payments due to CONSULTANT under this Agreement or terminate pursuant to Section 16.

24. **USE OF SUBCONTRACTORS.** CONSULTANT must obtain CITY's prior written approval to use any consultants while performing any portion of this Agreement. Such approval must approve of the proposed consultant and the terms of compensation.

25. **INCIDENTAL TASKS.** CONSULTANT will meet with CITY monthly to provide the status on the project, which will include a schedule update and a short narrative description of progress during the past month for each major task, a description of the work remaining and a description of the work to be done before the next schedule update.

26. **NOTICES**. All communications to either party by the other party will be deemed made when received by such party at its respective name and address as follows:

<u>If to CONSULTANT:</u> <u>If to CITY:</u>

Municipal Auditing Services LLC PO Box 11866 Fresno CA 93775-1866	City of Monterey Park 320 W. Newmark Ave. Monterey Park, CA. 91754
Attention: Kevin Weigant	Monterey Park, CA Attention: Chu Thai

Any such written communications by mail will be conclusively deemed to have been received by the addressee upon deposit thereof in the United States Mail, postage prepaid and properly addressed as noted above. In all other instances, notices will be deemed given at the time of actual delivery. Changes may be made in the names or addresses of persons to whom notices are to be given by giving notice in the manner prescribed in this paragraph.

27. **CONFLICT OF INTEREST**. CONSULTANT will comply with all conflict of interest laws and regulations including, without limitation, CITY's conflict of interest regulations.

28. **SOLICITATION**. CONSULTANT maintains and warrants that it has not employed nor retained any company or person, other than CONSULTANT's bona fide employee, to solicit or secure this Agreement. Further, CONSULTANT warrants that it has not paid nor has it agreed to pay any company or person, other than CONSULTANT's bona fide employee, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. Should CONSULTANT breach or violate this warranty, CITY may rescind this Agreement without liability.

29. **THIRD PARTY BENEFICIARIES**. This Agreement and every provision herein is generally for the exclusive benefit of CONSULTANT and CITY and not for the benefit of any other party. There will be no incidental or other beneficiaries of any of CONSULTANT's or CITY's obligations under this Agreement.

30. **INTERPRETATION**. This Agreement was drafted in, and will be construed in accordance with the laws of the State of California, and exclusive venue for any action involving this agreement will be in Los Angeles County.

31. **COMPLIANCE WITH LAW**. CONSULTANT agrees to comply with all federal, state, and local laws applicable to this Agreement.

32. **ENTIRE AGREEMENT.** This Agreement, and its Attachments, sets forth the entire understanding of the parties. There are no other understandings, terms or other agreements expressed or implied, oral or written. There is one Attachments to this Agreement. This Agreement will bind and inure to the benefit of the parties to this Agreement and any subsequent successors and assigns.

33. **RULES OF CONSTRUCTION.** Each Party had the opportunity to independently review this Agreement with legal counsel. Accordingly, this Agreement will be construed simply, as a whole, and in accordance with its fair meaning; it will not be interpreted strictly for or against either Party.

34. **SEVERABILITY.** If any portion of this Agreement is declared by a court of competent jurisdiction to be invalid or unenforceable, then such portion will be deemed modified to the extent necessary in the opinion of the court to render such portion enforceable and, as so modified, such portion and the balance of this Agreement will continue in full force and effect.

35. **AUTHORITY/MODIFICATION.** The Parties represent and warrant that all necessary action has been taken by the Parties to authorize the undersigned to execute this Agreement and to engage in the actions described herein. This Agreement may be modified by written amendment. CITY's executive manager, or designee, may execute any such amendment on behalf of CITY.

36. **ACCEPTANCE OF FACSIMILE SIGNATURES.** The Parties agree that this Agreement, agreements ancillary to this Agreement, and related documents to be entered into in connection with this Agreement will be considered signed when the signature of a party is delivered by facsimile transmission. Such facsimile signature will be treated in all respects as having the same effect as an original signature.

37. **CAPTIONS.** The captions of the paragraphs of this Agreement are for convenience of reference only and will not affect the interpretation of this Agreement.

38. **TIME IS OF ESSENCE.** Time is of the essence for each and every provision of this Agreement.

39. **FORCE MAJEURE**. Should performance of this Agreement be prevented due to fire, flood, explosion, acts of terrorism, war, embargo, government action, civil or military authority, the natural elements, or other similar causes beyond the Parties' reasonable control, then the Agreement will immediately terminate without obligation of either party to the other.

40. **STATEMENT OF EXPERIENCE.** By executing this Agreement, CONSULTANT represents that it has demonstrated trustworthiness and possesses the quality, fitness and capacity to perform the Agreement in a manner satisfactory to CITY. CONSULTANT represents that its financial resources, surety and insurance experience, service experience, completion ability, personnel, current workload, experience in dealing with private consultants, and experience in dealing with public agencies all suggest that CONSULTANT is capable of performing the proposed contract and has a demonstrated capacity to deal fairly and effectively with and to satisfy a public CITY.

[Signatures on next page]

IN WITNESS WHEREOF the parties hereto have executed this contract the day and year first hereinabove written.

CITY OF MONTEREY PARK

_____	_____
Paul Talbot, City Manager	Kevin Weigant, President

ATTEST:

_____
Vincent D. Chang,
City Clerk

APPROVED AS TO FORM:
MARK D. HENSLEY, City Attorney

By: _____
Karl H. Berger, Assistant City Attorney

Attachment C

Termination Notice

Except as otherwise provided, upon termination of the Agreement CONSULTANT must stop all work under the Scope of Services. CONSULTANT may continue to take action for collecting amounts due to CITY from accounts created during the term of the Agreement. Accordingly, if CITY receives payments resulting from CONSULTANT's work during the term of the Agreement, CITY will compensate CONSULTANT in accordance with the Agreement. This Section will survive termination of the Agreement.

ATTACHMENT 3

Resolution Adopting Business Tax Amnesty Program

RESOLUTION NO. ____

A RESOLUTION ESTABLISHING A ONE MONTH AMNESTY PROGRAM TO ENCOURAGE COMPLIANCE WITH THE MONTEREY PARK MUNICIPAL CODE BUSINESS LICENSE REQUIREMENTS.

The City Council of the city of Monterey Park does resolve as follows:

SECTION 1: The City Council finds and declares as follows:

A. Chapter 5.08 of the Monterey Park Municipal Code ("MPMC") requires all persons conducting business within the City's jurisdiction to obtain a business license;

B. Revenue generated from business license fees helps pay for a variety of public services provided by the City;

C. The City is undertaking a business license audit program in order to help ensure full compliance with the MPMC;

D. While paying a business license fee is required by the MPMC, the City recognizes that many businesses may not comply with the law through inadvertence rather than intentional avoidance;

E. Recognizing the public interest in both obtaining greater compliance with the MPMC and businesses' desire to adhere to the law, the City Council believes that it is in the City's interest to implement business license amnesty program as described in this Resolution;

SECTION 2: *Amnesty Program*. The City Council authorizes the City Manager, or designee, to implement the following amnesty program (the "Program"):

A. The Program will be effective between October 1, 2014 and October 31, 2014 ("Amnesty Period");

B. During the Amnesty Period, first time business license or home occupation applicants may submit applications to the City during regular business hours; and

C. Penalties that might otherwise be imposed pursuant to MPMC § 5.08.170 will be waived upon a person obtaining a business license or home occupation permit through the Program including, without limitation, paying all applicable fees.

SECTION 3: *Administrative Policies and Procedures*. If required to implement the Program,

the City Manager is authorized to promulgate administrative policies and procedures.

SECTION 4: This Resolution will become effective immediately upon adoption.

PASSED AND ADOPTED this ___ day of _____, 2014.

_____
Anthony Wong, Mayor

ATTEST:

_____
Vincent D. Chang, City Clerk

APPROVED AS TO FORM:
Mark D. Hensley, City Attorney

By: _____
Karl H. Berger, Assistant City Attorney

[Macintosh HD:Users:karlberger:Downloads:MP - BLT Resolution.doc]
August 8, 2014

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-J.**

TO: Paul L. Talbot, City Manager

FROM: Jim Smith, Chief of Police

SUBJECT: Mobile Vision In Car Camera System Technology Upgrade

RECOMMENDATION:

It is recommended that the City Council:

(1) Authorize the City Manager, or designee, to execute an agreement in a form approved by the City Attorney, to purchase a Mobile Vision In-Car Camera Flashback 3 System Technology upgrade in the amount of $191,121 from L3 Communications Mobile Vision, Inc. Funding was approved in the 2014-15 Fiscal Year Budget, Account No. 0010-801-5002-99321.

(2) Take such additional, related action that may be desirable.

EXECUTIVE SUMMARY:

Approval is requested for the purchase in the amount of $191,121 to L3 Communications Mobile Vision Inc., to upgrade the Digital In-Car Video system for the Police patrol vehicles, parking enforcement vehicles, and motorcycles. The recommended contract includes the replacement of the in car digital video recorders (DVRs), access points, servers, disk storage, recording and DVD burning equipment, installation, training, and an additional four-year prepaid extended warranty. Total contract cost consists of the system upgrade and an additional four-year pre paid warranty.

BACKGROUND:

The Monterey Park Police Department is currently utilizing L3 Communications Mobile Vision In-Car Flashback 2 System. This system records Officer's activity during traffic stops, contacts with individuals, car chases, and other situations in the field. The system utilizes a mounted camera in the patrol vehicle, a recording device (DVR), wireless audio transmitters, wireless access points at the Station to download the videos onto a server, and a DVD burning device to make copies for archiving and court cases. The current system was procured from L3 Communications Mobile Vision Inc, in July 2009. Effective October 2014, the Flashback 2 System will no longer be

supported. The Flashback 2 System has reached the end of it useful life and is in need of an upgrade.
The City of Monterey Park Municipal Code Section 3.20.050(2) exempts from competitive bidding in situations where solicitation of bids or proposal would for any reason be impractical (i.e.: sole source). In this instance, bidding would be impractical because if the City competitively bid the system and contracted with a different vendor, the cost of the total system replacement would significantly exceed the cost of the upgrade. This is a technology upgrade to our existing system. The increased cost of a full system replacement would include the installation of new cameras, monitors, cradles, rewiring of the patrol vehicles, migrating current data, and additional training.

By using the same vendor that installed the existing Flashback 2 System, the existing cameras, monitors, transmitters, cradles, wiring and cabling in the patrol vehicles can be reused with the Flashback 3 System, minimizing the cost and downtime required for the replacement of the equipment. In addition, these existing items will be covered under the additional five year extended warranty period.

FISCAL IMPACT:

Funding was approved in the FY2014-15 Budget, Account No. 0010-801-5002-99321.

Respectfully submitted,

Jim Smith
Chief of Police

Prepared by:

Paul Villalobos
Sergeant, Technical Services

Approved By:

Paul L. Talbot
City Manager

Reviewed by:

Karl Berger
Assistant City Attorney

Attachments:

(1) L3 Communications Mobile Vision Inc. quote

ATTACHMENT 1 Pg. 1 of 3

L3 communications
Mobile-Vision, Inc.

90 Fanny Road
Boonton, NJ 07005
Phone: (800) 336-8475
Fax: (973) 257-3024

Quote

QUOTATION NUMBER: 0131714
QUOTATION DATE: 8/1/2014

SALESPERSON: MT
CUSTOMER NUMBER: CAMONT2

Sold To:
Monterey Park Police Dept
320 West Newmark Ave
Monterey Park, CA 91754

Ship To:
Monterey Park Police Dept
320 West Newmark Ave
Attn: Paul Villalobos
Monterey Park, CA 91754

Confirm To:
Paul Villalobos

Bill-To Phone: (626) 307-1224

Customer P.O.	Ship VIA	F.O.B.	Terms
	UPS GROUND	BOONTON, NJ	Net 30 Days

Item Number	Unit	Ordered	Unit Price	Amount
/MVD-EMA-DVD EMA - DVD Year 2	EACH	1.00	1,913.00	1,913.00
/MVD-EMA-DVD EMA - DVD Year 3	EACH	1.00	1,913.00	1,913.00
/MVD-EMA-DVD EMA - DVD Year 4	EACH	1.00	1,913.00	1,913.00
/MVD-EMA-DVD EMA - DVD Year 5	EACH	1.00	1,913.00	1,913.00
/EMA WAP EMA WAP/Antenna Year 2	EACH	6.00	120.00	720.00
/EMA WAP EMA WAP/Antenna Year 3	EACH	6.00	120.00	720.00
/EMA WAP EMA WAP/Antenna Year 4	EACH	6.00	120.00	720.00
/EMA WAP EMA WAP/Antenna Year 5	EACH	6.00	120.00	720.00
/INSTALLATION Installation of WAP/Antenna	EACH	1.00	3,795.00	3,795.00

Remove existing Access Points and Install New Access Points at customer location. 4 Locations
Installation by Black and White

****** QUOTATION IS VALID FOR 60 DAYS ******

Subtotal:	180,242.45
Shipping and Handling:	1,650.00
Sales Tax:	10,028.47
Order Total:	**191,920.92**

ATTACHMENT 1 Pg 2 of 3

L3 communications
Mobile-Vision, Inc.

90 Fanny Road
Boonton, NJ 07005
Phone: (800) 336-8475
Fax: (973) 257-3024

Quote

QUOTATION NUMBER: 0131714
QUOTATION DATE: 8/1/2014

SALESPERSON: MT
CUSTOMER NUMBER: CAMONT2

Sold To:
Monterey Park Police Dept
320 West Newmark Ave
Monterey Park, CA 91754

Ship To:
Monterey Park Police Dept
320 West Newmark Ave
Attn: Paul Villalobos
Monterey Park, CA 91754

Confirm To:
Paul Villalobos

Bill-To Phone: (626) 307-1224

Page: 1

Customer P.O.	Ship VIA	F.O.B.	Terms
	UPS GROUND	BOONTON, NJ	Net 30 Days

Item Number	Unit	Ordered	Unit Price	Amount
MVD-FB3-FB2-UPG	EACH	31.00	2,395.00	74,245.00
Upgrade, Flashback 3 from Flashback 2, FB				
MVD-VLP2-FS	EACH	31.00	0.00	0.00
Assembly, Voice Link Plus 2 Wireless Microphone System with Transmitter w/Belt Clip, E				
MVD-VLP2-CG	EACH	31.00	0.00	0.00
VLP2 Charging Station with AC Power Adapter				
MVD-SMW3C3C2CB	EACH	31.00	218.95	6,787.45
Antenna, Dome Wifi/GPS Thru-Hole Mount, Black, FB3				
LSMVDR625	EACH	1.00	15,756.00	15,756.00
Hardware Only Rack Server: 25TB RAID-6 DASD, Dual Quad-Core Intel Xeon 2.4GHz p				
LSMVDDVDBR2540	EACH	1.00	8,495.00	8,495.00
DVD/Blu Ray Backup Robot with Built-In Workstation: 100 Disk Capacity				
MVD-AP-AN-IN	EACH	6.00	749.00	4,494.00
Kit, Indoor AP-802.11n over a or a. Includes antenna, POE injector, POE converter				
MVD-DEP-BT3	EACH	1.00	5,900.00	5,900.00
Solution Configuration / Training		Whse: 008		
MVD-DES-BTO-EOL	EACH	1.00	750.00	750.00
OS/DES SWR Installation on EOL Servers & Data Migration		Whse: 008		

Continued

ATTACHMENT 1 Pg 3 of 3

L3 communications
Mobile-Vision, Inc.

90 Fanny Road
Boonton, NJ 07005
Phone: (800) 336-8475
Fax: (973) 257-3024

Quote

QUOTATION NUMBER: 0131714
QUOTATION DATE: 8/1/2014

SALESPERSON: MT
CUSTOMER NUMBER: CAMONT2

Sold To:
Monterey Park Police Dept
320 West Newmark Ave
Monterey Park, CA 91754

Ship To:
Monterey Park Police Dept
320 West Newmark Ave
Attn: Paul Villalobos
Monterey Park, CA 91754

Confirm To:
Paul Villalobos

Bill-To Phone: (626) 307-1224

Customer P.O.	Ship VIA	F.O.B.	Terms
	UPS GROUND	BOONTON, NJ	Net 30 Days

Item Number	Unit	Ordered	Unit Price	Amount
MVD-FB-EMA-4Y EMA Flashback In Car Yr 2-5	EACH	31.00	1,000.00	31,000.00
/EMA DEP EMA Server Hardware Year 2	EACH	1.00	2,607.00	2,607.00
/EMA DEP EMA Server Hardware Year 3	EACH	1.00	2,607.00	2,607.00
/EMA DEP EMA Server Hardware Year 4	EACH	1.00	2,607.00	2,607.00
/EMA DEP EMA Server Hardware Year 5	EACH	1.00	2,607.00	2,607.00
/MVD-EMA-SWR EMA - DEP Software Only Year 2	EACH	31.00	65.00	2,015.00
/MVD-EMA-SWR EMA - DEP Software Only Year 3	EACH	31.00	65.00	2,015.00
/MVD-EMA-SWR EMA - DEP Software Only Year 4	EACH	31.00	65.00	2,015.00
/MVD-EMA-SWR EMA - DEP Software Only Year 5	EACH	31.00	65.00	2,015.00

Continued

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-K.**

TO: The Honorable Mayor and City Council

FROM: Norma Arvizu, City Librarian

SUBJECT: ADOPT A RESOLUTION FOR DECLARING SEPTEMBER INTERNATIONAL LITERACY MONTH

RECOMMENDATION:
It is recommended that the City Council:

1. Adopt the resolution recognizing the 30th California State Library Literacy Services Anniversary and the Annual Celebration of International Literacy Day on September 8, 2014.

BACKGROUND:
The California Library Literacy Services (CLLS) will celebrate 30 years of changing lives for the better through providing services for adults with low literacy skills. This milestone will be marked by celebratory events statewide, supported by a media relations campaign to help raise awareness of the critical role California public libraries play in curbing the negative cycle of low adult literacy, and increase volunteer recruitment to help reduce adult learner waiting lists statewide.

State Librarian, Greg Lucas has requested Governor Brown proclaim September 2014 as "Adult Literacy Awareness Month." The LAMP Literacy Program is also celebrating 30 years of providing adult literacy services and is asking Council recognize this with a proclamation for Adult Literacy Awareness Month in September as well.

FISCAL IMPACT:
None.

Respectfully submitted by:

Norma R Arvizu

Norma Arvizu
City Librarian

Approved by:

Paul L. Talbot
City Manager

ATTACHMENT:

1. Resolution

ATTACHMENT 1
Resolution

RESOLUTION NO.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MONTEREY PARK RECOGNIZING THE 30th ANNIVERSARY OF THE CALIFORNIA LIBRARY LITERACY SERVICE OF THE CALIFORNIA STATE LIBRARY AND THE ANNUAL CELEBRATION OF INTERNATIONAL LITERACY DAY

The City Council does resolve as follows:

Section 1. The City Council finds and declares that:

A. The California Library Literacy Service was formed in September 1984 as part of the California State Library.

B. Literacy skills for all of our country's citizens is vital to the acquisition of knowledge and to their personal growth..

C. California Library Literacy Service provides both funding and program support for over 100 free library adult literacy programs in California, including the Monterey Park Bruggemeyer Library's LAMP program for the past thirty years..

D. The support provided by California Library Literacy Service enables these free adult literacy programs to engage over 12,600 volunteer tutors who devote over 855,000 hours helping over 22,700 citizens each year in elevating their skills in numeracy and speaking, reading, and writing of English.

E. International Literacy Day is celebrated each year on September 8th to focus attention on the 800 million people throughout the world who are unable to read and still need our help, and on the many successes world-wide in combating low literacy skills.

Section 2. The City Council further declares:

A. Septernber as Adult Literacy Awareness Month to honor the California Library Literacy Service and International Literacy Day.

Section 3. This Resolution takes effect immediately upon its adoption.

PASSED, APPROVED, AND ADOPTED this 20th day of August 2014.

Anthony Wong
Mayor
Monterey Park, California

ATTEST:

Vincent D. Chang, City Clerk
Monterey Park, California

State of California)
County of Los Angeles) ss.
City of Monterey Park)

I, Vincent D. Chang, City Clerk of the City of Monterey Park, California, do hereby certify that the foregoing Resolution No. was duly and regularly adopted by the City Council of the City of Monterey Park at a meeting held on the 20th day of August, 2014, by the following vote:

Ayes:
Noyes:
Absent:
Abstain:

Dated this 20th day of August, 2014

Vincent D. Chang, City Clerk
Monterey Park, California

City Council Staff Report

DATE: AUGUST 20, 2014

AGENDA ITEM NO: **Consent Calendar Agenda Item 3-L.**

TO: PAUL TALBOT, CITY MANAGER

FROM: SCOTT HABERLE, FIRE CHIEF

SUBJECT: APPROVAL OF PURCHASE – FIRE DEPARTMENT DEFIBRILLATOR

RECOMMENDATION: Authorize Purchase of Defibrillator/Monitor to Zoll

It is recommended that the City Council:

(1) Waive bidding requirements pursuant to Monterey Park Municipal Code §3.20.050 (2) and award the bid to Zoll Medical Corp. Funds in the amount of $36,695 were budgeted in Fiscal Year 2013-2014; Account Number 0010-801-5002-99724.

(2) Authorize the City Manager to execute an agreement in a form approved by the City Attorney; and

(3) Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

The Fire Department's current Zoll E-Series cardiac defibrillator is more than five years old, which is beyond the recommended service life and outdated in terms of technological advances and software improvements. The City Council approved funding for one E-series defibrillator/monitor in the Fiscal Year 2014-2015 budget and staff is now seeking City Council authorization to purchase the replacement defibrillator/monitor.

BACKGROUND:

The Monterey Park Fire Department provides advanced life support services through the service delivery platform of two, advanced life support Firefighter/Paramedic staffed rescue ambulances and two, Firefighter/Paramedic assessment, Fire Engines. The cardiac defibrillator/monitor is a key component in the assessment and treatment of a patient experiencing a cardiac emergency. The current ZOLL defibrillators/monitors in service have a front line service cycle of five years. Our current inventory includes eight defibrillators from 2006 and 2012. The older defibrillators are beyond the five year recommended service life. Since the initial purchases of the defibrillators, technological advances and software improvements have been made – further outdating these defibrillators. This purchase will ensure consistent availability for patient care. It further ensures that our frontline inventory is compliant with manufacturer and industry standard software and upgrade requirements.

To ensure continuity of services and emergency response, the Fire Department began a phased-in replacement program that began last year to purchase one defibrillator each fiscal year. The City Council approved a budget of $36,695 based on the previous year's quote. Due to a slight CPI increase, the total cost for the defibrillator is $36,933.61. Additional funds are available in the EMS Division's operating budget.

To proceed with this purchase, staff is seeking City Council approval to waive formal bidding requirements to allow purchase of a Zoll E-series monitor from Zoll Medical Corporation as a sole source

purchase (Exhibit A). The Zoll E-Series monitors are used by our department and other agencies in the area, providing area knowledge, ease of use, and assurance of interoperability. This is consistent with the goals of the region and is becoming a standard for first responders in the area to use the same equipment, training procedures and operating policies. This monitor is compliant with all the required 12 Lead EKG reading and transmission features required in the Los Angeles County Healthcare system.

These monitors are also accepted by the layperson automatic external defibrillators ("AED") located in Monterey Park's facilities. In the event there is a need to use one of the layperson AEDs, the Zoll E-Series defibrillator/monitor can be plugged into the Layperson AED pads without need of changing any equipment. It provides seamless patient care in a critical event in which every minute counts towards patient survivability.

FISCAL IMPACT:

Funds to purchase one E-Series Defibrillator/Monitor is available in Fiscal Year 2014-2015 in Account No. 0010-801-5002-99724 in the amount of $36,695 and $238.61 from the EMS Division Account No. 0010-801-3220-38400.

Respectfully submitted,

Scott Haberle
Fire Chief

Prepared by:

Ken Leasure
EMS Battalion Chief

Approved By:

Paul L. Talbot
City Manager

Reviewed by:

Karl H. Berger
Assistant City Attorney

Attachments: Attachment A – Sole Source Memorandum
Attachment B – Quote from Zoll

ATTACHMENT A
SOLE SOURCE
MEMORANDUM

CITY OF MONTEREY PARK
INTEROFFICE MEMO

DATE: AUGUST 8, 2014

TO: **SCOTT HABERLE, FIRE CHIEF**

FROM: **KEN LEASURE, BATTALION CHIEF**

SUBJECT: **SOLE SOURCE PURCHASE REQUISITION JUSTIFICATION**

I am requesting sole source approval for the purchase of one E Series 12-Lead EKG to replace an outdated 2006 defibrillator.

The Monterey Park Fire Department uses Zoll E Series 12 Lead EKG Defibrillators in its frontline paramedic equipment. Our Department has chosen these defibrillators because of the compatibility and seamless transition to the City's layperson Automatic External Defibrillators currently installed in Monterey Park's buildings and parks. If there is an emergency call to a City facility in which a layperson AED is being used, the paramedic defibrillator can be plugged into the AED pads that are on the patient without changing the pads or equipment. It provides a seamless transition to paramedic equipment easily and efficiently.

In addition, the Zoll E Series 12 Lead EKG Defibrillator is also the same monitor used by area fire departments. Monterey Park uses the same defibrillator as the City of Los Angeles, Pasadena, Burbank, and Monrovia. The purchase from Zoll will assist in maintaining continuity of the regional standards and goals and most importantly interoperability and response efficiency between agencies.

ATTACHMENT B
QUOTE FROM ZOLL

ATTACHMENT B

ZOLL®

GUIDELINES 2010 READY

ZOLL Medical Corporation
Worldwide HeadQuarters
269 Mill Rd
Chelmsford, Massachusetts 01824-4105
(978) 421-9655 Main
(800) 348-9011
(978) 421-0015 Customer Support
FEDERAL ID#: 04-2711626

TO: Monterey Park Fire Department

320 West Newmark Ave
Monterery Park, CA 91754
Attn: **Ron price**

email: Rprice@montereypark.ca.gov
Tel: -

QUOTATION 170101 V:1

DATE: July 30, 2014

TERMS: Net 30 Days

FOB: Shipping Point

FREIGHT: Free Freight

ITEM	MODEL NUMBER	DESCRIPTION	QTY.	UNIT PRICE	DISC PRICE	TOTAL PRICE
1	601-2231011-01	**X Series ® Manual Monitor/Defibrillator $14,995** with 4 trace tri-mode display monitor/ defibrillator/ printer, comes with Real CPR Help®, advisory algorithm, advanced communications package (Wi-Fi, Bluetooth, USB cellular modem capable) USB data transfer capable and large 6.5"(16.5cm) diagonal screen, full 12 ECG lead view with both dynamic and static 12-lead mode display. **Accessories Included:** • Six (6) foot 3- Lead ECG cable • MFC cable • MFC CPR connector • A/C power adapter/ battery charger • A/C power cord • One (1) roll printer paper • 6.6 Ah Li-ion battery • Carry case • Declaration of Conformity • Operator's Manual • Quick Reference Guide • **One (1)-year EMS warranty** **Advanced Options:** **Real CPR Help Expansion Pack $995** CPR Dashboard quantitive depth and rate in real time, release indicator, interruption timer, perfusion performance indicator (PPI) • See - Thru CPR artifact filtering **ZOLL Noninvasive Pacing Technology: $2,550** **Masimo Pulse Oximetry**	1	$40,020.00	$32,016.00	$32,016.00 **

This quote is made subject to ZOLL's standard commercial terms and conditions (ZOLL T's + C's) which accompany this quote. Any purchase order (P.O.) issued in response to this quotation will be deemed to incorporate ZOLL T's + C's. Any modification of the ZOLL T's + C's must be set forth or referenced in the customer's P.O. No commercial terms or conditions shall apply to the sale of goods or services governed by this quote and the customer's P.O unless set forth in or referenced by either document.

Page 1 Subtotal **$32,016.00**

1. DELIVERY WILL BE MADE 60-90 DAYS AFTER RECEIPT OF ACCEPTED PURCHASE ORDER.
2. PRICES QUOTED ARE VALID FOR 60 DAYS.
3. APPLICABLE TAX WILL BE ADDED AT THE TIME OF INVOICING.
4. ALL PURCHASE ORDERS ARE SUBJECT TO CREDIT APPROVAL BEFORE ACCEPTABLE BY ZOLL.
5. **FAX PURCHASE ORDER AND QUOTATION TO ZOLL CUSTOMER SUPPORT AT 978-421-0015 OR EMAIL TO ESALES@ZOLL.COM.**
6. ALL DISCOUNTS OFF LIST PRICE ARE CONTINGENT UPON PAYMENT WITHIN AGREED UPON TERMS.
7. PLACE YOUR ACCESSORY ORDERS ONLINE BY VISITING www.zollwebstore.com.

Bryan Pank
Sr. EMS Account Executive
617-901-6565

GUIDELINES 2010 READY

ZOLL Medical Corporation
Worldwide HeadQuarters
269 Mill Rd
Chelmsford, Massachusetts 01824-4105
(978) 421-9655 Main
(800) 348-9011
(978) 421-0015 Customer Support
FEDERAL ID#: 04-2711626

TO: Monterey Park Fire Department

320 West Newmark Ave
Monterery Park, CA 91754
Attn: **Ron price**

email: Rprice@montereypark.ca.gov
Tel: -

QUOTATION 170101 V:1

DATE: July 30, 2014

TERMS: Net 30 Days

FOB: Shipping Point

FREIGHT: Free Freight

ITEM	MODEL NUMBER	DESCRIPTION	QTY.	UNIT PRICE	DISC PRICE	TOTAL PRICE	
		SP02 & SpCO $4,540 • Signal Extraction Technology (SET) • Rainbow SET (for SpCO & SpMet) **NIBP Welch Allyn Includes: $3495** • Smartcuff 10 foot Dual Lumen hose • SureBP Reusable Adult Medium Cuff **End Tidal Carbon Dioxide monitoring (ETCO2) $4,995** **Oridion Microstream Technology:** Order required Microstream tubing sets separately **Interpretative 12- Lead ECG: $8,450** • 12-Lead one step ECG cable- includes 4- Lead limb lead cable and removable precordial 6- Lead set					
2	8000-0341	**SpO2/SpCO/SpMet Rainbow Resuable Patient Cable: Connects to Single Use Sensors (4 ft)**	1	$225.00	$168.75	$168.75	*
3	8000-000371	**SpO2/SpCO/SpMet Rainbow DCI Adult Reusable Sensor with connector (3 ft)**	1	$495.00	$340.30	$340.30	*
4	8000-002005-01	**Cable Sleeve, Propaq / X Series, ZOLL Blue**	1	$49.95	$39.00	$39.00	**
5	8000-0895	**Cuff Kit with Welch Allyn Small Adult, Large Adult and Thigh Cuffs**	1	$157.50	$126.00	$126.00	**

Page 2 Subtotal **$32,690.05**

This quote is made subject to ZOLL's standard commercial terms and conditions (ZOLL T's + C's) which accompany this quote. Any purchase order (P.O.) issued in response to this quotation will be deemed to incorporate ZOLL T's + C's. Any modification of the ZOLL T's + C's must be set forth or referenced in the customer's P.O. No commercial terms or conditions shall apply to the sale of goods or services governed by this quote and the customer's P.O unless set forth in or referenced by either document.

1. DELIVERY WILL BE MADE 60-90 DAYS AFTER RECEIPT OF ACCEPTED PURCHASE ORDER.
2. PRICES QUOTED ARE VALID FOR 60 DAYS.
3. APPLICABLE TAX WILL BE ADDED AT THE TIME OF INVOICING.
4. ALL PURCHASE ORDERS ARE SUBJECT TO CREDIT APPROVAL BEFORE ACCEPTABLE BY ZOLL.
5. **FAX PURCHASE ORDER AND QUOTATION TO ZOLL CUSTOMER SUPPORT AT 978-421-0015 OR EMAIL TO ESALES@ZOLL.COM.**
6. ALL DISCOUNTS OFF LIST PRICE ARE CONTINGENT UPON PAYMENT WITHIN AGREED UPON TERMS.
7. PLACE YOUR ACCESSORY ORDERS ONLINE BY VISITING www.zollwebstore.com.

Bryan Pank
Sr. EMS Account Executive
617-901-6565

GUIDELINES 2010 READY

ZOLL Medical Corporation
Worldwide HeadQuarters
269 Mill Rd
Chelmsford, Massachusetts 01824-4105
(978) 421-9655 Main
(800) 348-9011
(978) 421-0015 Customer Support
FEDERAL ID#: 04-2711626

TO: Monterey Park Fire Department

320 West Newmark Ave
Monterery Park, CA 91754
Attn: **Ron price**

email: Rprice@montereypark.ca.gov
Tel: -

QUOTATION 170101 V:1

DATE: July 30, 2014

TERMS: Net 30 Days

FOB: Shipping Point

FREIGHT: Free Freight

ITEM	MODEL NUMBER	DESCRIPTION	QTY.	UNIT PRICE	DISC PRICE	TOTAL PRICE	
6	8000-0580-01	**Six hour rechargeable Smart battery**	2	$495.00	$396.00	$792.00	**
7	8300-0250-01	**SurePower Charger Adapter**	2	$97.00	$77.00	$154.00	**
8	8707-000500-01	**USB extension cable**	1	$35.00	$28.00	$28.00	**
9	8300-0520-01	**Filterline Set Adult/Pediatric, Case of 25**	1	$275.00	$220.00	$220.00	**
10		**Estimated tax...9%**				$3,049.56	
		****Reflects Discount Pricing.****					
		***Reflects National Purchasing Partners (NPP) Contract Pricing.**					

This quote is made subject to ZOLL's standard commercial terms and conditions (ZOLL T's + C's) which accompany this quote. Any purchase order (P.O.) issued in response to this quotation will be deemed to incorporate ZOLL T's + C's. Any modification of the ZOLL T's + C's must be set forth or referenced in the customer's P.O. No commercial terms or conditions shall apply to the sale of goods or services governed by this quote and the customer's P.O unless set forth in or referenced by either document.

TOTAL **$36,933.61**

1. DELIVERY WILL BE MADE 60-90 DAYS AFTER RECEIPT OF ACCEPTED PURCHASE ORDER.
2. PRICES QUOTED ARE VALID FOR 60 DAYS.
3. APPLICABLE TAX WILL BE ADDED AT THE TIME OF INVOICING.
4. ALL PURCHASE ORDERS ARE SUBJECT TO CREDIT APPROVAL BEFORE ACCEPTABLE BY ZOLL.
5. **FAX PURCHASE ORDER AND QUOTATION TO ZOLL CUSTOMER SUPPORT AT 978-421-0015 OR EMAIL TO ESALES@ZOLL.COM.**
6. ALL DISCOUNTS OFF LIST PRICE ARE CONTINGENT UPON PAYMENT WITHIN AGREED UPON TERMS.
7. PLACE YOUR ACCESSORY ORDERS ONLINE BY VISITING www.zollwebstore.com.

Bryan Pank
Sr. EMS Account Executive
617-901-6565

ZOLL QUOTATION GENERAL TERMS & CONDITIONS

1. ACCEPTANCE. This Quotation constitutes an offer by ZOLL Medical Corporation to sell to the Customer the equipment (including a license to use certain software) listed in this Quotation and described in the specifications either attached to or referred to in this Quotation (hereinafter referred to as Equipment). Any acceptance of such offer is expressly limited to the terms of this Quotation, including these General Terms and Conditions. Acceptance shall be so limited to this Quotation notwithstanding (i) any conflicting written or oral representations made by ZOLL Medical Corporation or any agent or employee of ZOLL Medical Corporation or (ii) receipt or acknowledgement by ZOLL Medical Corporation of any purchase order, specification, or other document issued by the Customer. Any such document shall be wholly inapplicable to any sale made pursuant to this Quotation, and shall not be binding in any way on ZOLL Medical Corporation.

Acceptance of this Quotation by the Customer shall create an agreement between ZOLL Medical Corporation and the Customer (hereinafter referred to as the "Contract" the terms and conditions of which are expressly limited to the provisions of this Quotation including these Terms and Conditions. No waiver change or modification of any of the provisions of this Quotation or the Contract shall be binding on ZOLL Medical Corporation unless such waiver, change or modification (i) is made in writing (ii) expressly states that it is a waiver, change or modification of this Quotation or the Contract and (iii) is signed by an authorized representative of ZOLL Medical Corporation.

2. DELIVERY AND RISK OF LOSS. Unless otherwise stated, all deliveries shall be F.O.B. ZOLL Medical Corporation's facility. Risk of loss or damage to the Equipment shall pass to the Customer upon delivery of the Equipment to the carrier.

3. TERMS OF PAYMENT. Unless otherwise stated in its Quotation payment by Customer is due thirty (30) days after the ship date appearing on ZOLL Medical Corporation invoice. Any amounts payable hereunder which remain unpaid after the date shall be subject to a late charge equal to 1.5% per month from the due date until such amount is paid.

4. CREDIT APPROVAL. All shipments and deliveries shall at all times be subject to the approval of credit by ZOLL Medical Corporation. ZOLL Medical Corporation may at any time decline to make any shipment or delivery except upon receipt of payment or security or upon terms regarding credit or security satisfactory to ZOLL Medical Corporation.

5. TAXES & FEES. The pricing quoted in its Quotation do not include sales use, excise, or other similar taxes or any duties or customs charges, or any order processing fees. The Customer shall pay in addition for the prices quoted the amount of any present or future sales, excise or other similar tax or customs duty or charge applicable to the sale or use of the Equipment sold hereunder (except any tax based on the net income of ZOLL Medical Corporation), and any order processing fees that ZOLL may apply from time to time. In lieu thereof the Customer may provide ZOLL Medical Corporation with a tax exemption certificate acceptable to the taxing authorities.

6. WARRANTY. (a) ZOLL Medical Corporation warrants to the Customer that from the earlier of the date of installation or thirty (30) days after the date of shipment from ZOLL Medical Corporation's facility, the Equipment (other than accessories and electrodes) will be free from defects in material and workmanship under normal use and service for the period noted on the reverse side. Accessories and electrodes shall be warranted for ninety (90) days from the date of shipment. During such period ZOLL Medical Corporation will at no charge to the Customer either repair or replace (at ZOLL Medical Corporation's sole option) any part of the Equipment found by ZOLL Medical Corporation to be defective in material or workmanship. If ZOLL Medical Corporation's inspection detects no defects in material or workmanship, ZOLL Medical Corporation's regular service charges shall apply. (b) ZOLL Medical Corporation shall not be responsible for any Equipment defect failure of the Equipment to perform any specified function, or any other nonconformance of the Equipment caused by or attributable to (i) any modification of the Equipment by the Customer, unless such modification is made with the prior written approval of ZOLL Medical Corporation: (ii) the use of the Equipment with any associated or complementary equipment accessory or software not specified by ZOLL Medical Corporation, or (iii) any misuse or abuse of the Equipment: (iv) exposure of the Equipment to conditions beyond the environmental, power or operating constraints specified by ZOLL Medical Corporation, or (v) installation or wiring of the Equipment other than in accordance with ZOLL Medical Corporation's instructions. (c) Warranty does not cover items subject to normal wear and burnout during use, including but not limited to lamps, fuses, batteries, cables and accessories. (d) The foregoing warranty does not apply to software included as part of the Equipment (including software embodied in read-only memory known as "firmware"). (e) The foregoing warranty constitutes the exclusive remedy of the Customer and the exclusive liability of ZOLL Medical Corporation for any breach of any warranty related to the Equipment supplied hereunder. THE WARRANTY SET FORTH HEREIN IS EXCLUSIVE AND ZOLL MEDICAL CORPORATION EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES WHETHER WRITTEN, ORAL, IMPLIED, OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

7. SOFTWARE LICENSE. (a) All software (the "Software" which term shall include firmware) included as part of the Equipment is licensed to Customer pursuant to a nonexclusive limited license on the terms hereinafter set forth, (b) Customer may not copy, distribute, modify, translate or adapt the Software, and may not disassemble or reverse compile the Software, or seek in any manner to discover, disclose or use any proprietary algorithms, techniques or other confidential information contained therein, (c) All rights in the Software remain the product of ZOLL Medical Corporation, and Customer shall have no right or interest therein except as expressly provided herein. (d) Customer's right to use the Software may be terminated by ZOLL Medical Corporation in the event of any failure to comply with terms of this quotation, (e) Customer may transfer the license conferred hereby only in connection with a transfer of the Equipment and may not retain any copies of the Software following such transfer. (f) ZOLL Medical Corporation warrants that the read-only memory or other media on which the Software is recorded will be free from defects in materials and workmanship for the period and on terms set forth in section 6. (g) Customer understands that the Software is a complex and sophisticated software product and no assurance can be given that operation of the Software will be uninterrupted or error-free, or that the Software will meet Customer's requirements. Except as set forth in section 7(f), ZOLL MEDICAL CORPORATION MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE SOFTWARE AND IN PARTICULAR DISCLAIMS ANY IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS OF A PARTICULAR PURPOSE WITH RESPECT THERETO. Customer's exclusive remedy for any breach of warranty or defect relating to the Software shall be the repair or replacement of any defective read-only memory or other media so that it correctly reproduces the Software. This License applies only to ZOLL Medical Corporation Software.

8. DELAYS IN DELIVERY. ZOLL Medical Corporation shall not be liable for any delay in the delivery of any part of the Equipment if such delay is due to any cause beyond the control of the ZOLL Medical Corporation including, but not limited to acts of God, fires, epidemics, floods, riots, wars, sabotage, labor disputes, governmental actions, inability to obtain materials, components, manufacturing facilities or transportation or any other cause beyond the control of ZOLL Medical Corporation. In addition ZOLL Medical Corporation shall not be liable for any delay in delivery caused by failure of the Customer to provide any necessary information in a timely manner. In the event of any such delay, the date of shipment or performance hereunder shall be extended to the period equal to the time lost by reason of such delay. In the event of such delay ZOLL Medical Corporation may allocate available Equipment among its Customers on any reasonable and equitable basis. The delivery dates set forth in this Quotation are approximate only and ZOLL Medical Corporation shall not be liable for or shall the Contract be breached by, any delivery by ZOLL Medical Corporation within a reasonable time after such dates.

9. LIMITATIONS OF LIABILITY. IN NO EVENT SHALL ZOLL MEDICAL CORPORATION BE LIABLE FOR INDIRECT SPECIAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ZOLL MEDICAL CORPORATIONS PERFORMANCE OR FAILURE TO PERFORM PURSUANT TO THIS QUOTATION OR THE CONTRACT OR THE FURNISHING, PERFORMANCE, OR USE OF ANY EQUIPMENT OR SOFTWARE SOLD HERETO, WHETHER DUE TO A BREACH OF CONTRACT, BREACH OF WARRANTY, THE NEGLIGENCE OF ZOLL MEDICAL CORPORATION OR OTHERWISE.

10. PATENT INDEMNITY. ZOLL Medical Corporation shall at its own expense defend any suit that may be instituted against the Customer for alleged infringement of any United States patents or copyrights related to the parts of the Equipment or the Software manufactured by ZOLL Medical Corporation, provided that (i) such alleged infringement consists only in the use of such Equipment or the Software by itself and not as a part of or in combination with any other devices or parts, (ii) the Customer gives ZOLL Medical Corporation immediate notice in writing of any such suit and permits ZOLL Medical Corporation through counsel of its choice, to answer the charge of infringement and defend such suit, and (iii) the Customer gives ZOLL Medical Corporation all requested information, assistance and authority at ZOLL Medical Corporation's expense, to enable ZOLL Medical Corporation to defend such suit.

In the case of a final award of damages for infringement in any such suit, ZOLL Medical Corporation will pay such award, but it shall not be responsible for any settlement made without its written consent.

Section 10 states ZOLL Medical Corporation's total responsibility and liability's, and the Customer's sole remedy for any actual or alleged infringement of any patent by the Equipment or the Software or any part thereof provided hereunder. In no event shall ZOLL Medical Corporation be liable for any indirect, special, or consequential damages resulting from any such infringement.

11. CLAIMS FOR SHORTAGE. Each shipment of Equipment shall be promptly examined by the Customer upon receipt thereof. The Customer shall inform ZOLL Medical Corporation of any shortage in any shipment within ten (10) days of receipt of Equipment. If no such shortage is reported within ten (10) day period, the shipment shall be conclusively deemed to have been complete.

12. RETURNS AND CANCELLATION. (a) The Customer shall obtain authorization from ZOLL Medical Corporation prior to returning any of the Equipment. (b) The Customer receives authorization from ZOLL Medical Corporation to return a product for credit, the Customer shall be subject to a restocking charge of twenty percent (20%) of the original list purchase price, but not less than $50.00 per product. (c) Any such change in delivery caused by the Customer that causes a delivery date greater than six (6) months from the Customer's original order date shall constitute a new order for the affected Equipment in determining the appropriate list price.

13. APPLICABLE LAW. This Quotation and the Contract shall be governed by the substantive laws of the Commonwealth of Massachusetts without regard to any choice of law provisions thereof.

14. COMPLIANCE WITH LAWS. (a) ZOLL Medical Corporation represents that all goods and services delivered pursuant to the Contract will be produced and supplied in compliance with all applicable state and federal laws and regulations, including the requirements of the Fair Labor Standards Act of 1938, as amended. (b) The Customer shall be responsible for compliance with any federal, state and local laws and regulations applicable to the installation or use of the Equipment furnished hereunder, and will obtain any permits required for such installation and use.

15. NON-WAIVER OF DEFAULT. In the event of any default by the Customer, ZOLL Medical Corporation may decline to make further shipments or render any further warranty or other services without in any way affecting its right under such order. If despite any default by Customer, ZOLL Medical Corporation elects to continue to make shipments its action shall not constitute a waiver of any default by the Customer or in any way affect ZOLL Medical Corporation's legal remedies regarding any such default. No claim or right arising out of a breach of the Agreement by the Customer can be discharged in whole or in part by waiver or renunciation of the claim or right unless the waiver or renunciation is supported by consideration and is in writing signed by ZOLL Medical Corporation.

16. ASSIGNMENT. This Quotation, and the Contract, may not be assigned by the Customer without the prior written consent of ZOLL Medical Corporation, and any assignment without such consent shall be null and void.

17. TITLE TO PRODUCTS. Title to right of possession of the products sold hereunder shall remain with ZOLL Medical Corporation until ZOLL Medical Corporation delivers the Equipment to the carrier and agrees to do all acts necessary to perfect and maintain such right and title in ZOLL Medical Corporation. Failure of the Customer to pay the purchase price for any product when due shall give ZOLL Medical Corporation the right, without liability to repossess the Equipment, with or without notice, and to avail itself of any remedy provided by law.

18. EQUAL EMPLOYMENT OPPORTUNITY / AFFIRMATIVE ACTION.

VETERAN'S EMPLOYMENT - If this order is subject to Executive Order 11710 and the rules, regulations, or orders of the Secretary of Labor issued thereunder the contract clause as set forth at 41 CFR 60-250.4 is hereby included as part of this order.

EMPLOYMENT OF HANDICAPPED - if this order is subject to Section 503 of the Rehabilitation Act of 1973, as amended and the rules, regulations or orders of the Secretary of Labor as issued thereunder, the contract clause at 41 CFR 60-741.7 is hereby included as part of this order.

EQUAL OPPORTUNITY EMPLOYMENT - if this order is subject to the provisions of Executive Order 11246, as amended, and the rules, regulations or orders of the Secretary of Labor issued thereunder, the contract clause set forth at 41 CFR 60-1.4 (a) and 60-1.4 (b) are hereby included as a part of this order and Seller agrees to comply with the reporting requirements set forth at 41 CFR 60-1.7 and the affirmative action compliance program requirements set forth as 41 CFR 60-1.40.

19. VALIDITY OF QUOTATION. This Quotation shall be valid and subject to acceptance by the Customer, in accordance with the terms of Section 1 hereof for the period set forth on the face hereof. After such period, the acceptance of this Quotation shall not be binding upon ZOLL Medical Corporation and shall not create a contract, unless such acceptance is acknowledged and accepted by ZOLL Medical Corporation by a writing signed by an authorized representative of ZOLL Medical Corporation.

20. GENERAL. Any Contract resulting from this Quotation shall be governed by and interpreted in accordance with the laws of the Commonwealth of Massachusetts. This constitutes the entire agreement between Buyer and Supplier with respect to the purchase and sale of the Products described in the face hereof, and only representations or statements contained herein shall be binding upon Supplier as a warranty or otherwise. Acceptance or acquiescence in the course of performance rendered pursuant hereto shall not be relevant to determine the meaning of this writing even though the accepting or acquiescing party has knowledge of the nature of the performance and opportunity for objection. No addition to or modification of any of the terms and conditions specified herein shall be binding upon Supplier unless made in writing and signed by a duly authorized representative of Supplier. The terms and conditions specified shall prevail notwithstanding any variance from the terms and conditions of any order or other form submitted by Buyer for the Products set forth on the face of this Agreement. To the extent that this writing may be treated as an acceptance of Buyer's prior offer, such acceptance is expressly made conditional on assent by Buyer to the terms hereof, and, without limitation, acceptance of the goods by Buyer to the terms hereof, and, without limitation, acceptance of the goods by Buyer shall constitute such assent. All cancellations and reschedules require a minimum of thirty (30) days notice.

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **New Business Agenda Item 6-A.**

TO: The Honorable Mayor and City Council

FROM: Paul Talbot, City Manager
Ron Bow, Director of Public Works / Assistant City Manager

SUBJECT: Garvey Reservoir – Amendment to the September 1993 Settlement Agreement ("Settlement Agreement") and the 1983 Lease Agreement (Lease) Between the City of Monterey Park ("City") and Metropolitan Water District ("MWD") Concerning the Garvey Reservoir. MWD is Planning to Raise the Elevation Storage of the Garvey Reservoir from 561 to 573 Feet Pursuant to the 1989 Settlement Agreement.

RECOMMENDATION:

It is recommended that the City Council:

(1) Approve the Amendment to the Settlement Agreement; and

(2) Approve the Amendment to Lease Agreement; and

(3) Take such additional related action that may be desirable.

EXECUTIVE SUMMARY:

MWD is proposing to raise the operational level of the Garvey Reservoir in accordance with the terms of the 1993 Settlement Agreement and is willing to continue the monitoring and reporting obligations set for in the Settlement Agreement as well as provide additional park acreage and fund $50,000 in upgrades to Garvey Park. Accordingly, staff is recommending that the Council approve the amendments to the Settlement Agreement and the Lease Agreement rather than engage in litigation with MWD which is the remedy available to the City under the Settlement Agreement if the City wants to oppose MWD's plan to raise the operational level of the Reservoir.

BACKGROUND:

Settlement Agreement

In or about 1989, MWD and the City became aware of substantial water seepage from ground surrounding the Garvey Reservoir, particularly along Fulton Avenue. MWD drained the Reservoir after determining that the seepage could be originating from cracks at the bottom of the Reservoir. A dispute arose amongst the parties as to MWD's right to repair and expand the storage of the Reservoir based upon the

California Environmental Quality Act ("CEQA") determination that had been made by MWD in 1992. The City prevailed at the trial court level and MWD appealed the trial court's decision. While the matter was on appeal, the parties entered into the Settlement Agreement (Exhibit A).

The Settlement Agreement required MWD to: install a new liner system in the Reservoir and take other remedial measures to prevent leakage; install monitoring and alarm equipment for purposes of monitoring ground water seepage; undertake numerous testing and reporting requirements regarding the repair and operation of the Reservoir; undertake testing of the different operational levels of the Reservoir, while limiting the number of days that the Reservoir could be filled to certain specified levels for safety purposes; drain the reservoir (at least partially) should problems arise with the operation of the Reservoir; and, meet certain safety conditions before the Reservoir could be operated on a regular basis.

Once the above requirements had been met without any resulting operational problems, MWD was allowed under the Agreement to operate the Reservoir at average annual operational level of 545 feet with a maximum operational level of 561 feet. During this regular operational time period, MWD was required to maintain the Reservoir in good working order and provide various operational reports to the City.

Following nine years of regular operation of the Reservoir, the Settlement Agreement provides that MWD may notify the City Manager of its intent to raise the operational levels above stated regular operational limits commencing on the tenth year following the regular operation of the Reservoir. MWD is required as part of the notice to provide the City with analysis and evidence demonstrating that the proposal to raise the operational limits of the Reservoir do not materially increase the risk to persons or property.

Under the Settlement Agreement, the City has the right to meet and discuss MWD's proposal. The Agreement also provides that if the City fails to file an action within 60 days of MWD's notice to terminate the Settlement Agreement due to impasse being reached over the meet and confer requirement that, or if the City fails to obtain a court order which finds that the proposal would materially increase the risk to persons or property, the operational limits shall be deemed modified and that the Agreement will otherwise remain in full force and effect.

The Agreement also provided for MWD to pay the City $700,000 to make specified improvements to Garvey Park.

MWD's Request to Increase Operational Limits

In May 2009, MWD made a written request of the City to increase the operational limits of the Reservoir (Exhibit B). As part of the request, MWD proposed to: provide the City with a current seismic report, continue the reporting requirements set forth in the Settlement Agreement; continue the current regular meetings of MWD's and the City's

Technical Coordination Committee meetings; continue with current leak detection activities; assume primary responsibility for detected leaks caused by MWD; and, provide courtesy notifications when raising the level of the reservoir to full capacity for any extended time period.

The City responded to MWD's request in August 2009 (Exhibit C). The City noted that while it wanted to work cooperatively with MWD, that MWD's proposal was deficient as it: did not provide a specific description of the proposed modifications that MWD was proposing to make; did not provide MWD's analysis and evidence supporting the proposed increases to the operational limits; and the required seismic report was 18 years old (thus, City requested an updated report). The City also proposed language changes to the proposals made by MWD for purposes of seeking that all of the safety activities and reporting requirements set forth in the Settlement Agreement would stay in effect.

Based upon the above communications, discussions ensued between the parties which resulted in MWD providing the clarifying information sought by the City including an updated seismic report (Exhibit D). In May 2013, MWD sent a letter to the City (Exhibit E) that confirmed this exchange of information and confirmed that MWD would agree to adhere to the safety activities and reporting requirements set forth in the Settlement Agreement.

Amendment to Settlement Agreement and Lease Agreement

For purposes of committing to writing the final understanding of the parties with regard to MWD's request to increase the operational limits of the Reservoir, City staff and MWD negotiated an amendment to the Settlement Agreement (Exhibit F). The Amendment includes a general summary of the dispute between the parties and MWD's request to increase the operational limit of Garvey Reservoir to 573 feet. The amendment provides that MWD may increase its operational limit to 573 feet and that all of the monitoring and reporting activities set forth in the Settlement Agreement would remain in place. It also provides that the City will not exercise its right to file the legal actions contemplated by the Settlement Agreement but that the City retains all legal and equitable rights to the City as should the Reservoir pose a health and safety threat in the future. The Agreement also continues the obligation of MWD to defend and indemnify the City with regard to issues arising from the operation of the Reservoir.

Finally, the amendment provides that MWD will provide additional leased park space to the City which is located north of the tennis courts at Garvey Park and MWD will pay the City $50,000 for improving the Garvey Park tennis courts and adjacent frontage. The proposed amendment to the 1983 Park Lease is for the purpose of effectuating the increase in park area and improvements thereon (Exhibits G and H).

Notices were sent to residents in radius of 300 feet of the MWD Garvey Reservoir property. Residential addresses were cross referenced with the water bill to verify the ownership of property. Owners that rent their home may utilize a different address for

any and all official business were notified. On August 4, 2014, 322 notices in English, Spanish and Chinese were mailed out to the property owners notifying them of the MWD subject being discussed at tonight's meeting with the date, time and location of the City Council meeting. The notice provides property owners an opportunity to comment on any concerns they may have regarding this subject in writing or at the meeting (Exhibit I).

Staff Analysis and Recommendation

Staff has reviewed MWD's requirements under the MWD agreement, including the seismic study, and believes that it appears at this time that MWD can move forward with increasing its operational limits at the Reservoir. Thus, while the City could file a legal action challenging MWD's proposal, staff believes it is would be in the City's best interest to enter into the amendment to the Settlement Agreement and thereby ensure that MWD is required to continue its extensive monitoring and reporting requirements set forth in the Settlement Agreement. If a problem does develop the City will have the right at that time to pursue remedies both through communications with MWD and, if necessary, through legal action. The Garvey Park lease expansion and $50,000 payment are appreciated but are not factors that influenced staff's recommendation.

FISCAL IMPACT:

The City shall receive approximately .196 acres of additional leased parkland and $50,000 for improvements to Garvey Park.

Respectfully submitted,

Ron Bow
Director of Public Works/
Assistant City Manager

Approved By:

Paul L. Talbot
City Manager

Reviewed by:

Mark D. Hensley
City Attorney

ATTACHMENTS:

1 - Exhibit A – Settlement Agreement September 1993
2- Exhibit B – MWD Request May 2009
3- Exhibit C – City Response August 2009
4- Exhibit D – Seismic Report
5- Exhibit E – MWD letter May 2013
6- Exhibit F – Amended Settlement Agreement
7- Exhibit G – Original Lease October 1983
8- Exhibit H – Amendment to Garvey Park Lease
9- Exhibit I – Notice to Residents Aug 2014

ATTACHMENT 1

Exhibit A – Settlement Agreement
September 1993

SETTLEMENT AGREEMENT

BETWEEN

THE CITY OF MONTEREY PARK

AND

METROPOLITAN WATER DISTRICT

OF SOUTHERN CALIFORNIA

CONCERNING THE GARVEY RESERVOIR

TABLE OF CONTENTS

		Page
1.	REMEDIAL ACTIONS AND IMPROVEMENTS	5
2.	WET TESTING REQUIREMENTS	7
3.	CONDITIONS PRECEDENT TO REGULAR OPERATION	8
4.	ONGOING OPERATION	9
5.	TECHNICAL COORDINATION COMMITTEE	14
6.	NOTIFICATION OF PROBLEMS	15
7.	REMEDIES AND ENFORCEMENT	15
8.	DISPOSITION OF LAWSUIT AND APPEAL	18
9.	COMMUNITY ENHANCEMENTS	18
10.	REFERENCE OF CERTAIN DISPUTES	22
11.	NOTICES	23
12.	WAIVER	24
13.	COUNTERPARTS	24
14.	NO OBLIGATION TO THIRD PARTIES	25
15.	AMENDMENTS IN WRITING	25
16.	FURTHER ASSURANCES	25
17.	SUCCESSORS AND ASSIGNS	26
18.	SEVERABILITY	26
19.	ENTIRE AGREEMENT	26
20.	DEFINITION OF "GOVERNMENTAL REQUIREMENTS"	27
21.	INTERPRETATION	27
22.	TIME OF ESSENCE	28
23.	EFFECTIVENESS AND DURATION	28

SETTLEMENT AGREEMENT

This Settlement Agreement ("Agreement") is made as of September 16, 1993, by and between the CITY OF MONTEREY PARK ("City"), a public body, corporate and politic, and METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, a public body ("MWD"), both parties being sometimes collectively referred to herein as the "Parties" and individually as a "Party", and is made with reference to the following facts:

A. WHEREAS, MWD is a public agency which provides imported water from both the State Water Project and the Colorado River to its 27 member agencies, which in turn sell the water at retail or at wholesale for ultimate use. MWD's service area covers approximately 5,200 square miles and includes most of Southern California's coastal plain.

B. WHEREAS, MWD is the owner and operator of the Garvey Reservoir ("Reservoir"), a storage facility for treated drinking water with a maximum potential capacity of 1610 acre-feet located in the City, more particularly described in that certain Final Environmental Impact Report ("FEIR") dated June 1992, entitled "Garvey Reservoir Restoration Project", and identified by the State of California as State Clearinghouse No. 9001168. The Reservoir, which began storing water in 1955, controls pressure and pipeline flow within the 1,000 square-mile area from central Los Angeles to

western Orange County. The Reservoir currently does not contain water.

C. WHEREAS, MWD has maintained, and the City has disputed, in part, that the Reservoir: (i) is a vital part of MWD's distribution system and is strategically located at the midpoint of MWD's 37-mile long, 72-inch diameter Middle Feeder pipeline; (ii) provides pressure stabilization and water supply for short-term "peaking" operations caused by daily and seasonal variations in demand, and supplies water during periods when treatment plants and pipelines are out of service; and (iii) also helps ensure system reliability against the risk of interruption to MWD member agencies.

D. WHEREAS, in 1989, MWD and City became aware of substantially increased water seepage from the ground along Fulton Avenue in the City, a location downhill from the Reservoir. MWD drained the Reservoir after determining that the water could have originated from certain cracks at the Reservoir's bottom.

E. WHEREAS, MWD maintained, and the City disputed, that the repair to the Reservoir constituted a repair to an existing facility that would not expand storage capacity and thus was categorically exempt from the requirement under the California Environmental Quality Act (CEQA) concerning the preparation of an Environmental Impact Report (EIR). Thereafter, in accommodation to

requests from the City and others, MWD prepared an EIR (i.e., the FEIR).

F. WHEREAS, MWD sent a CEQA Notice of Preparation of the EIR to approximately 225 different addresses and held a public hearing on its proposed EIR. At the request of the City, MWD formed a "Cooperative Committee" to enhance public input on the repair project during preparation of the EIR. The Committee held seven meetings between January 1991 and June 1992. On December 5, 1991, MWD held a public meeting to review the Draft EIR.

G. WHEREAS, the FEIR describes a project proposed by MWD whereby certain improvements would be made to the Reservoir and the Reservoir would be filled or partially-filled with water. The FEIR also describes past problems with excess water seepage through cracks in the Reservoir.

H. WHEREAS, the City instituted proceedings ("Lawsuit") in the Superior Court for the County of Los Angeles, Case No. BS020116, challenging the FEIR and the project described therein. On March 18, 1993, the Court entered its judgment in the Lawsuit, ordering issuance of a writ of mandate compelling MWD to set aside its September 15, 1992 approval of the proposed Reservoir restoration project and its September 15, 1992 Certification of the FEIR. A second lawsuit ("Second Lawsuit") filed by the City against MWD

concerning the Reservoir is currently pending in the Superior Court for the County of Los Angeles as Case No. BC069605.

I. WHEREAS, MWD filed an appeal ("Appeal") from the judgment in the Lawsuit. The Appeal is currently pending as Case No. B076393 in the Second Appellate District of the Court of Appeal. MWD has filed its opening brief in the Appeal, and the City has not yet filed its responding brief.

J. WHEREAS, some residents of the City and other members of the local community have, over the past few years, expressed concern over the restoration of Reservoir. Because of MWD's view of the importance of this facility to MWD's regional distribution system, and because of concern regarding its existence and operation as expressed by the City and some members of the community, MWD and the City have been engaged in an intense series of meetings and negotiations in an attempt to address each other's respective concerns. This Agreement represents a joint resolution resulting from those productive efforts.

NOW THEREFORE, in consideration of the covenants and provisions of this Agreement, the Parties agree as follows:

1. REMEDIAL ACTIONS AND IMPROVEMENTS

1.1 MWD shall maintain the Reservoir in a drained and empty condition until, in addition to any and all other applicable requirements, MWD has completed the following at no cost or expense to City:

1.1.1 MWD shall implement, install and make operational the Hypalon liner system as described in Attachment 1 to this Agreement, as well as the other remedial measures and project features described in Section 2.0 of the FEIR.

1.1.2 MWD shall implement, install and make operational the seepage and groundwater level monitoring and alarm systems ("Monitoring Systems") described at pp. 2-8 and 2-12 of the FEIR to the extent feasible prior to the commencement of wet testing, and the ground movement benchmark survey program described in Attachment 2 to this Agreement. The Monitoring Systems shall include a remote monitoring station with alarm for each component of the Monitoring Systems at the Monterey Park City Hall.

1.1.3 MWD shall comply with all applicable Governmental Requirements (as defined in Section 20 below).

1.2 Not less than 30 days prior to commencing onsite work at the Reservoir site, MWD shall provide City with a detailed

construction and implementation schedule, updated from time to time as required, for the installation and testing of the measures and improvements described in this Section 1. With reasonable prior notice to MWD, the City shall be permitted reasonable access to the Reservoir site during the restoration and testing.

1.3 Throughout the testing period and up to and including the commencement of regular operations, MWD shall provide the City with not less than five business days' advance written notice prior to introducing water into the Reservoir. Such notice shall specify the date and time the filling will commence, the maximum fill elevation, and the intended duration of the filled condition.

1.4 MWD shall provide to the City upon receipt by MWD: (i) copies of all data and reports generated from the testing of the liner (and available data and reports regarding the bonding, seams and anchoring to be used in the liner), drainage and Monitoring Systems installed or to be installed in connection with the Reservoir; and (ii) all product information, product testing data and reports relating to the liner (including without limitation the bonding, seams and anchoring to be used in the liner) drainage and/or Monitoring Systems resulting from testing of similar systems by the manufacturer or persons other than MWD, and/or from use of such systems in projects other than the Reservoir.

2. WET TESTING REQUIREMENTS

2.1 Following satisfaction of the conditions in Section 1 above, but before commencing normal operations, MWD shall fill the Reservoir with water to a maximum water surface elevation of 570 feet, or to such lesser elevation as is sufficient to verify the proper functioning of the liner, drainage, and monitoring systems.

2.2 The Reservoir shall not remain filled during the test period for more than thirty consecutive calendar days at any one time. The aggregate combined number of calendar days during which the Reservoir is filled for test purposes shall not exceed seventy-five days.

2.3 If any of the wet tests disclose that the liner, drainage, or monitoring systems are not in good working order, then the Reservoir shall be immediately drained and the problem corrected prior to any refilling. The City shall be notified immediately by telephone and in writing upon MWD's discovery of any such problem and shall be provided with all test results and a description of corrective measures taken prior to refilling. The City acknowledges and agrees that during the test period, it may not be necessary or appropriate for MWD to drain 100% of the water from the Reservoir, and that a minimal amount of water may be

permitted to remain provided that such does not pose a material risk of injury to person or damage to property.

3. CONDITIONS PRECEDENT TO REGULAR OPERATION

In no event shall regular operation of the Reservoir (i.e. filled conditions extending beyond the 75 aggregate days provided for testing purposes) commence until the following conditions have been met:

3.1 Wet testing shall have demonstrated that the liner, drainage and Monitoring Systems are fully operational and in good working order, and will continue to do so.

3.2 MWD shall have provided instructional literature and onsite instruction to designated City staff members regarding the use and interpretation of the Reservoir monitoring and alarm system installed in City Hall, including identification of any significant liner, drainage or monitoring system problem or potential problem which the monitoring equipment is capable of disclosing.

3.3 MWD shall have complied with all applicable Governmental Requirements.

3.4 MWD shall have given City at least five business days' advance written notice of the date ("Regular Operation Commencement Date") regular operation will commence.

4. ONGOING OPERATION

4.1 Except as provided in Sections 4.6 and 7.3 below, and except as provided above with respect to the 75-day wet testing period, MWD shall not allow the water surface elevation in the Reservoir to exceed 561 feet at any time. In addition, MWD shall adhere to all of the following limitations:

4.1.1 The annual average water surface elevation in the Reservoir shall not exceed an elevation of 545 feet for any calendar year.

4.1.2 Water surface elevation in the Reservoir may be raised to levels up to 555 feet for periods not to exceed ten consecutive days, and up to 561 feet for periods not to exceed two consecutive days.

4.2 The limitations set forth in Section 4.1 above ("Operation Limitations") are depicted graphically in Attachment 3 to this Agreement. In the event of a conflict or apparent conflict between the text of this Agreement and information depicted in Attachment 3, the text of this Agreement shall be controlling.

4.3 On or before the fifth day of each month, MWD shall provide to the City written reports stating: (i) the water surface elevation in the Reservoir for each day of the preceding month; (ii) at least daily reading levels of each piezometer, and (iii) for each incident during the preceding month of seepage greater than the reasonably established norm, the location, quantity of flow and duration of seepage detected by the seepage monitoring system or otherwise known to MWD. The accuracy of each report shall be certified by an MWD official on behalf of MWD under penalty of perjury. MWD shall also promptly provide to the City any and all other reports, memoranda, test results, narrative, quantitative and/or graphic analyses, depictions or written materials generated by or readily available to MWD related to the seepage, groundwater level, ground movement, soil conditions, seismic conditions, and/or seismic activity in the vicinity of or otherwise relating to the Reservoir.

4.4 MWD shall maintain the liner, drainage and monitoring systems for the Reservoir in good working order. This maintenance obligation shall include the duty to repair and replace the systems and systems equipment as may be necessary from time to time. If MWD ever upgrades the monitoring system, it shall also at no cost to City, make appropriate upgrades to the monitoring station in City Hall and retrain City staff in the use thereof as required. MWD shall remain solely responsible for maintaining, operating and monitoring the Reservoir and its liner, drainage and

monitoring systems. The monitoring station to be provided at City Hall is purely for the convenience of the City, and shall impose on the City no duty or liability with respect to the monitoring, maintenance or operation of the Reservoir.

MWD shall indemnify, defend and hold the City harmless from any and all claims, demands, suits, costs, losses and liabilities, including without limitation court costs and attorneys' fees, arising out of or relating to monitoring, maintaining and/or operating the Reservoir.

4.5 At least once every six (6) months, commencing during the first six (6) months of 1994, MWD shall conduct or cause to be conducted by a duly qualified and certified professional a survey of forty-three (43) monuments or benchmarks in the Reservoir as described on Attachment 2 to this Agreement. At least within every five (5) years from the effective date of this Agreement, MWD shall conduct or cause to be conducted an extended area level net survey that uses forty-two (42) monuments located within a 2.3 mile radius of the Reservoir as described in Attachment 2 of this Agreement. On or before the thirtieth (30th) day following the completion of each survey, MWD shall deliver to the City a report of the survey results, including a summary of the amount of any vertical and horizontal movement of the Reservoir embankments.

4.6 Following the ninth anniversary of the Regular Operation Commencement Date, MWD may notify the City Manager in writing of MWD's desire to raise water levels above the Operation Limitations commencing on or after the tenth anniversary of the Regular Operation Commencement Date. Such written notice ("Notice of Modification") shall include a specific description of the modifications which MWD proposes to make to the Operation Limitations as set forth in this Agreement, and MWD's analysis, evidence, findings and conclusions which demonstrate that such proposal meets the standard set forth in Section 7.3 below. Without limiting or impairing any right or remedy of the City to enforce this Agreement, upon request of the City Manager and within thirty days from receiving the Notice of Modification, the Parties shall meet to discuss MWD's proposal to raise the Operation Limitations, and shall meet and confer on a voluntary basis thereafter as they mutually agree is desirable. If an impasse is declared by either Party giving written notice ("Termination Notice") to the other, the meet and confer process under this Section 4.6 shall automatically terminate. If either Party issues a Termination Notice, MWD shall be entitled to continue to operate the Reservoir in accordance with this Agreement. If the City fails to file an action challenging the proposed raising of the water levels as set forth in the Notice of Modification within 60 days of receipt of the Termination Notice, the Operation Limitations shall be deemed modified, effective as of the tenth anniversary of the Regular Operation Commencement Date, to raise the water levels as

proposed in MWD's Notice of Modification, and this Agreement shall otherwise remain in full force and effect as so modified. If the City does file an action pursuant to this section or otherwise challenging MWD's proposed modification, the Operation Limitations shall be deemed to be modified to raise the water levels as proposed in MWD's Notice of Modification, effective as of the tenth anniversary of the Regular Operation Commencement Date, if and only if City fails within one year of filing the action to obtain a court order which determines that the standard set forth in Section 7.3 has not been met. At the election of the City, any action filed pursuant to this Section 4.6 shall be resolved by judicial reference in accordance with Section 10 below. The Parties acknowledge and agree that the procedure set forth above in this Section 4.6 is provided in order to accelerate review of any proposed modification, and City shall be entitled to maintain an action pursuant to this section and shall not be denied declaratory or other relief because of lack of ripeness, prematurity or similar doctrines. Nothing herein shall be construed to prevent the court in an action brought by the City pursuant to this Section 4.6 from: (i) ordering, effective following the tenth anniversary, modifications to the water levels permitted under the Operation Limitations which are less than those proposed in the Notice of Modification but more than the Operation Limitations permit, if determined by the court to be justified based on the standard set forth in Section 7.3; nor (ii) issuing a final order or judgment to modify the Operation Limitations as proposed by MWD in the Notice

of Modification after granting a preliminary order which has denied the proposed modifications.

5. TECHNICAL COORDINATION COMMITTEE

5.1 Commencing as soon as reasonably feasible following the date of this Agreement, the Parties shall establish a joint technical coordination committee ("Technical Committee"), staffed by each Party with engineering staff and/or consultants able to understand and communicate to their respective managements the substance of technical issues which may arise in connection with restoration and operation of the Reservoir. The Technical Committee shall convene, meet and confer as often as is necessary in light of the volume and urgency of technical issues of interest to both Parties, initially on a monthly basis. Topics to be addressed prior to completion of the restoration process include design, testing and implementation of the liner, drainage and monitoring systems, the progress and coordination of construction activities, anticipated fill dates, water levels, soil and geologic conditions, ground movement and seismic activity. Either Party may convene a special Technical Committee meeting on 2 working days' advance written notice, subject to the reasonable availability of the committee members and their alternates. Without limiting any other information, disclosure and notice requirements under this Agreement, MWD representatives at each Technical Committee meeting shall disclose to City representatives any known or suspected

problem with or due to the Reservoir, including without limitation any evidence that the liner, drainage or Monitoring Systems are not in good working order. When deemed appropriate by either Party, the City Manager or his designee and MWD management shall meet to discuss issues of mutual interest, whether as part of a Technical Committee meeting or in a separate meeting.

6. NOTIFICATION OF PROBLEMS

6.1 In addition to its other disclosure and notification obligations hereunder, both prior to and after the commencement of regular operation, MWD shall notify the City by telephone, with written confirmation, immediately upon its discovery of any problem with the Reservoir, the Reservoir liner system, the Reservoir drainage system, or the Reservoir monitoring system, which could materially increase the risk of injury to persons or damage to property within the City.

7. REMEDIES AND ENFORCEMENT

7.1 Without limiting any other rights or remedies which the City may have by law or by agreement, the City shall have the right to petition for a temporary and/or permanent injunction from the Superior Court for the County of Los Angeles ("Court") requiring MWD to take whatever remedial action the Court determines is appropriate if either:

7.1.1 the City believes that a condition has developed or has been discovered by the City which poses a materially increased risk of injury to persons or damage to property caused by water or earth movement associated with the Reservoir; or

7.1.2 MWD breaches this Agreement and/or the City detects leakage from the Reservoir and/or all or part of the Monitoring System fails.

The Court shall grant the City's petition and order MWD to take the remedial action deemed appropriate by the Court if the Court finds that the condition does or would pose a materially increased risk of injury to persons or damage to property in the case of an event described in Section 7.1.1, or does or would pose a material risk of injury to persons or damage to property in the case of an event described in Section 7.1.2. The Parties further acknowledge that money damages alone would be an insufficient remedy under the circumstances described in this Section 7.1 and Section 7.3.

7.2 It is hereby stipulated and agreed by the Parties that failure by MWD to adhere to the Operation Limitations in Section 4.1 of this Agreement shall conclusively entitle City to obtain, in addition to any other remedies the court might deem appropriate, an injunction compelling MWD's compliance with those limitations. If a court finds that MWD has repeatedly or wantonly

violated the Operation Limitations, the Court shall, in addition to any other appropriate relief, order MWD to pay and advance to the City, in annual installments for a period of three years commencing 30 days following the date of the order, an amount sufficient to reimburse the City's direct and indirect costs of hiring and maintaining a staff member or consultant assigned to monitor MWD's compliance with this Agreement, and to coordinate, assemble and analyze technical information related to the operation of and risks associated with the Reservoir. In no case shall MWD's obligation under the preceding sentence exceed the sum of $65,000 per year, adjusted from the date of this Agreement by the change in the U.S. Department of Labor's Consumer Price Index for All Urban Consumers, L.A/Orange Metropolitan Area.

7.3 If the City desires to challenge a Notice of Modification proposed by MWD pursuant to Section 4.6 above, the City shall be entitled to obtain a court order prohibiting and/or denying the proposed modification of the Operation Limitations if a court determines that MWD has failed to demonstrate that the proposed water surface levels higher than the Operation Limitations permit do not materially increase the risk of injury to persons or damage to property.

8. DISPOSITION OF LAWSUIT AND APPEAL.

8.1 Within 15 days following the date of this Agreement, MWD shall prepare, in a form reasonably satisfactory to the City, a stipulated joint application to the Court of Appeal for an order that the judgment in the Lawsuit be vacated and the Lawsuit and Appeal dismissed with prejudice. The Parties shall execute the stipulated joint application and MWD shall cause it to be filed in the Appeal.

8.2 In the event for any reason the Court of Appeal does not sign and enter the order as requested in the stipulated joint application, then the Parties shall reasonably cooperate in achieving the result intended by the Parties or as close there to as possible by other means, such as by MWD dismissing its Appeal and by the City agreeing not to enforce the judgment in the Lawsuit.

8.3 The City shall dismiss the Second Lawsuit with prejudice within 30 days following the date of this Agreement.

9. COMMUNITY ENHANCEMENTS.

During the negotiations which led up to this Agreement, MWD and the City have recognized numerous opportunities to work together for the mutual benefit of each other and the community on

a long-term basis. These opportunities include: (i) enhancement of the athletic, recreational and other areas surrounding the Reservoir; (ii) promotion of water conservation, including drought-resistant landscaping; and (iii) educational and other community outreach programs focusing on water technology, distribution, conservation and engineering. In order to commence working toward the Parties' long-term goals in this regard, the City shall consult with MWD and MWD shall contribute financially and otherwise as described below, to accomplish the specific programs set forth below.

9.1 In order to improve and enhance the surrounding areas in the vicinity of the Reservoir, MWD shall advance and pay to the City, at the times and in the amounts specified in Section 9.2 below, monies for the following public improvement and recreational activities costs:

9.1.1 **Baseball field** (located in the yellow shaded area depicted on Attachment 4 appended to this Agreement) - Renovation of the field, which could include replacing lights, improving irrigation and drainage, installing spectator stands, upgrading restrooms to ADA standards and installing player dugouts. Additional paved parking would also be a goal.

9.1.2 **Tennis Courts** (located in the yellow shaded area) - The existing courts would be rehabilitated. City

wishes to add a youth basketball and/or unlighted tennis courts to the south of the existing courts, in the blue shaded area.

9.1.3 **Garvey Park Museum** (located in a green shaded area, north of the tennis courts) - City wishes to rehabilitate the museum by replacing the roof, HVAC system, and flooring and upgrading restrooms to ADA standards.

9.1.4 **Children's Playground** (located in green shaded area north of tennis courts) - City wishes to rehabilitate to ADA standards.

9.1.5 **Picnic area** (located in green shaded area north of tennis courts) - City wishes to add three (3) new picnic pavilions.

9.2 For the purposes described in Section 9.1 above, MWD shall deposit with the City the aggregate sum of Seven Hundred Thousand Dollars ($700,000), to be deposited and paid to the City in installments as follows: $350,000 on or before October 1, 1993; $150,000 on or before April 1, 1994; and $200,000 on or before January 1, 1995. The City shall not be obligated to install any of said improvements to the extent their aggregate cost exceeds said maximum amount (together with any interest accruing thereon in the hands of the City, which interest shall also be used for said purposes). Upon request, the City shall provide to MWD receipts,

canceled checks, or other reasonable documentation showing that the funds have been expended for the purposes set forth in this Agreement.

9.3 In addition, MWD shall within 120 days following the date hereof install drought-resistant, attractive landscaping (including benches and a paved walkway) reasonably acceptable to the City in the blue-shaded area lying east of Orange Avenue, consisting of approximately 1.29 acres (currently leased to City). The cost of this work shall be at least Thirty Thousand Dollars ($30,000.00). The City shall maintain this area after the work is completed by MWD and the landscaping is established. MWD shall indemnify, defend and hold the City harmless from any claims, demands, suits, costs, losses and liabilities, including without limitation court costs and attorneys' fees, arising out of or relating to the design and installation of the landscaping described in this Section 9.3 and in Section 9.4 below.

9.4 MWD shall also landscape, install a sprinkler system and maintain a parkway on its property between the curb and sidewalk, which runs along the west side of Orange Avenue. This landscaping shall be attractive and shall comply with landscaping plans submitted in advance for the City's approval, which approval shall not be unreasonably withheld.

9.5 City, with the cooperation of MWD, will select two or three of the projects listed in subsection 9.1 above to complete during the 1993-94 fiscal year. It is understood that the ball field renovation is of primary concern to MWD and MWD would prefer this project to be completed within the first three months of 1994.

9.6 In addition to the foregoing, MWD shall deposit with and pay to the City the aggregate sum of One Hundred Thousand Dollars ($100,000), in two equal $50,000 installments due October 1, 1993 and January 1, 1995, to be allocated, together with any interest accruing thereon in the hands of the City, at the rate of approximately Twenty Thousand Dollars ($20,000) per year for each of the next five years, which sums shall be earmarked for the general maintenance of City parks and recreational facilities adjoining the Reservoir.

10. REFERENCE OF CERTAIN DISPUTES.

At the City's election in its sole discretion, any action commenced by the City hereunder shall be resolved by judicial reference pursuant to California Code of Civil Procedure Section 638, as amended. The action shall be conducted, pursuant an order of general reference, by a single referee chosen by mutual consent, or, lacking consent, by an impartial method prescribed by Judicial Arbitration and Mediation Services, Inc., 350 S. Figueroa, Los Angeles, California, from among their affiliated referees (or from

such more limited pool as the Parties may agree). Each Party shall pay its own attorney fees and costs as well as one-half the fees of the Referee and other joint expenses incurred in connection with the Reference.

11. NOTICES.

All notices, requests, demands and other communications under this Agreement shall be in writing unless otherwise specified and shall be rebuttably presumed to have been given on the date of service if served personally on or faxed to the Party to whom notice is to be given, or three days after the date of mailing if mailed to the Party to whom notice is to be given, by first class mail, registered or certified, postage prepaid, return receipt requested and properly addressed as follows:

To City:

City of Monterey Park
320 West Newmark Avenue
Monterey Park, California 91754
Attn.: Chris Jeffers, City Manager
Phone (818) 307-1255
Fax (818) 280-4537

With Copy to:

Brown, Winfield & Canzoneri, Inc.
300 South Grand Avenue, Suite 1500
Los Angeles, California 90071-3125
Attn: Anthony Canzoneri, Esq.
Phone (213) 687-2100
Fax (213) 687-2149

To MWD:

Metropolitan Water District
of Southern California
350 S. Grand Avenue
Los Angeles, CA 90071
Attn: N. Gregory Taylor, Esq.
General Counsel
Phone (213) 217-6115
Fax (213) 217-6450

With Copy to:

Metropolitan Water District
of Southern California
350 S. Grand Avenue
Los Angeles, CA 90071
Attn: Norman Flette, Esq.
Deputy General Counsel
Phone (213) 217-6115
Fax (213) 217-6450

Any Party may change its address, phone or fax number(s) for purposes of this Section by giving the other Party written notice of the new address in the manner set forth above.

12. WAIVER.

The waiver by either Party of a breach of any provision of this Agreement shall not be deemed a waiver of any subsequent breach whether of the same or another provision of this Agreement.

13. COUNTERPARTS.

This Agreement may be executed in any number of counterparts, each of which shall be deemed an original but all of which shall constitute one and the same instrument.

14. NO OBLIGATION TO THIRD PARTIES.

The execution and delivery of this Agreement shall not be deemed to confer any rights upon, nor obligate either of the Parties hereto to, any person or entity not a Party to this Agreement.

15. AMENDMENTS IN WRITING.

The provisions of this Agreement may not be amended or altered except by a written instrument duly executed by each of the Parties hereto, which expressly states that it is an amendment hereto.

16. FURTHER ASSURANCES.

Each of the Parties shall execute such other and further documents and do such further acts as may be reasonably required to effectuate the intent of the Parties and carry out the terms of this Agreement.

17. SUCCESSORS AND ASSIGNS.

This Agreement shall be binding upon and shall inure to the benefit of the Parties hereto and their respective heirs, representatives, successors and assigns.

18. SEVERABILITY.

In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision hereof, and the remainder of the provisions of this Agreement shall continue in full force and effect without impairment unless they are dependent upon the invalid provisions for their meaning or substance, in which case they shall also be unenforceable unless they can be construed and enforced without the invalid provisions.

19. ENTIRE AGREEMENT.

All understandings and agreements heretofore had between the Parties respecting this transaction are merged in this Agreement and this Agreement completely expresses the agreement of the Parties. There are no representations, warranties or agreements except as specifically and expressly set forth in this Agreement.

20. DEFINITION OF "GOVERNMENTAL REQUIREMENTS".

As used herein, the term "Governmental Requirements" shall mean the regulations, constitution, charter, codes, ordinances, laws, guidelines, formal opinions, and other rules, regulations and policies of any governmental unit, public body or agency, whether local, county, regional, state or federal, having jurisdiction over the subject in question.

21. INTERPRETATION.

Whenever the context hereof shall so require, the singular shall include the plural, the male gender shall include the female gender and the neuter, and vice versa. This Agreement is not to be construed in favor of one party nor against another on account of its authorship. Unless otherwise specified, all references to days shall be deemed to refer to calendar days. Unless otherwise specified, any reference to a section of this Agreement shall be deemed to also refer to any subsections of that section. The term "filled" or "full" and variants thereof shall for purposes of this Agreement, unless otherwise specified, be deemed to include "partially-filled" and "partially-full".

22. TIME OF ESSENCE.

Time is of the essence with respect to all matters contained in this Agreement.

23. EFFECTIVENESS AND DURATION.

This Agreement shall become effective on the later of the following dates:

(a) the date upon which the Monterey Park City Council has authorized the execution hereof by its Mayor;

(b) the date upon which MWD's Board of Directors has authorized the execution hereof by its General Counsel; or

(c) the date upon which each of the Parties have received copies hereof fully executed by both Parties, approved as to form and attested as indicated below.

The effective date as determined above shall be inserted in the blank space in the second line of this Agreement, and this Agreement shall thereafter remain effective for so long as the Reservoir remains in operation in any manner or at any level whatsoever.

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of the date first written above.

"CITY"

Approved as to form:
Brown, Winfield & Canzoneri, Inc.

By: _____
Anthony Canzoneri
City Attorney

Attest:

By: _____
City Clerk

CITY OF MONTEREY PARK

By: _____
Mayor

Date Executed: September 16, 1993

"MWD"

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

By: _____
N. Gregory Taylor, Esq.
General Counsel

Date Executed: September 11, 1993

Attachment 1

Liner System Description

The lining system proposed (suject to DSOD approval) as part of the remedial repair consists of a liner/drainage composite, comprised of synthetics, which would be installed over the entire reservoir floor and side slopes. The design includes leaving the existing 45 mil thick Hypalon reservoir cover (pink) in place to act as protection for the reservoir liner system and placing, in sequence, the following new layers of geosynthetics[1]:

a. A thick geotextile (brown);

b. A secondary liner consisting of three ply reinforced Hypalon (blue);

c. A synthetic drainage layer material, generically referred to as a geonet. The geonet has a thin layer of geotextile attached to it, (orange) and ;

d. A top or primary liner consisting of a thick multiply reinforced Hypalon (green).

A geotextile is a blanket like material used as a padding to protect the liner system from the rough asphalt surface.

A geonet is a grid-like plastic net sheet with a thin layer of attached geotextile. The basic purpose of a geonet is to maintain an open path between the primary and seconday liners, thus allowing any water leakage through the top liner to flow freely to the monitoring drains.

---

[1]Incorporated herein by this reference and made a part of this Agreement are duplicate samples of the materials to be used in the liner system ("Liner Materials"). The colors referred to in the brackets following the description of each layer of material corresponds to the color tag on each layer of the Liner Materials. Each tag on the two sets of Liner Materials shall be initialed by the signatories of this Agreement. By initialing each tag each Party acknowledges that each material attached to the tag is the same as described in the corresponding color referred to above. Each Party shall retain one set of Liner Materials.

Description of Benchmark Survey Programs

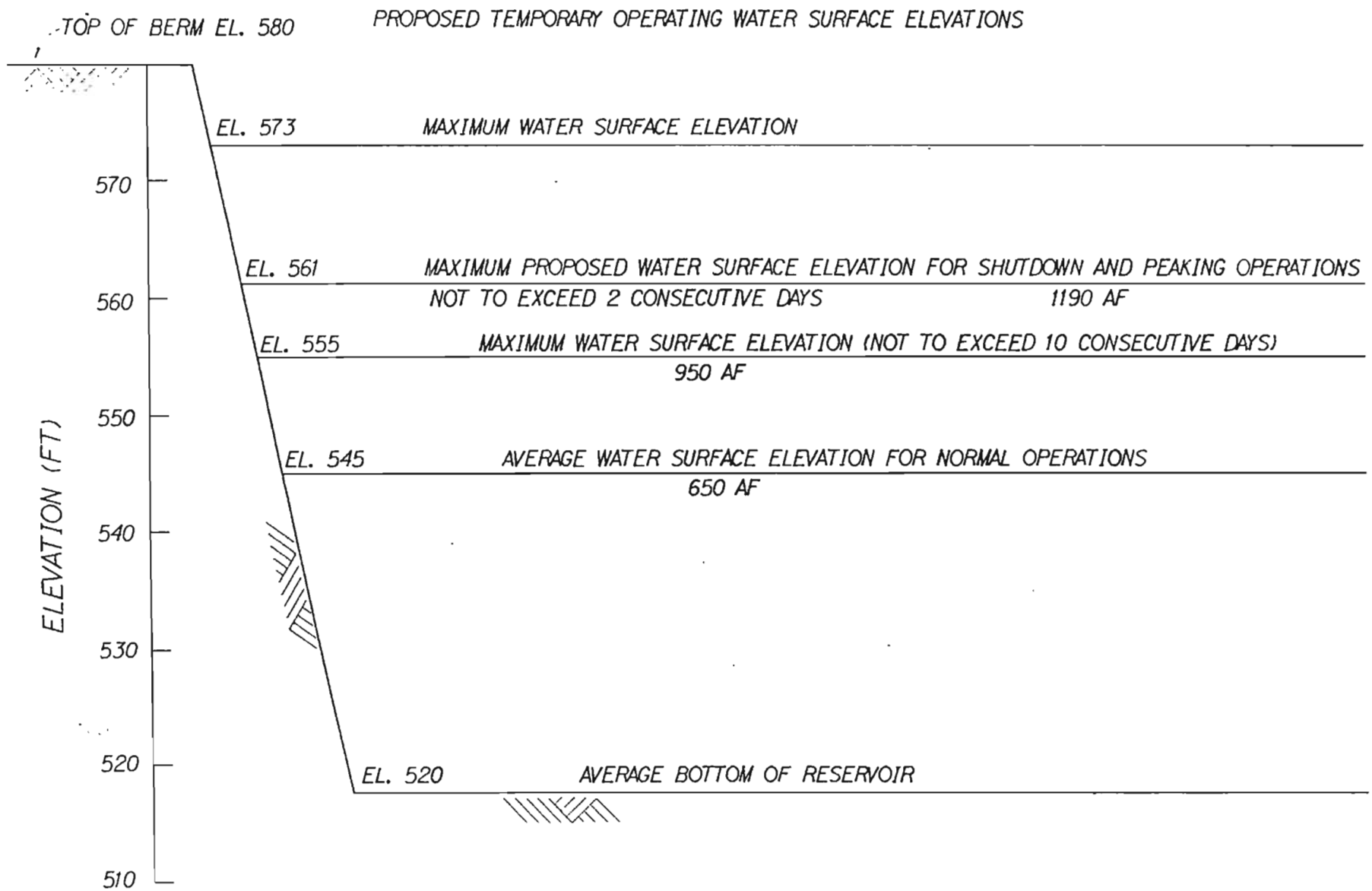
Metropolitan has developed the following two surveillance programs for measuring earth movement at Garvey Reservoir:

a. An onsite deformations survery program that uses 43 survey monuments to measure the potential horizontal and vertical movement of Garvey Reservoir embankments. This program is completed once every six months. Horizontal accuracy of the survey shall be second order one ten-thousandth (0.0001') of a foot. Vertical survey information will be measured to one hundredth (0.01') of a foot and meet or exceed third order Federal Geodetic Control Committee Standards and Specifications for Geodetic Control Network. and;

b. An offsite extended area level net program that uses 42 monuments located within a 2.3 mile radius of Garvey Reservoir to measure any changes in elevation of the reservoir region. This program is completed once every 5 years. Vertical survey information will be measured to one hundredth (0.01') of a foot and meet or exceed third order Federal Geodetic Control Committee Standards and Specifications for Geodetic Control Network.

GARVEY RESERVOIR

PROPOSED TEMPORARY OPERATING WATER SURFACE ELEVATIONS



DATE: 7-27-93

ATTACHMENT 3

B076393

COURT OF APPEAL

STATE OF CALIFORNIA

SECOND APPELLATE DISTRICT

DIVISION 7

CITY OF MONTEREY PARK, a municipal corporation,

Petitioner and Respondent,

vs.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, a public body, corporate and politic,

Respondent and Appellant.

JOINT APPLICATION TO VACATE JUDGMENT AND DISMISS ACTION; STIPULATION; MEMORANDUM OF POINTS AND AUTHORITIES

N. Gregory Taylor
General Counsel
Karen L. Tachiki
Asst. General Counsel
Norman N. Flette
Deputy General Counsel
Setha Schlang
Deputy General Counsel
350 South Grand Avenue, 29th Floor
Los Angeles, California 90071
(213) 217-6240

Daniel P. Selmi, Esq.
1441 West Olympic Boulevard
Los Angeles, California 90015
(213) 736-1098

Attorneys for Respondent and Appellant The Metropolitan Water District of Southern California

Thomas F. Winfield, III, Esq.
Thomas I. McKnew, Esq.
Katherine A. Miller, Esq.
Mark L. Share, Esq.
Brown, Winfield & Canzoneri,
300 South Grand Avenue, 29th
Los Angeles, California 90
(213) 687-2100

Attorneys for Petitioner and Respondent City of Monterey

B076393

COURT OF APPEAL

STATE OF CALIFORNIA

SECOND APPELLATE DISTRICT

DIVISION 7

CITY OF MONTEREY PARK, a municipal corporation,

Petitioner and Respondent,

vs.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, a public body, corporate and politic,

Respondent and Appellant.

JOINT APPLICATION TO VACATE JUDGMENT AND DISMISS ACTION

Respondent and Appellant, The Metropolitan Water District of Southern California ("MWD"), and Petitioner and Respondent, City of Monterey Park ("City"), jointly apply as follows:

That this Court forthwith issue a remitter to the Superior Court and order that the judgment below be vacated and set

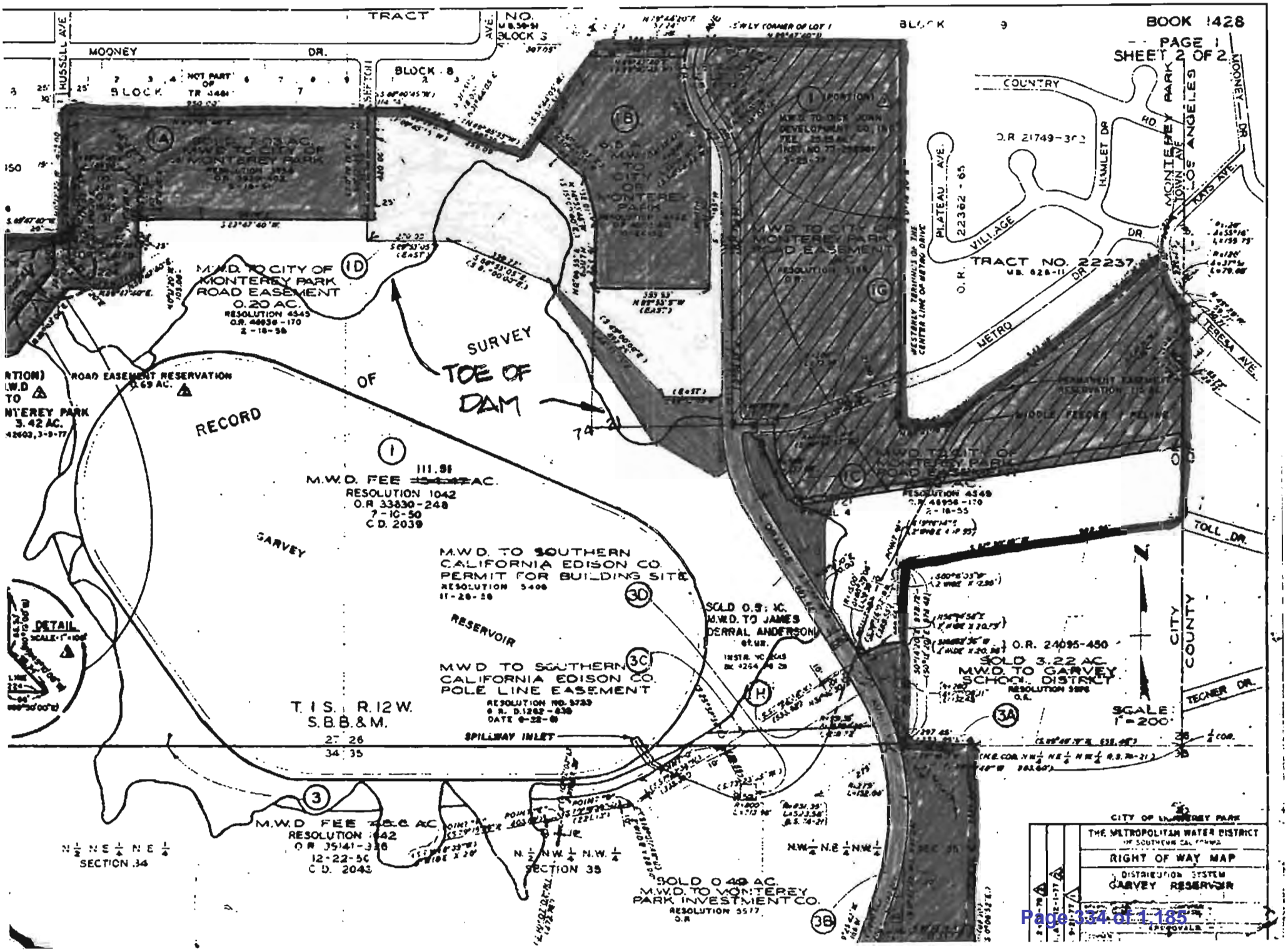
aside, that the action be dismissed with prejudice, and that each party shall bear its own costs on appeal.

Dated: August ____, 1993 THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

By: _____
N. Gregory Taylor,
General Counsel
Attorneys for Respondent and Appellant The Metropolitan Water District of Southern California

Dated: ~~August~~ September 16, 1993 BROWN, WINFIELD & CANZONERI, INC.

By: _____
Thomas I. McKnew, Jr.
Attorneys for Petitioner and Respondent City of Monterey Park


BOOK 1428
PAGE 1
SHEET 2 OF 2
TRACT NO. 22237
M.W.D. TO CITY OF MONTEREY PARK ROAD EASEMENT 0.20 AC.
RESOLUTION 4545
SURVEY OF RECORD
TOE OF DAM
M.W.D. FEE 111.91 AC.
RESOLUTION 1042
O.R. 33830-248
7-10-50
C.D. 2039
GARVEY RESERVOIR
M.W.D. TO SOUTHERN CALIFORNIA EDISON CO. PERMIT FOR BUILDING SITE
RESOLUTION 5406
11-20-58
M.W.D. TO SOUTHERN CALIFORNIA EDISON CO. POLE LINE EASEMENT
SOLD 0.9 AC. M.W.D. TO JAMES DERRAL ANDERSON
SOLD 3.22 AC. M.W.D. TO GARVEY SCHOOL DISTRICT
O.R. 24095-450
T. 1 S., R. 12 W.
S.B.B.&M.
SPILLWAY INLET
M.W.D. FEE 70.0 AC.
RESOLUTION 1042
O.R. 35141-326
12-22-50
C.D. 2043
SECTION 34
SECTION 35
SOLD 0.49 AC. M.W.D. TO MONTEREY PARK INVESTMENT CO.
RESOLUTION 5517
DETAIL
SCALE: 1"=200'
CITY OF MONTEREY PARK
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
RIGHT OF WAY MAP
DISTRIBUTION SYSTEM
GARVEY RESERVOIR
MONTEREY PARK
LOS ANGELES
CITY
COUNTY
TOLL DR.
TECNER DR.
TERESA AVE.
METRO
VILLAGE
HAMLET DR.
PLATEAU AVE.
COUNTRY
MOONEY DR.
HUSSELL AVE.
MOONEY DR.

B076393

COURT OF APPEAL

STATE OF CALIFORNIA

SECOND APPELLATE DISTRICT

DIVISION 7

CITY OF MONTEREY PARK, a municipal corporation,

Petitioner and Respondent,

vs.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, a public body, corporate and politic,

Respondent and Appellant.

STIPULATION TO VACATE JUDGMENT AND DISMISS ACTION

Respondent and Appellant, The Metropolitan Water District of Southern California ("MWD"), and Petitioner and Respondent, City of Monterey Park ("City"), in support of their Joint Application to Vacate Judgment and Dismiss Action, stipulate as follows:

1. The Joint Application to Vacate Judgment and Dismiss Action ("Joint Application") is sought pursuant to a settlement of

the entire action brought by the City against MWD for mandamus. Although the lawsuit has been aggressively litigated by both parties, the parties have reached a full settlement and compromise that will settle all pending disputes between them without prejudicing either party with respect to any other litigation which has been or may be instituted in the future. The purpose of the Joint Application is to place the parties in the same position as they would have been in if no litigation between them had ever been commenced, and the parties had agreed in the first instance to settle their differences without resorting to litigation.

2. In the mandamus action brought by the City, the City sought and obtained a judgment invalidating MWD's approval of the Garvey Reservoir Restoration Project ("Project") to repair and restore a reservoir located in the City of Monterey Park on the ground that the Final Environmental Impact Report ("FEIR") for the restoration of the Project is inadequate because it violated the California Environmental Quality Act, Public Resources Code Sections 21000 et seq ("CEQA") . Although MWD prepared, approved and certified the FEIR under CEQA, MWD contends that the Project is exempt from CEQA as a repair to an existing dam under the supervision of the State Department of Water Resources, and as a reconstruction of an existing structure that will not expand capacity. MWD also contends that its FEIR, which it contends was prepared voluntarily, is legally adequate. MWD has filed its Appellant's Opening Brief. The City has not yet filed its

Respondent's Brief, and by Order of August 5, 1993, the Court extended the time for the City to file its Respondent's Brief and Appendix for 32 days, to and including September 22, 1993.

3. MWD and the City hereby stipulate and agree that vacation of the judgment and dismissal of the lawsuit and appeal with prejudice should be granted for the following reasons:

(A) Vacation of the judgment and dismissal with prejudice will place the parties in the same position they would have been in if no action had ever been filed by the City and is in accordance with the settlement agreement of the parties;

(B) The rights and interest of both MWD and the City (the only parties to this action) will be promptly and finally resolved, and the parties will be relieved of the expense, delay and uncertainty of being required to proceed with this appeal in order to determine the validity of the judgment below.

(C) Vacation of the judgment pursuant to this stipulation will not affect the rights of anyone other than the parties to this appeal.

(D) MWD and the City are mutually willing to furnish to the Court such further briefing and analysis as the Court may request in order to satisfy the Court that the vacation of the

trial court's judgment is in the interest of justice and consistent with governing principles of California law.

4. The parties hereby stipulate and apply to the Court of Appeal to remand the action to the Superior Court with directions that: (a) the remitter shall issue forthwith, (b) the trial court's judgment shall be vacated and set aside and the action dismissed with prejudice and (c) each party shall bear its own costs on appeal.

5. Furthermore, while this matter is under consideration by the Court of Appeal and in the furtherance of justice and economy the parties hereby agree that it would be in their mutual best interest that the Court grant an extension of time to the City in which to file its Respondent's Brief and Appendix to and including October 12, 1993. A separate application has been filed requesting the extension.

Dated: August 31, 1993

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

By: _____
N. Gregory Taylor,
General Counsel
Attorneys for Respondent and Appellant The Metropolitan Water District of Southern California

Dated: ~~August~~ September 16, 1993 BROWN, WINFIELD & CANZONERI, INC.

By: Thomas I. McKnew, Jr.

Thomas I. McKnew, Jr.
Attorneys for Petitioner and
Respondent City of
Monterey Park

MEMORANDUM OF POINTS AND AUTHORITIES

I. INTRODUCTION

Respondent and Appellant, The Metropolitan Water District of Southern California ("MWD"), and Petitioner and Respondent, City of Monterey Park ("City"), have entered into a settlement agreement of all of the matters in dispute, subject only to the vacation of the trial court's judgment in the mandamus action filed by the City and dismissal of its lawsuit with prejudice. As part of the settlement agreement, the parties have agreed that within fifteen (15) days following the date of the agreement, this Joint Application to the Court of Appeal would be prepared for an order that the judgment in the lawsuit be vacated and the lawsuit dismissed with prejudice.

II. DISCUSSION

California Courts of Appeal have the legal authority to reverse (or otherwise vacate) a trial court's judgment when the parties stipulate to such an action as a condition of a proposed settlement.

In Neary v. Regents of University of California (1992) 3 Cal.4th 273, 276-277 the court stated as follows:

"The orderly termination of litigation the parties themselves no longer wish to pursue has a direct and substantial effect on the use and conservation of the appellate court's resources and is therefore a matter within the courts' inherent power to control their own processes. Moreover, when the parties themselves no longer wish to litigate, a stipulated reversal is consistent with the courts' authority to conform their orders with justice. (Code Civ. Proc., § 128, subd. (a)(8).) We hold that California's appellate courts have the legal authority to reverse (or otherwise vacate) a trial court's judgment when the parties stipulate to such action as a condition of a proposed settlement pending appeal."

Furthermore, the court in Neary, supra, at p. 285 stated that "thwarting the settlement would be needlessly unfair to the parties, they would deny the settlement on the terms they desire even though no substantial competing interest is apparent. Indeed they would be punished for not being prescient."

III. CONCLUSION

It is respectfully requested that this Court order a vacation of the judgment based upon this Joint Application and Stipulation of the parties and remand the action to the Superior Court for the County of Los Angeles for dismissal with prejudice.

Dated: August 31, 1993 THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

By: _____
N. Gregory Taylor,
General Counsel
Attorneys for Respondent and Appellant The Metropolitan Water District of Southern California

Dated: ~~August~~ September 16, 1993 BROWN, WINFIELD & CANZONERI, INC.

By: _____
Thomas I. McKnew, Jr.
Attorneys for Respondent City of Monterey Park

ATTACHMENT 2

Exhibit B - MWD Request

May 2009

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

May 14, 2009

Via Federal Express

June Yotsuya, City Manager
City of Monterey Park
320 West Newmark Avenue
Monterey Park, CA 91754

Modifications to Operations of Garvey Reservoir

Dear Ms. Yotsuya:

The Metropolitan Water District of Southern California (Metropolitan) writes to request written, authorized confirmation of the City of Monterey Park's (City) consent to Metropolitan's May 15, 2008 proposal to remove operational limits on the Garvey Reservoir pursuant to paragraph 4.6 of the Settlement Agreement Between the City of Monterey Park and Metropolitan Water District of Southern California Concerning the Garvey Reservoir, dated September 16, 1993 (Settlement Agreement). A copy of the May 15, 2008 correspondence and the relevant documentation is enclosed for reference. The proposed operational changes would allow Metropolitan to raise the level of the reservoir at its discretion and resume normal operations of the reservoir. Metropolitan's operations, extensive monitoring, and study of the Garvey Reservoir over the past 10 years demonstrates the safety and integrity of the reservoir, and justifies the removal of the operational limits under the Settlement Agreement.

For the past year, Metropolitan has worked closely with the City of Monterey Park (City) on this proposal as part of the Technical Coordination Committee, as contemplated in the Settlement Agreement. See Settlement Agreement at ¶ 5. As a result of these discussions, Metropolitan understands that the City has no objection to Metropolitan's removing of the operational limits of the Settlement Agreement so long as Metropolitan agrees to the following terms:

1. Metropolitan agrees to provide the City with its current Seismic Assessment Report, as well as copies of an updated seismic report once it is completed.
2. Continue current reporting requirements set forth in the Settlement Agreement.
3. Continue with the regular Technical Coordination Committee meetings.
4. Continue with current leak detection monitoring, reporting, and emergency coordination procedures.
5. Assume primary responsibility for any detected leaks from or caused by Metropolitan's operations.
6. Provide courtesy notification when raising level of reservoir to full capacity for any extended period of time.

700 N. Alameda Street, Los Angeles, California 90012 • Mailing Address: Box 54153, Los Angeles, California 90054-0153 • Telephone (213) 217-6000

Metropolitan requests that the City provide its written, authorized acceptance to this proposal by signing this letter agreement and returning one copy of the signature page to Metropolitan. If we do not hear back from the City within 120 days, Metropolitan will resume its normal operations. Any concerns by the City should be addressed pursuant to the procedures agreed upon in paragraph 4.6 and 7.3 of the Settlement Agreement. Timely resolution of this issue is necessary to protect Metropolitan's operational flexibility and its member agencies' long-term investments in the reservoir.

If you have any questions, please contact Sergio E. Valles, P.E., Metropolitan's Engineering Program Manager, at (909) 392-7116, Metropolitan's primary representative on the committee. We thank you and your staff for working cooperatively with Metropolitan to informally resolve this matter and allow Metropolitan to resume its normal operations that are critical to the regional drinking water supply.

Very truly yours,

Gordon L. Johnson
Assistant Group Manager/Chief Engineer

GLJ/cms
Attachments

ACCEPTED:

THE CITY OF MONTEREY PARK

By:_____
Name

_____
Title

Dated:_____

cc: Elias Saykali, City Engineer (w/exhibits)
Via Federal Express

City Attorney (w/exhibits)
c/o City Manager
Via Federal Express

Catherine M. Stites, Esq., Metropolitan Deputy General Counsel

Sergio E. Valles, P.E., Metropolitan Engineering Program Manager

ATTACHMENT 3

Exhibit C – City Response

August 2009

City of Monterey Park
320 W. Newmark Avenue Monterey Park CA 91754-2896
www.ci.monterey-park.ca.us

City Council
Betty Tom Chu
Mitchell Ing
David T. Lau
Benjamin "Frank" Venti
Anthony Wong

City Clerk
David Barron

City Treasurer
Joseph Leon

VIA FACSIMILE AND U.S. Mail

August 21, 2009

Gordon L. Johnson
Assistant Group Manager/Chief Engineer
Metropolitan Water District
P.O. Box 54153
Los Angeles, California 90054
(213)830-4599 Fax

N. Gregory Taylor, Esq.
General Counsel
Metropolitan Water District
350 S. Grand Avenue
Los Angeles, California 90071
(213)217-6450

Norman Flette, Esq.
Deputy General Counsel
350 S. Grand Avenue
Los Angeles, California 90071
(213)217-6450

RE: MODIFICATIONS TO OPERATIONS OF GARVEY RESERVOIR

Gentlemen.

The City is in receipt of a letter dated May 14, 2009, from Mr. Gordon L. Johnson with regard to the above-referenced matter. It appears that this letter is intended to serve as a "Notice of Modification" pursuant to Section 4.6 of the "Settlement Agreement Between The City of Monterey Park and Metropolitan Water District of Southern California Concerning the Garvey Reservoir," ("Agreement") that was entered into on or about September 16, 1993.

While the City does want to work cooperatively with MWD with regard to carrying out the terms and conditions of the Agreement, the Notice of Modification did not include "a specific description of the modifications which MWD proposes to make to the Operation Limitations," or "MWD's analysis, evidence and findings, and conclusions which demonstrate that such proposal meets the standard set forth in Section 7.3 below" as required by Section 4.6 of the Agreement. Accordingly, the Notice is deficient.

The City does acknowledge that the City's Public Works' Director, Elias Saykali was in the past week provided with a 1991 seismic study regarding the reservoir. The City has some serious concerns about the report given that it was generated over 18 years ago (prior to the Agreement), particularly since seismic regulations have undergone significant changes during this time period. Thus, the City is requesting that a new report be generated and that all "analysis, evidence, and findings, and conclusions" upon which MWD is relying to modify the operation of the reservoir be provided to the City.

If the above documentation is provided to the City and the City believes that such supports MWD's Notice, then the City would be willing to sign a letter agreement in the form of MWD's May 14, 2009 letter with the following modifications:

The last sentence of the second paragraph on page 1 should be amended to read: "As a result of these discussions and the information provided to the City in accordance with Section 4.6 of the Settlement Agreement, the City currently has no objection to Metropolitan modifying the Operational Limits of the Reservoir to an operating capacity at maximum water surface elevation of 571 above sea level, so long as the all other terms and conditions of the Settlement Agreement remain in full force and effect, and the following additional conditions are met:

1. Item number 1, on page 1 should be amended to read: "All conditions and suggested safety measures and improvements identified in the 1991 Seismic Report, as amended and updated, shall be adhered to and implemented by MWD."
2. Item number 2, on page 1should be amended to read: "All reporting requirements set forth in the Settlement Agreement shall be continued and shall be updated as necessary and appropriate to address the City's reasonable safety concerns."
3. Item number 3, on page 1 should be deleted. It is simply restates what is in the Settlement Agreement
4. Item number 4, on page 1 should be amended to read: "Current leak detection monitoring, reporting and emergency coordination procedures shall continue to be implemented. Additionally, the City and MWD shall meet to review such procedures and MWD shall implement additional and/or new procedures based upon advancements in available technology and/or reasonable safety concerns."
5. Item number 5, on page 1 should be amended to read: "MWD shall have reporting, repair and financial responsibility for any detected leaks from or caused by MWD's operations."
6. Item number 6, on page 1 should be amended to read: "MWD shall provide 24 hour advance notification to the City when raising the level of the reservoir to the new Operational Limits. The notification shall include an estimate of the time period that the level of the reservoir shall be raised to the new Operational Limits."

Although the notice was deficient for the reasons set forth above, I would suggest that MWD provide the required information to the City and allow the City a reasonable and agreed upon time period to review the information. In the event the City has any concerns after its review, then the parties should meet and discuss the City's concerns and resolve such consistent with Section 4.6 of the Agreement.

The City does want to work with MWD to quickly resolve the above issues. Please respond to this communication at your earliest convenience so that we can determine how to work towards resolution of the City's concerns.

Sincerely,

June Yotsuya

June Yotsuya,
City Manager

ATTACHMENT 4
Exhibit D – Seismic Report

APPENDIX A

Summary of Reviewed Documents

APPENDIX A
SUMMARY OF REVIEWED DOCUMENTS

Garvey Reservoir
Los Angeles County, California

DOCUMENT	SUMMARY	KEY FINDINGS
Buwalda, John P. (1950), "Geology of the Garvey Reservoir Site," Report No. 784, June 20, 1950	Geologic investigation performed prior to construction between May 4 and June 6, 1950 in order to develop geologic map. Relied on 25 borings ranging between 25 and 107 feet in depth. Much of the geologic mapping was performed on sharply cut ravines on the north and south slopes of the ridge. Structural geologic data used in constructing cross sections consists of approximately 50 measurements of strikes and dips. The data was recorded on field map, but not transferred to geologic map. The reservoir site is underlain by younger Saugus Gravels and older Pico Siltstone. Based on borings, the Saugus/Pico contact was found to undulate, and slope gently to the southeast from the northwest corner of the property. **Saugus Gravels** Although called Saugus gravels, author notes that this formation is comprised mainly of reddish or brownish coarse sand. Formation is relatively young (Pleistocene), and therefore, loosely consolidated. Sands are mostly feldspar, deposited by streams flowing southward out of the San Gabriel Mountains. Sandstones contain varying amounts of gravel and clay. Clay may have originated through decay of the finer feldspar particles. Most of the formation consists of coarse sand containing varying amounts of cobbles and boulders up to 1 ft to 2 ft in diameter. There are some layers of fine sand with no pebbles. Three layers of siltstone	**Bearing Capacity** "The gravel and the silt formations obviously are not of such character as to be suitable for foundations or abutments of arch or gravity concrete dams. But either formation would support the excavated portion of the reservoir adequately." Excavation to elevation 500' entirely in gravels and sands. "The embankment fills of the reservoir will rest on the gravel formation except in an area along its north side, roughly 600 by 700 feet, on the site of the old Garvey ranch reservoir." "Both the gravel and silt formations are regarded as strong enough to support, without squeezing out, the heights of embankments proposed with 3:1 slopes. The maximum heights are about 150 feet where the embankment crosses the two gulches on the north side." (P. 11) **Cleanout** Relatively thin layer of soil (not more than few feet thick) over most of the reservoir site. "It will probably be desirable to remove this material in places, because of its loose character, before placing fill." (P. 6) "As mentioned earlier there are certain areas where the soil is quite thick. The bearing strength of this soil is much less than that of the gravels and the silts. Less compacted, it is also much more pervious. Deep fills, or probably better still, no fills should be placed upon it; it should be removed." (P. 15)

DOCUMENT	SUMMARY	KEY FINDINGS
	interbedded with coarse sand were observed on the gulches on the north side of the hills. **Pico Siltstone** The Pico Siltstones are a marine deposit, comprised predominately of quartz and feldspar. The siltstones are bluish gray, sharply stratified and uniform. Formation is south dipping between 8 and 27 degrees, with an average of 15 degrees. The formation outcrops around base of the hills on almost all sides. **Materials for Construction** Embankment fill will generally consist of coarse sand-gravel mixture containing a small percentage of clay from four different borrow areas within the site. The sand-gravel formation also includes a few silt strata. Considerable variation in the excavated material. "But it appears certain the deficiency in the materials of embankment construction will be in the fines."	"Where the fill rests on the silt, as on the north side of reservoir, any water entering the fill either from the reservoir or from rainfall will presumably move downward through the fill to the surface of the silt and along that surface to the nearest point of escape. This suggests that the surface of the silt should be cleaned down to firm material before any fill is placed upon it. It would be especially undesirable to have a layer of clay or clayey soil remain between the base of the sandy fill and the firm silt." (P. 15) **Faults and Seismicity** Buwalda concluded that there was no evidence indicating that a major fault "crosses or skirts the reservoir site." However, there is evidence of minor "inconsequential" faults which traverse the gravels here and there.
The Metropolitan Water District of Southern California (1952A). "Garvey Reservoir Part 1, Notice Inviting Bids Instructions to Bidders, Proposal, Agreement and Specifications,"	Project specifications for concrete, reinforcement steel, asphaltic concrete pavement and premix pavement (Sections 109-142). Appendix A contains boring logs for test holes 1A to 58A. Missing earthwork specifications (Sections 96-108). Requested missing sections from MWD on 6-24-09. Requested sections were not available at the time this report was prepared.	
The Metropolitan Water District of Southern California (1952B).	Construction drawings for Garvey Reservoir. When constructed, the entire reservoir was lined	

DOCUMENT	SUMMARY	KEY FINDINGS
"Garvey Reservoir Part 2, Drawings"	with 3 inches of porous asphalt concrete and a blanket of compacted earth that is approximately 10 feet thick on the bottom of the reservoir, tapering to 3-ft thick at the crest. Reservoir was constructed with an approximate 86-ft-high, 16-ft ID reinforced concrete gated outlet tower that also served as the junction structure for the inlet piping and the circulating piping. Drawing 8-9317 shows the locations of the borings whose logs are in MWD, 1952A.	
Title and Author Unknown (Date Unknown-1953?) "Earthwork Specifications" pages S-23 to S-43	Sections include: 1) Clearing and Grubbing 2) Open Cut Excavation 3) Excavation for Reservoir and Roads 4) Excavation for Feeder Pipe Trench 5) Disposal of Excavated Materials 6) Preparation of Embankment Materials 7) Embankment Construction 8) Compacting Embankment Materials 9) Preparation of Foundation for Pipe Lines and Concrete Structures 10) Backfill 11) Consolidated Backfill 12) Compacted Backfill	
The Metropolitan Water District of Southern California (1954), "Historical Record, Garvey Reservoir"	Historical record describing construction of the Garvey Reservoir prepared by Metropolitan Water District personnel: H.C. Matthews (Engineer), W.S. Merrithew (Senior Engineer) and D.S. Cleveland (Inspector).	**Clearing and Grubbing** Started on October 21, 1952. Some areas were burned off while most of them required stripping and grubbing. All vegetation, trees and other questionable materials were removed. Combustible materials were sprayed with oil and burned; others were disposed of by the Contractor.

DOCUMENT	SUMMARY	KEY FINDINGS
		Excavation Started November 7, 1952. Excavation operations started in the bottom of the west ravine followed by the east ravine. Areas of the east and north embankments were stripped and all materials in excess of that required in the east fill was stockpiled in the area east of the north borrow area, above Elevation 470. A total of 94,714 cy of material was excavated and stockpiled. After the north and east embankment areas had been stripped, the north half of the reservoir bottom was excavated to a depth of 10 feet below the finish grade. Following that operation, the 2.67 to 1 excavated slopes beneath the side blanket were excavated. As the excavation of the side slope progressed the south half of the reservoir bottom was cut to the same elevation as the north half. **Compacted Embankments** Embankment operations began on November 24, 1952. Excavation and embankment operations were coordinated to minimize the time between operations. Compaction achieved using 7 two-drum sheepsfoot rollers. Before fill operations started, the area was stripped of all soil and alluvium. The area was stripped to firm material suitable for foundation. The foundation was disced, watered and rolled before any fill material was placed. Fill was placed in 8-inch loose lifts, watered and disced and then rolled. The entire area of each lift was rolled a minimum of 16 times. The thickness of the lift and the amount of water was constantly checked and controlled by District personnel. In general, the 16-roller trips resulted in a mean compacted fill dry density of 121.7 pcf meeting the requirements of Section 104(a) of the specifications. An average of four densities were taken each day, which amounts to one test per 2500 to

DOCUMENT	SUMMARY	KEY FINDINGS
		3000 cy of placed fill. A total of 1230 density tests were made during construction of Garvey Reservoir. **Construction Observations** Intermittent rains in early 1954 caused all earthwork construction to be suspended from January 9 to April 7. Erosion was observed in three areas of the interior slopes between 0.1 to 0.5 feet in depth. These areas were hand compacted using 4-inch thick lifts and pneumatic tampers. Seepage was observed in the foundation of the NW embankment area at elevation 510. This area was drained by using a gravel pocket and 10-inch diameter clay pipe line, and continued to drain at a rate of 0.04 gpm regardless of weather conditions. The Saugus Gravels are quite friable. Observed nearly 100% increase in fines content after laboratory compaction test. However, the sheepsfoot roller in the field seemed to have little to no effect on the materials with respect to particles breaking down.
Bechtel Corporation (1965), "Review of Metropolitan Water District Dams, Garvey Reservoir," January	Comprehensive study of Garvey Reservoir including: (1) geology; (2) embankment investigation; (3) embankment seepage; (4) embankment stability; (5) embankment movement; and (6) embankment overtopping. Bechtel concluded that Garvey Reservoir and its appurtenances are in excellent condition.	**Geology** The geologic conditions were found to be satisfactory with no evidence of active faulting and differential movement across the reservoir. Geologic formations are the Repetto of early Pliocene age and Pico of late Pliocene age. Plate 3 shows distributions of these formations. Both formations dip southerly at angles ranging from 5 to 35 degrees. Siltstone interbeds act as impervious barriers to groundwater migration from one pervious stratum to another.

APPENDIX A
SUMMARY OF REVIEWED DOCUMENTS

DOCUMENT	SUMMARY	KEY FINDINGS
	Field Investigation Bechtel advanced a total of 10 borings to depths ranging from 31.5 to 153 feet. Drilled a total of 10 holes (A through J) in embankment and installed 14 piezometers (P1 to P14) in these holes. Piezometer screen intervals shown on boring logs. Additional hole (G-1) drilled in foundation material and piezometer installed. **Laboratory** Bechtel (1965) performed 7 Consolidated Undrained (C-U) triaxial tests with pore pressure measurements on saturated embankment fill samples. Three isotropic C-U test were performed on the sandy lean clay (alluvium). Four anisotropic C-U tests were performed on the silty to clayey sand with gravel. Laboratory testing also included dry densities and moisture contents, sieve analyses and hydrometers, specific gravity, Atterberg Limits, and 2 hydraulic conductivities. (Holes B,H,I,J) Two constant head permeability tests were performed on undisturbed samples (1 on embankment fill and 1 on clay alluvium) in the triaxial cells prior to consolidation and shearing. Reservoir was drained in March 1964 to facilitate liner inspection.	An abandoned oil well, "Monte Cristo" was discovered in SW corner of reservoir. Signs of liner distress were observed in the adjacent area when reservoir was emptied. Seismicity evaluation concludes an expected peak ground acceleration of 0.15g (corresponds to Modified Mercalli Intensity of 8). **Embankment Investigation** a) *Inspection*: Several "soft spots" and patches of old repairs were observed in a band about 50 feet wide. Concluded that band of soft spots was related to fill placement and does not coincide with any trend of faulting and further repairs would likely be necessary. Distress in the lining was also observed in area of supporting cradles of circulating lines. Movement attributed to consolidation of fill, blanket and lining. Movement not considered to be excessive, and remedial measures were not recommended. b) *Field Investigation*: Embankment generally consists of clayey/silty sand (with gravel) underlain by foundation material. A layer of firm sandy lean clay about 15 to 20-feet thick was encountered at depth in two of the drill holes (Holes B and H). Holes B and H are located on the north and south sides of the embankment, respectively.

DOCUMENT	SUMMARY	KEY FINDINGS
		c) *Laboratory*: The shear strength parameters of the lean sandy clay determined to be similar to that of the silty and clayey sand. **Embankment Seepage** Bechtel concluded that seepage conditions do not have a significant effect on the stability of the embankment due to "impervious nature" of the embankment (k = 0.2 ft/year). No evidence of significant transverse cracks in embankment. Quantity of water coming from underdrains is small. Magnitudes of pore pressures as registered by the piezometers do not have a significant effect on the embankment stability. Minor seepage in the pipe gallery has existed for some time as evidenced by slime coating. No evidence of piping of fines, and seepage confined to construction joints. Embankment material above gallery is adequate to prevent pore pressures from affecting stability. **Embankment Stability** Stability analyses performed on two different cross sections using circular failure surfaces by the differential slice method. One section represents "maximum" (height) section, and the other is due to anomaly in pore pressures (P-13 and P-14). $s = 0.54 + \sigma \tan 24^0$ (tsf) for both the clay and gravelly clayey sand from laboratory test results. $s = 0.27 + \sigma \tan 24^0$ (tsf) for both the clay and gravelly clayey sand used in stability analyses (cohesion reduced). Required Factor of Safety (FoS) is 1.1 for seismic and 1.2 for rapid drawdown. Stability criteria were satisfied.

DOCUMENT	SUMMARY	KEY FINDINGS
		Embankment Movements Minor signs of movement with both vertical and horizontal movements being well within recorded values for earth dam embankment. Movements analyzed are based on control points which were set in Jan. 1955. Movement analyzed for vertical and horizontal including transverse axis movement and longitudinal movement. a) Vertical movement: Maximum compression about 0.12 ft. Some evidence of minor swelling in cut areas (0.01 ft) b) Maximum transverse movement is 0.03 ft while maximum longitudinal movement is 0.08 ft **Embankment Overtopping** Based on the Bechtel analysis, the maximum reservoir water surface elevation is 576 feet, and the maximum spillway outflow at this elevation is 530 cfs. Since the crest of the reservoir crest is at an elevation of 580ft, the embankment is safe against overtopping.
Dames and Moore (1980), "Report – Phase 1, Seismic Stability Investigation, Garvey Reservoir for Metropolitan Water District," Job. No. 02269-011-02	Phase 1 Report (January 25, 1980) was not provided to AMEC Geomatrix for review.	
Dames and Moore (1981), "Report – Phase 2, Seismic Stability Investigation, Garvey Reservoir for Metropolitan Water District," Job. No. 02269-011-02, December 28	Report is organized into five main parts: 1) Geology and Seismology – Reviewed pertinent geological and seismological literature. Also included a field reconnaissance. Ground motion criteria were developed based on the result of this phase.	**Geology and Seismology** *Regional Geology* Site is located within two major tectonic systems: northwest trending San Andreas and the east-west trending Transverse Ranges Province. Site is located in close proximity to numerous faults. Raymond Fault is a high-angle reverse fault; Whittier-

APPENDIX A
SUMMARY OF REVIEWED DOCUMENTS

DOCUMENT	SUMMARY	KEY FINDINGS
	Reviewed nature and history of faulting along the Raymond fault zone, the Sierra Madre fault zone, and the Whittier-Elsinore fault zone. 2) Soil Investigation –Included 6 mud rotary borings, static and dynamic laboratory tests, classification and index tests in order to evaluate embankment stability and liquefaction. Classification tests included gradation tests, percent passing No. 200 sieve, hydrometer analyses, moisture content and dry density, specific gravity, and one Atterberg Limits. Static strength tests were performed on samples which had first undergone cyclic loading. Cyclic tests were isotropically consolidated to a stress equal to the effective overburden pressure measured below the dam crest. Evaluated pore-pressure buildup and residual undrained static shear strength following cyclic loading using Seed approach (19th Rankine Lecture of the British Geotechnical Society, Sept 1979). 3) Liquefaction evaluated using simplified Seed method (February 1979). 4) Embankment Stability Evaluation.	Elsinore exhibits right-lateral displacement; Sierra Madre fault is a north-dipping thrust fault, and the San Andreas Whittier Fault zone also includes three northeast-trending faults identified as Rio Hondo, Pico, and Cemetary. Maximum Credible Earthquakes are 2 events: Near Source Magnitude 6.7 to 7 with pga (bedrock) = 0.5g Far Source Magnitude 8.5 (San Andreas) with a pga = 0.25g Elastic response spectra developed based on Magnitude 7 event and pga (rock) of 0.5g. Bracketed duration (greater than 0.05g) or duration of strong ground motion ranges from 22 to 25 seconds for near fault sources and 29 seconds for San Andreas. ***Local Geology*** Contact between Saugus and Pico Formations is an unconformity, undulatory in nature and dips southward at angles from 8 to 45 degrees. "Site lies along the north limb of a small syncline identified by Quarles (1941) as one of a system of poorly defined en echelon folds that are expressed in the present surface topography of the Repetto and Montebello Hills". Reservoir expected to experience significant ground shaking during the design life. No evidence of surface fault rupture beneath the embankments. Overtopping may occur due to standing waves during an

DOCUMENT	SUMMARY	KEY FINDINGS
	5) Structural Investigation – Evaluation of the probable modes of structural response under the Maximum Credible Earthquake, potential modes of failure, and methodologies for mitigating these modes if they represent a risk (this summary does not go into detail about the structural aspect of the D&M investigation).	earthquake, but should not pose a hazard to structures or affect stability of embankment. Observed slope failures do not pose a significant hazard-no systematic cracking observed (therefore no significant nontectonic displacements). **Soil Investigation** Reservoir embankment was constructed using a Saugus gravel conglomerate deposit. High compactive effort was achieved using thin lifts and sheepsfoot rollers. D&M determined that the embankment fill is relatively impervious. D&M also determined that vertical and horizontal embankment movements are insignificant (through regular monitoring). Cyclic stress ratios of 0.25 to 0.32 were used for laboratory dynamic testing. The loading was stopped after 14 cycles (typically 100 to 200 for very strong materials). *Liquefaction*: Evaluated potential for liquefaction based on Boring 6. "Results indicated acceptable performance by a comfortable margin" (very high blowcounts). *Considered Embankment Stability*: Safe for static and seismic by "a comfortable margin". Results of "Seed" analysis indicate movements are within acceptable limits during and following an earthquake. Based on the laboratory test results, the residual undrained shear strength of the materials tested in the investigation exceeded the static shear strength used by

DOCUMENT	SUMMARY	KEY FINDINGS
		Becthel (1965). Therefore, additional analyses were not necessary. **Structural Investigation** Refer to report
Wahler Associates (1991), "Investigation and Evaluation of Cracking-Garvey Reservoir," Job No. MWD-266A, January 31	Study was commissioned by MWD following: 1) continued increase in maximum historic groundwater elevations; 2) discovery of abnormal seepage conditions in areas south of the reservoir; and 3) discovery of a liner crack in the reservoir floor in November 1989. Scope of work consisted of: 1) Geologic mapping – joint effort with LCA; 2) Evaluation of historic seismic activity affecting the reservoir; 3) Backhoe exploration trenching – a total of 23 trenches were excavated, including 6 deep trenches across the west crack; 4) Large diameter bucket auger – 4 large diameter auger holes to depths ranging from 44.5 to 84.0 feet; 5) Exploratory drilling – a total of 23 borings; 6) Installing piezometers – 12 total; 7) Laboratory testing; 8) Field permeability testing – water pressure tests performed on three shallow borings in the foundation (DH-12, DH-13 and DH-16), constant head and falling head tests also performed;	**Liner Crack Discovery** During the later part of 1989, groundwater elevations in the southwest area were discovered to be above historical maximum levels, and subsequently, MWD, emptied the reservoir. During this process (Nov. 1989), a crack in the reservoir liner was discovered. The study was then commissioned by MWD. By emptying the reservoir, the surface seepage problems, which were discovered in Oct. 1989 at the residences along Fulton Avenue, were alleviated. Chronology of Major Events is summarized in Table II-1. **Regional Seismicity and Tectonics** The reservoir is located about 3 miles northwest of the mapped extent of the Whittier Fault and about 4000 feet southwest of the Highland Park Fault. The main shock of the Whittier Narrows Earthquake at Garvey Reservoir recorded a pga of 0.48g horizontal and 0.39g vertical with a strong motion duration of 9 seconds. Hauksson and Jones (1989) believe that this earthquake occurred along a previously unidentified buried thrust fault which underlies the Elysian Park anticline which is located northeast of the reservoir. Wahler suggests that the project region may have been

DOCUMENT	SUMMARY	KEY FINDINGS
	9) Oversight of tiltmeter installation in boreholes near the west crack area – 4 tiltometers installed in boreholes adjacent to west crack in order to monitor movement along crack; and 10) Installing Surface Crack monuments (MWD).	subjected to tension stresses generated in north-south to northeast-southwest directions as a result of uplift which occurred along the Elysian Park anticline. **Geology** Bedrock underlying the reservoir consists mostly of interbedded conglomerate, sandstone, and siltstone of the Pliocene age Pico Formation. The Repetto Formation, which underlies the Pico, consists of Miocene Age siltstone and fine-grained sandstone. Other geologic units include man-placed fill, and colluvium. Refer to LCA (1991) summary in this document for additional discussion. **Local Faulting** Evidence of faulting was not observed within the reservoir area during this investigation. LCA confirmed that high angle reverse faults (as previously mapped by Bechtel and D&M) exist along the northern property line of the site. However, faults were deemed to be inactive. **Crack Investigation** Water problems were reported during the early part of November 1989, and at the same time, piezometer levels began exceeding historical maximum levels. During reservoir drawdown, MWD sent divers to investigate reservoir floor. The divers discovered a hole and cracks in the asphalt liner on the western portion of the reservoir. MWD later discovered another area of cracking about 1400 feet SE of the west crack. West Crack – Pronounced cracking and settlement of the asphalt liner coincided with areas of significant piping and erosion in the underlying soil liner. See Wahler report for detailed discussion.

DOCUMENT	SUMMARY	KEY FINDINGS
		The liner cracking was determined to have caused buildup of the groundwater mound locally beneath the south and west portions of the reservoir. **Findings** • Vertical and/or horizontal offsets were not observed in the trenches and bucket auger holes. Both cracks were determined to be tension-related and *not* associated with 1) tectonic surface faulting or shearing 2) differential settlement or 3) slope instability due to weak bedding planes; • "Loose materials" classified as low density sands and silts were not encountered in the foundation materials in the nearby crack areas; • Permeability of the liner materials determined to be lower than foundation (laboratory tests typically vary from $5x10^{-5}$ to $3x10^{-7}$ cm/s). Laboratory tests on undisturbed foundation materials vary from $8x10^{-4}$ to $9x10^{-6}$ cm/s. Field permeability tests of foundation materials range from $8x10^{-4}$ to $5x10^{-7}$ cm/s; • Wahler's review of historic records of underdrains and piezometers within and near the reservoir indicated that flows and levels remained "normal" during the Whittier Narrows earthquake; • *Vertical movements* - A key piece of information related to the crack development was the comparison of vertical survey data between 1975 and 1990. During that period, up to 8 mm of ground subsidence and 22 mm of ground rise occurred over a distance of less than 2 miles on a straight northeast-southwest trending line

DOCUMENT	SUMMARY	KEY FINDINGS
		through the reservoir. "This scenario would correspond with the direction of cracking." This data is not totally conclusive; and • *Horizontal movements* – It is stated that "As shown on Figure IV-18, which compares the mean horizontal distances between monuments before and after the Whittier earthquake, there is a definite trend for extension of northerly to southerly distances across the reservoir." **Conclusions** Credible causes of liner cracking attributed to three factors: 1) Tensional stresses caused by differential movements resulting from tectonic influences known to be historically active in the region (uplift and subsidence); 2) Tensional stresses caused by regional uplift and/or subsidence, combined with periodic local seismic activity of record; and 3) Tensional stresses created strictly by ground shaking during the 1987 Whittier 1988 Pasadena, and/or 1989 Montebello earthquakes. It should be noted that all three were considered to be credible contenders, but "it will never be known whether any single one of these was the triggering mechanism." The three possibilities are interrelated. Surface fault rupture was eliminated as a possible cause
Dames and Moore (1991), "Report, Seismic Stability Investigation, Garvey	Evaluated the seismic stability of the Garvey Reservoir based on updated seismic hazard assessment of the site in light of the ground motion information obtained during the 1987 Whittier	**Geology** The site is underlain by conglomerates, sandstones and siltstones of the Pico Formation of Pliocene age. The Pico Formation overlies sediments of the Pliocene

DOCUMENT	SUMMARY	KEY FINDINGS
Reservoir for Metropolitan Water District," Job No. 02269-025-015, January 30, 1991	earthquake. During the 1987 Whittier event (M = 5.9), a peak ground acceleration of 0.477 g was recorded at the Garvey Reservoir (Brady et al. 1988). The recorded ground shaking intensity was approximately 41% higher than that calculated from deterministic data using average attenuation relationships from that time. Possible explanations for the observed difference include local focusing effects due to the complexity of the basement and travel path effects. The seismic stability of the dam was re-evaluated using a peak ground acceleration of 0.6 g based on discussions with DSOD. **Field Investigation** Consisted of drilling 4 rotary wash borings (actual drilling and sampling was performed by Wahler Associates). Borings I-1, I-12 and I-19 were drilled to install piezometers. SPT blowcounts were measured in Boring DH-26. Sampling was performed in Borings I-1 and I-19 near the "maximum" (height) sections of the embankment on the NE side of the reservoir, and in Borings I-12 and DH-26 on the SW side of the reservoir. I-12 and DH-26 on the SW side are near B-5 (Dames and Moore, 1981). Samples were obtained using a pitcher barrel sampler with a 3-inch diameter, wireline core barrel sampling with a 2-inch diameter and SPT sampler.	Repetto Formation comprised primarily of siltstone with interbedded fine-grained sandstone. The sandstones and conglomerates are poorly to moderately cemented and relatively pervious, whereas the impervious siltstones are moderately indurated. Bedding in the site strikes approximately east-west and dips south at 15 to 30 degrees from the horizontal. **Field Investigation** The embankment fill was characterized as gravelly clayey sand/gravely silty sand (SM-SC). **Laboratory Test Results** a) Dames and Moore (1981) performed 2 C-D triaxial tests on unsaturated fill soil specimens, which is consistent with their assumption that the embankment will be dry. b) Dames and Moore (1991) performed 8 isotropic C-U triaxial tests on fill samples obtained from the pitcher barrel sampler. The strength from these tests is higher than those reported in Bechtel (1965). Also performed sieve analyses, Atterberg Limits, and 4 direct shear tests on the foundation materials. **Seismic Stability** Static and seismic stability analyses were performed using limit equilibrium (STABL) and the Makdisi-Seed deformation analysis methods, respectively. Effective stress and total stress strength parameters were used for the embankment fill during the static and seismic analyses, respectively. Total stress strength parameters were used for the foundation materials for both static and seismic conditions.

DOCUMENT	SUMMARY	KEY FINDINGS
	Laboratory Testing Dames and Moore (1991) performed 8 isotropic C-U triaxial tests on fill samples obtained from the pitcher barrel sampler. The shear strength parameters were determined to be higher than those obtained by Bechtel (1965). Laboratory tests also consisted of sieve analyses, Atterberg Limits, and direct shear tests on the foundation materials.	Evaluated using the Makdisi-Seed method on Cross Sections A-A', B-B', C-C', M-M' and N-N'. Peak accelerations in the embankment were determined using dynamic response analyses, the results of which are not presented. Assumed an average shear wave velocity of 890 ft/s based on resonant column testing performed by Dames and Moore (1981). For a potential sliding surface extending the full height of the embankment, the average maximum acceleration of the sliding mass was taken to be 0.35 times the crest acceleration. Lastly, the MCE was assumed to have a magnitude of 7.5. Embankment Fill Strength used in analyses (ksf): TSA: $s = 1.2 + \sigma \tan 21^0$ ESA: $s = 1.1 + \sigma \tan 24^0$ Foundation Shear Strength (ksf): TSA: $s = 0.7 + \sigma \tan 27^0$ These strength parameters are based on the Bechtel (1965) static test results and the D&M (1991) static test results. They do not include the D&M (1981) dynamic test results. The results of the D&M strength tests indicate that the Bechtel (1965) cohesion was low. D&M conclude that, based on the results of the deformation analyses, significant embankment deformations are not expected to occur during the design earthquake. Deformations between 6 to 9 inches were estimated.

DOCUMENT	SUMMARY	KEY FINDINGS
		Liquefaction Dames and Moore make reference to concerns raised by DSOD about relatively low SPT blowcounts at a depth of 33 feet in Boring 5 from the Dames and Moore (1981) report. Two subsequent borings were drilled (I-12 and DH-26) near the location of Boring 5, with continuous SPT blowcounts in DH-26. Dames and Moore conclude that the material above 30 feet is embankment fill, and the material below 36 feet is foundation. The material between 30 and 36 feet was difficult to identify, although it has been classified as fill. Estimated an average cyclic shear strain of 0.08 percent based on deformations computed using Makdisi-Seed. Based on a shear modulus of 920,000 psf, an average shear stress of 735 psf was estimated. Assuming an effective overburden stress of 3650 psf at 35 feet depth, a cyclic stress ratio (CSR) of 0.2 was computed. Lastly, based on Seed et al. (1984) liquefaction triggering data, Dames and Moore concluded that liquefaction is highly unlikely.
LeRoy Crandall and Associates (1991), "Geologic, Hydrogeologic, and Well Completion Report, Northwest Area, Garvey Reservoir," Job No. LCA L89571.AEO, March 28	Evaluated geologic and hydrogeologic (groundwater) conditions in the area located on the northwest side of the reservoir. LCA produced a geologic map with cross sections as well as a groundwater contour map for the area on the W side of the reservoir. Scope of work included: 1) Constructing eight groundwater monitoring wells; 2) Performed constant head permeability tests at two well locations (I-16 and I-37);	**Ransom Way Investigation** Residential area is underlain by artificial fill which overlies Repetto Formation siltstone and fine-grained sandstone. LCA concluded that the reported water seepage / damp soil problems are likely due to surface drainage problems. They found no connection between water seepage to leakage from Garvey Reservoir. **Geology** The northwest portion of the Garvey property is underlain by the Pico Formation conglomerate, sandstone, and siltstone. Bedding attitudes range from N55E to N76W

DOCUMENT	SUMMARY	KEY FINDINGS
	3) Geologic Mapping of NW area and on City of Monterey Park Water Tank property (included excavation of 6 exploratory test pits); 4) Excavating 4 bucket auger holes to explore for perched or shallow groundwater and to investigate the possible causes of circulation losses (loss of drilling fluid) that occurred during well drilling; and 5) Laboratory testing – consisted of field moisture content and dry density of the soils and bedrock. LCA also performed 2 EI tests on soils from 224 Ransom Way Study also addressed reported water and settlement problems from several home owners along Ransom Way. The home owners reported damp soil and water seepage, cracks in interior and exterior plaster, settlement of foundations, and windows/doors that are out of plumb.	dipping 12 to 22 degrees southward. The approximate location of the Pico Formation and Repetto Formation contact is on the city property on the northwest side of the reservoir. The contact is undalatory, and defined by a "hard, mineralized, shale layer that acts as a partial barrier to percolating water." Perched water encountered at the Pico/Repetto contact. LCA concluded that the fluid losses during drilling likely due to open fractures in the bedrock. **Groundwater** The groundwater elevations are typically deep (approximately 446 to 419 feet). Based on the contours, the direction of flow is generally to the south. Perched groundwater was observed in two of the bucket augers (BA-5 and BA-8) at the contact of the Pico and Repetto; this is about 110 feet above the nearby water levels in A-4 and A-5. **Constant Head Permeability Test Results** Soil permeability at I-16 and I-37 was estimated to be 246 and 262 ft/yr ($2.4x10^{-4}$ and $2.5x10^{-4}$ cm/s), respectively. These permeabilities are greater than those calculated in 1990 for W-1 and W-2 which were $3.6x10^{-5}$ and $7.5x10^{-6}$ cm/s, respectively. Wells W-1 and W-2 are located within the reservoir. The greater permeability is attributed to joint and fractures which appear locally.
The Metropolitan Water District of Southern California (1994), "Distribution System, Garvey	Part 1 of 2 Bid Information • Document 00020 – Notice to Inviting Bids • Document 00025 – Signatures and Stamps	Refer to RUST Environment and Infrastructure (formerly Wahler Associates) (1996), "As-Constructed Crack Grouting Report for Garvey Reservoir."

APPENDIX A
SUMMARY OF REVIEWED DOCUMENTS

DOCUMENT	SUMMARY	KEY FINDINGS
Reservoir Repair, Specifications Number 1217A Part 1, and 1217B Part 2." March 1994	• Document 00100 – Instructions to Bidders • Document 00120 – Supplementary Instructions to Bidders • Document 00125 – MBE/WBE Business Outreach Program Bid Forms • Document 00305 – Bid Proposal • Document 00310 – Bidding Sheet • Document 00410 – Bidders Bond • Document 00420 – Bidders General Information • Document 00425 – Bidder's Plan for Construction • Document 00430 – Subcontractor List • Document 00436 – MBE/WBE Participation • Document 00437 – MBE/WBE Good-Faith Effort • Document 00480 – Declaration of Noncollusion to be Executed by Bidder and Submitted with Bid Contract Administration Forms • Document 00505 – Agreement • Document 00520 – Escrow Agreement for Security Deposits in Lieu of Retention • Document 00525 – Acknowledgment • Document 00530 – Acknowledgment by Attorney in Fact • Document 00610 – Bond for Faithful Performance • Document 00620 – Payment Bond • Document 00650 – Insurer's Certificate of Insurance	

DOCUMENT	SUMMARY	KEY FINDINGS
	• Document 00660 – Worker's Compensation Insurance Certificate • Document 00665 – Affirmative Action Requirements • Document 00670 – Ethnic Composition of Project Work Force Conditions of the Contract • Document 00700 – General Conditions • Document 00800 – Supplement General Conditions Specifications • Division 1 – Special Conditions • Division 2 – Earthwork • Division 3 – Concrete • Division 4 – Miscellaneous Materials, and Structural Metalworks • Division 5 – Piping • Division 6 – Sealants • Division 7 – Painting and Coating • Division 8 – Asphalt Concrete • Division 9 – Removal, Salvage, or Disposal of Existing Reservoir Perimeter Fence • Division 10 – Mechanical • Division 11 – Electrical • Division 12 – Modifications to Existing Floating Cover • Division 13 – Cathodic Protection of Underdrain Collection Sump Part 2 of 2 Construction Drawings and Sections	

APPENDIX A
SUMMARY OF REVIEWED DOCUMENTS

DOCUMENT	SUMMARY	KEY FINDINGS
The Metropolitan Water District of Southern California (1996), "Distribution System, Garvey Reservoir Composite Lining Construction, Specifications Number 1254, Parts 1 and 2." May 14, 1996	Part 1 of 2 Bid Information • Document 00100 – Instruction to Bidders • Document 00120 – Supplementary Instructions to Bidders • Document 00200 – Information Available to Bidders Bid Forms • Document 00305 – Bid Proposal • Document 00310 – Bidding Sheet • Document 00410 – Bidders Bond • Document 00420 – Bidders General Information • Document 00425 – Bidder's Plan for Construction • Document 00430 – Subcontractor List • Document 00431 – MBE/WBE Supplier List • Document 00480 – Declaration of Noncollusion to be Executed by Bidder and Submitted with Bid Contract Administration Forms • Document 00505 – Agreement • Document 00520 – Escrow Agreement for Security Deposits in Lieu of Retention • Document 00610 – Bond for Faithful Performance • Document 00620 – Payment Bond • Document 00650 – ACORD Certificate of Insurance • Document 00660 – Worker's Compensation Insurance Certificate	**Part 1 - Section 02771 – Modifications to Existing Floating Cover** "This section describes the modifications required to be made to the existing abandoned in-place floating cover and appurtenances prior to the installation of the composite lining as shown on the drawings and as specified herein." **Part 1 - Section 02776 – Hypalon Reservoir Lining** "This section includes furnishing and installing a primary and secondary fabric-reinforced chlorosulfinated polyethylene rubber (Hypalon) reservoir lining and appurtenant work as shown on the drawings and specified in this section." Membrane Composition: The membrane material shall be manufactured from a composition of high quality ingredients, suitably compounded, of which E.I. Dupont's Hypalon 45 is the sole elastomer and comprises at least 45 percent by weight of the composition. ASTM Designations provided on page 02776-9 and -10.

APPENDIX A
SUMMARY OF REVIEWED DOCUMENTS

DOCUMENT	SUMMARY	KEY FINDINGS
	• Document 00665 – Affirmative Action Requirements • Document 00670 – Ethnic Composition of Project Work Force Conditions of the Contract • Document 00700 – General Conditions Project Specifications • Division 1 – General Requirements • Division 2 – Site Work • Division 3 – Concrete <u>Part 2 of 2</u> Construction Drawings and Sections	
RUST Environment and Infrastructure (formerly Wahler Associates) (1996), "As-Constructed Crack Grouting Report for Garvey Reservoir," July 19	Report presents results of the grouting of the west liner crack. RUST explored an existing crack along the west side of the reservoir using backhoe trenches and large diameter bucket augers. Liner remedial plan consisted of: 1) excavating through the entire thickness of the liner in the cracked area and replacing it with compacted soil-bentonite plastic mixture; and 2) crack grouting to fill voids below the excavation (subject of report). The general crack repair procedure was as follows: • Prior to commencing the temporary excavation in the west crack area, existing temporary piezometers were drilled out and backfilled with grout; • In order to expose the crack, a temporary trench was excavated in the reservoir floor; • Two-inch diameter steel grout pipes were installed at 12 locations along the crack	Crack extended at least 68 feet below the reservoir bottom and was 182 feet long. According to Wahler, the "crack provided a conduit through which the water flowed and hydraulically connected with seepage areas in the low-lying residential areas on the west side of the reservoir." • Crack was repaired with grout or pre-existing soil along the entire length. "Grout infill is in tight contact with adjoining Pico Formation material"; • The pre-existing soil infill consisted of clayey sand, silty sand, sandy silt, silt or gravelly sand which, according to RUST, is similar to Pico. RUST concludes that this soil infill was the result of reservoir water flowing down the crack and attributes this to two causes: 1) surface runoff and 2) through open cracks exposed in previous trenches which were excavated for the crack investigation and left open for months; • Test holes confirm that the crack was grouted at

APPENDIX A
SUMMARY OF REVIEWED DOCUMENTS

DOCUMENT	SUMMARY	KEY FINDINGS
	exposed at the bottom of the temporary trench. In addition to providing a place of grout injection, the pipes also acted as vent holes during the grouting of adjoining grout holes and grout pipes; • The temporary trench was backfilled with compacted soil which acted as a surcharge pressure over grout pipes and crack; • 13 grout holes were drilled to intersect the crack at different elevations; initially drilled and installed permanent casing to top of the grout interval, then drilled the open grout hole interval to intersect the crack; and • The crack was grouted through the angle grout holes and grout pipes.	depth; and • There was a significant difference in the total quantity of cement grout injected into the crack and the total estimate of crack volume; RUST attributes this difference due to significant amounts of pre-existing soil infill which the grout cannot penetrate.
RUST Environment and Infrastructure (formerly Wahler Associates) (1997), "Supplemental Geotechnical Investigation for Garvey Reservoir, Monterey Park, California"	Report is divided into two parts: **PART A:** Results of supplemental geotechnical investigation and initial piezometer installation performed in Sept-Oct 1990. Conducted as a supplement to report on evaluation of cracking and seepage discovered in the bottom of the Garvey Reservoir in Nov 89 (Wahler Associates, 1991, Investigation and Evaluation of Cracking) **Field Investigation** Included drilling 16 borings, installing 11 deep piezometers (I-series) to monitor probable low historic water levels and 4 shallow piezometers (W-series) to monitor perched groundwater. Also included bucket augering of 4 holes in NW	**In-Situ Geophysical Testing** USGS measured shear wave velocities of 750 fps between 0 to 8 feet, 1420 fps between 8 to 82 feet, and 2110 fps from 82 to 131 feet (at I-22) Compressional wave velocities for the depths are 1380 fps, 3100 fps, and 3940 fps. **Geology** Repetto Formation has a high elevation point in the northwest corner of the property. From this point the Repetto Formation apparently dips to the south and southeast under the reservoir. Evidence which suggests that the contact between the Pico and Repetto is an undulatory erosional surface that may have been locally incised by stream channels during deposition of the Pico.

DOCUMENT	SUMMARY	KEY FINDINGS
	area of site to investigate cause of water losses which occurred during the previous drilling for the piezometer installations on the northwest portion of the site by LeRoy Crandall and Associates (A-series). Bucket augers advanced adjacent to Crandall holes A-2, A-4, and A-7. USGS performed geophysical measurements in Boring I-22, plotted shear wave velocities and compressional wave velocities with depth. **PART B:** Documents the installation of additional piezometers in Oct-Nov 1993. Included drilling of borings for installation of 17 piezometers (additional I-series). Depth ranges from 102 to 334.5 feet.	**Hydrogeology** Overall groundwater gradient is relatively flat to gently sloping to the southwest. Groundwater flows through the permeable sandstone and conglomerate beds, while less permeable siltstone beds act as confining layers. Produced a groundwater contour map based on piezometer readings from 1990. Groundwater mound located beneath the northern rim of the reservoir and represents highest groundwater elevation under the reservoir "footprint". RUST believes the reason for the mound is not naturally occurring but the result of the main embankment and/or underlying foundation being saturated and gradually draining in the Pico conglomerate, creating the groundwater mound. **Drill Fluid Circulation Losses** Results of investigation suggest that drill fluid circulation caused by the random occurrence of open fractures within discrete layers of the siltstone and conglomerate. There does not appear to be a consistent trend-it may be attributed to tensional stresses associated with the long-term tectonic uplift that has been documented. **Field Permeability Test Results** Permeability of the conglomerate and siltstone units ranges from about 6.4×10^{-8} to 2.2×10^{-5} cm/s.
Metropolitan Water District (2008), "Inspection and	Report submitted to Division of Safety of Dams (DSOD) covers visual inspection and data analysis between November 1, 2007 and October 31, 2008	**Groundwater Elevations** Recorded between 1999 and 2008 for I-series piezometers. Significant changes from RUST

DOCUMENT	SUMMARY	KEY FINDINGS
Surveillance Report for Garvey Reservoir"		groundwater contour map. **Deformation Survey** Recorded changes in northings, eastings and elevations from 28 different locations between 1999 and 2008. Also surveyed pavement cracks for 9 different areas.

APPENDIX B

Previous Subsurface Exploration Logs

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

REVIEW OF METROPOLITAN WATER DISTRICT'S CONVEYANCE SYSTEM

PREPARED BY

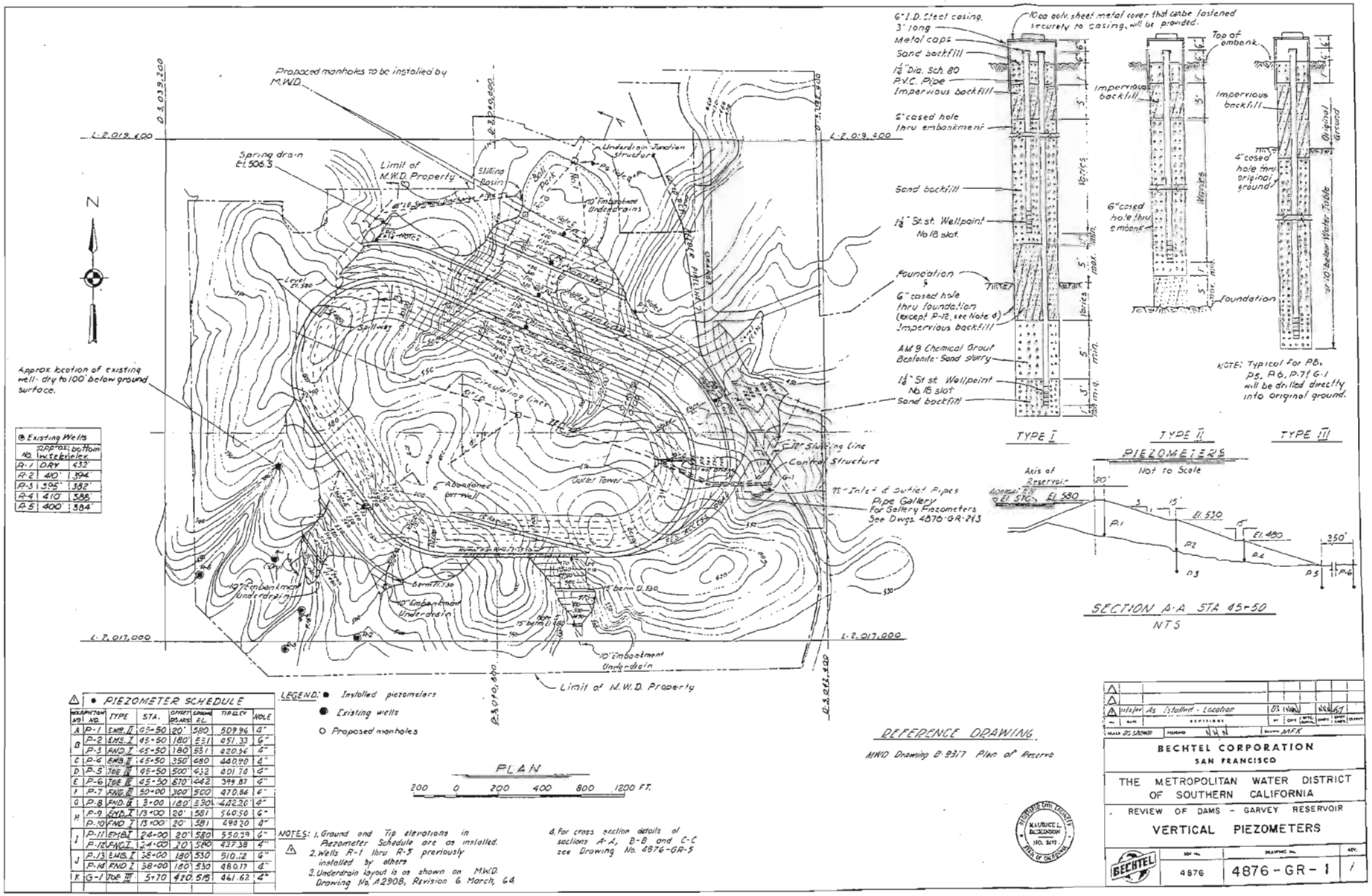
BECHTEL CORPORATION

SAN FRANCISCO

JANUARY 1965

REF. #2
METROPOLITAN WATER DISTRICT
LIBRARY — GENERAL OFFICE

C
B
75 029



Existing Wells		
No.	approx. bottom in Piezometer	
R-1	DRY	432'
R-2	410'	394'
R-3	395'	382'
R-4	410'	385'
R-5	400'	384'

PIEZOMETER SCHEDULE							
HOLE NO.	PIEZOMETER NO.	TYPE	STA.	OFFSET FROM ℄	GROUND EL.	TIP ELEV.	HOLE
A	P-1	EMB. II	25+50	20'	580	509.96	4"
B	P-2	EMB. I	45+50	180'	551	451.33	6"
	P-3	FND. I	45+50	180'	551	420.56	6"
C	P-4	EMB. II	45+50	350'	680	440.90	4"
D	P-5	TOE III	45+50	500'	632	401.70	4"
E	P-6	TOE III	45+50	670'	642	399.87	4"
F	P-7	FND. II	50+00	300'	500	470.86	4"
G	P-8	FND. II	3+00	160'	530	422.20	4"
H	P-9	FND. I	13+00	20'	581	560.50	6"
	P-10	FND. I	13+00	20'	581	498.20	4"
I	P-11	EMB. I	24+00	20'	580	550.39	6"
	P-12	FND. I	24+00	310'	590	437.38	4"
J	P-13	EMB. I	38+00	180'	530	510.12	6"
	P-14	FND. I	38+00	180'	530	480.17	4"
K	G-1	TOE III	5+70	420'	575	461.62	4"

NOTES:
1. Ground and Tip elevations in Piezometer Schedule are as installed.
2. Wells R-1 thru R-5 previously installed by others
3. Underdrain layout is as shown on M.W.D. Drawing No. A2908, Revision 6 March, 64
4. For cross section details of sections A-A, B-B and C-C see Drawing No. 4876-GR-5

BECHTEL CORPORATION

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 1
HOLE NO. A

PROJECT Garvey Reservoir ANGLE FROM HORIZ. 90° BEARING -
LOCATION Sta. 45+50 20' Lt. BEGUN 5/21/64 COMPLETED 6/16/6
OVERBURDEN - DEPTH DRILLED INTO ROCK - TOTAL DEPTH OF HOLE 70.5
ELEV. WATER TABLE - NO. CORE BOXES - NO. SAMPLES TAKEN 0
CORE RECOVERY (%) - FEET - MODEL & MAKE OF DRILL CP-15
GROUND ELEV. 580.2' HOLE LOGGED BY J. Elston DRILLER J. Jones

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
4" casing to 70.5'.								0.0 - 70.5' - EMBANKMENT MATERIAL. GRAVELLY CLAYEY SAND, brown.
P-1 El. top of pipe = 580.76'. Length of tip & pipe = 70.8'. Filter sand to 65.8'. Backfill to surface. Tip El. = 509.96						10 20 30 40 50 60 70		Bottom of Hole. Depth - 70.5'.

Hole Size 4"

HOLE NO. A
SITE Garvey

BECHTEL CORPORATION

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 2
HOLE NO. B

PROJECT Garvey Reservoir ANGLE FROM HORIZ 90° BEARING -
LOCATION Sta. 45+50 180' Lt. BEGUN 6/17/64 COMPLETED 6/30/64
OVERBURDEN - DEPTH DRILLED INTO ROCK 33.0 TOTAL DEPTH OF HOLE 112.0
ELEV. WATER TABLE - NO. CORE BOXES - NO. SAMPLES TAKEN 6
CORE RECOVERY (%) - FEET - MODEL & MAKE OF DRILL CP-15
GROUND ELEV. 530.6 HOLE LOGGED BY M. Thiel DRILLER C. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
6" casing to 80.8'. 4" casing to 112.0'.								0.0 - 98.0' - EMBANKMENT MATERIAL. GRAVELLY CLAYEY SAND, (SM-SC), brown, moist, with gravel sizes up to 2½", firm.
P-2 El. top of pipe = 530.83. Length of tip & pipe = 79.5'. Filter sand to 31.0'. Tip El. = 451.33'.						10		
							sample	15.8 - 17.1' - GR-3, (SM-SC).
						20		
P-3 El. top of pipe = 531.06'. Length of tip & pipe = 110.5'. Filter sand to 103.5'. Chemical grout to 88'. Tip El. = 420.56'.						30		30.1 - 31.1' - GR-4, (SM-SC).
						40		45.6 - 46.1' - GR-5.
						50		
						60		
						70		65.8 - 66.7' - GR-6, (SM-SC).

Hole Size 6" & 4"

HOLE NO. B

SHEET 2 OF 2

ROJECT Garvey

HOLE NO. B

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
							sample	
						80		79.0 - 98.0' - CLAY, (CL), yellow brown, moist, firm. 78.3 - 80.3' - GR-7,(CL)
						90		
								98.0' - TOP OF FOUNDATION 98.0 - 112.0' - SAND, (SP), mottled gray to orange brown, fine-grained. 100.0 - 101.0' - GR-50, (SP).
Lost all drill water return at 100'. Water test made inside 4" Ø casing with open hole from 100' to 112'.		9.9	0	5		100 110		
								Bottom of Hole. Depth - 112.0'.

Hole Size 6" & 4"

HOLE NO. B

BECHTEL CORPORATION

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 1
HOLE NO. C

PROJECT Garvey Reservoir ANGLE FROM HORIZ. 90° BEARING -
LOCATION Sta. 45+50 350' Lt. BEGUN 6/10/64 COMPLETED 6/11/64
OVERBURDEN - DEPTH DRILLED INTO ROCK - TOTAL DEPTH OF HOLE 46.0
ELEV. WATER TABLE 464.4 NO. CORE BOXES - NO. SAMPLES TAKEN 0
CORE RECOVERY (%) - FEET - MODEL & MAKE OF DRILL CP-8
GROUND ELEV. 480.1 HOLE LOGGED BY M. Thiel DRILLER C. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
4" casing to 46.0'.								0.0 - 46.0' - EMBANKMENT MATERIAL. GRAVELLY CLAYEY SAND, firm.
P-4 El. top of pipe = 481.40'. Length of tip & pipe = 40.5'. Filter sand to 34.5'. Impervious back-fill to ground surface. Tip El. = 440.90'.						10 20 30 40		46.0' - TOP OF FOUNDATION
								Bottom of Hole. Depth - 46.0'.

Hole Size 4"

HOLE NO. C
SITE Garvey

P-5

BECHTEL CORPORATION

SHEET 1 OF 1

HOLE NO. D

GEOLOGIC LOG OF DRILL HOLE

PROJECT Garvey Reservoir ANGLE FROM HORIZ. 90° BEARING -

LOCATION Sta. 45+50 500' Lt. BEGUN 6/11/64 COMPLETED 6/12/64

OVERBURDEN - DEPTH DRILLED INTO ROCK 33.2 TOTAL DEPTH OF HOLE 33.2'

ELEV. WATER TABLE - NO. CORE BOXES - NO. SAMPLES TAKEN 0

CORE RECOVERY (%) - FEET - MODEL & MAKE OF DRILL CP-8

GROUND ELEV. 432.2 HOLE LOGGED BY M. Thiel DRILLER C. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
4" casing to 33.2'.								0.0 - 33.2' - CONGLOMERATE, yellow brown, loosely cemented, firm.
P-5 El. top of pipe = 433.24'. Length of tip & pipe = 31.5'. Filter sand to 25.0'. Impervious backfill to surface. Tip El. = 401.74'.						10		
						20		
Partial loss of drill water at 10 - 20'.						30		
								Bottom of Hole. Depth - 33.2'.

HOLE NO. D

SITE Garvey

Hole Size 4"

P-6

BECHTEL CORPORATION

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 1
HOLE NO. E

PROJECT Garvey Reservoir ANGLE FROM HORIZ 90° BEARING -
LOCATION Sta. 45+50 870' Lt. BEGUN 6/15/04 COMPLETED 6/15/04
OVERBURDEN - DEPTH DRILLED INTO ROCK 34.2 TOTAL DEPTH OF HOLE 44.2
ELEV. WATER TABLE - NO. CORE BOXES - NO. SAMPLES TAKEN
CORE RECOVERY (%) - FEET - MODEL & MAKE OF DRILL CP-8
GROUND ELEV. 442.2 HOLE LOGGED BY M. Thiel DRILLER C. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
4" casing to 44.2'. P-6 El. top of pipe = 442.27'. Length of tip & pipe = 42.4'. Filter sand to 32.5'. Impervious back-fill to ground surface. Tip El. = 399.87'. Partial loss of drill water from 0 - 44.2'.						10 20 30 40		0.0 - 10.0' - EMBANKMENT AND ROAD FILL MATERIAL. GRAVELLY SILTY SAND. 10.0 - 44.2' - CONGLOMERATE, yellow brown, loosely cemented.
								Bottom of Hole. Depth - 44.2'.

Hole Size 4"

HOLE NO. E
SITE Garvey

BECHTEL CORPORATION

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 1
HOLE NO. P

PROJECT Garvey Reservoir ANGLE FROM HORIZ 90° BEARING -
LOCATION Sta. 50+00 300' Lt. BEGUN 6/4/64 COMPLETED 6/5/64
OVERBURDEN - DEPTH DRILLED INTO ROCK 31.5' TOTAL DEPTH OF HOLE 31.5'
ELEV. WATER TABLE -- NO. CORE BOXES NO. SAMPLES TAKEN 0
CORE RECOVERY (%) - FEET - MODEL & MAKE OF DRILL CP-8
GROUND ELEV. 500.4' HOLE LOGGED BY M. Thiel DRILLER G. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
4" casing to 31.5'. P-7 El. top of pipe = 500.36'. Length of tip & pipe = 29.5'. Filter sand to 24.5'. Impervious backfill to ground surface. Tip El. = 470.86'.						10 20 30		0.0 - 31.5' - CONGLOMERATE, yellow brown, loosely cemented, firm.
								Bottom of Hole. Depth - 31.5'.

Hole Size 4"

HOLE NO. P
SITE Garvey

BECHTEL CORPORATION

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 2
HOLE NO. G

PROJECT Garvey Reservoir — ANGLE FROM HORIZ. 90° — BEARING -
LOCATION Sta. 3+00 180' Lt. — BEGUN 5/26/64 — COMPLETED 6/3/64
OVERBURDEN - — DEPTH DRILLED INTO ROCK 33.6' — TOTAL DEPTH OF HOLE 110.0
ELEV. WATER TABLE - — NO. CORE BOXES - — NO. SAMPLES TAKEN 0
CORE RECOVERY (%) - — FEET - — MODEL & MAKE OF DRILL CP-8
GROUND ELEV. 530.0' — HOLE LOGGED BY J. Elston — DRILLER C. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
4" casing to 110.0'.								0.0 - 76.4' - EMBANKMENT MATERIAL.
P-8 El. top of pipe = 530.70'. Length of tip & pipe = 88.4'. Filter sand to 81.5'. Impervious back-fill to ground surface. Tip El. = 442.30'.						10, 20, 30		0.0 - 49.0' - GRAVELLY SILTY SAND, yellow brown.
Lost all drill water at 40'.						40, 50, 60, 70		49.0' - 51.0' - GRAVELLY SILT, gray black, hard consistency. 51.0 - 76.4' - GRAVELLY SILTY SAND, brown.

Hole Size 4"

HOLE NO. G
SITE Garvey

SHEET 2 OF 2

PROJECT Garvey

HOLE NO. G

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
						80 90 100 110		Grading to white gray. 76.4' - TOP OF FOUNDATION 76.4' - 110.0' - CONGLOMERATE, yellow brown, loosely cemented.
								Bottom of Hole. Depth - 110.0'.

Hole Size 4"

HOLE NO. G

Garvey

BECHTEL CORPORATION

SHEET 1 OF 2

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. H

PROJECT Garvey Reservoir ANGLE FROM HORIZ. 90° BEARING -

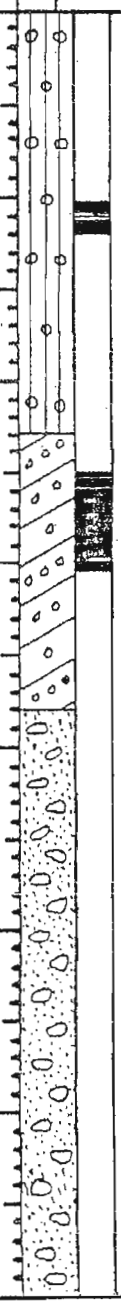
LOCATION Sta. 13+00 20' Lt. BEGUN 7/14/64 COMPLETED 7/17/64

OVERBURDEN - DEPTH DRILLED INTO ROCK 58.6' TOTAL DEPTH OF HOLE 96.6'

ELEV. WATER TABLE - NO. CORE BOXES - NO. SAMPLES TAKEN 6

CORE RECOVERY (%) - FEET - MODEL & MAKE OF DRILL CP-15

GROUND ELEV. 580.5' HOLE LOGGED BY M. Thiel DRILLER C. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG (sample)	CLASSIFICATION AND PHYSICAL CONDITION
6" casing to 24'. 4" casing to 81.6'. P-9 El. top of pipe = 581.80'. Length of tip & pipe = 21.3'. Filter sand to 16.3'. Impervious back-fill to ground surface. Tip El. = 560.50'. P-10 El. top of pipe = 581.70'. Length of tip & pipe = 87.5'. Filter sand to 31.0'. Chemical grout to 24.0'. Tip El. 494.20'. Lost all drill water at 38'.						10 20 30 40 50 60 70		0.0 - 38.0' - EMBANKMENT MATERIAL. GRAVELLY SILTY SAND, (SM), brown, moist, firm. 10.4 - 11.0' - GR-14, (SM). 11.0 - 12.0' - GR-15. 15.0 - 17.0' - GR-16. 22.9 - 38.0' - GRAVELLY SANDY CLAY, (CL), yellow brown to orange brown. 25.0 - 30.0' - GR-51. 30.0 - 30.5' - GR-52, (CL). 38.0' - TOP OF FOUNDATION. 38.0 - 81.6' - CONGLOMERATE, yellow brown, loosely cemented, with alternating, 1 -2', layers of sandy conglomerate and clayey sandstone.

Hole Size 6" & 4"

HOLE NO. H

SITE Garvey

SHEET 2 OF 2

PROJECT Garvey

HOLE NO. H

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG (sample)	CLASSIFICATION AND PHYSICAL CONDITION
						80 90		SANDY CONGLOMERATE, as above. 74.0 - 79.0' - GR-53. 81.6 - 96.6' - SILTSTONE, yellow brown with occasional quartz pebbles, firm.
								Bottom of Hole. Depth - 96.6'.

Hole Size 6" & 4"

HOLE NO. H

Garvey

BECHTEL CORPORATION

SHEET 1 OF 3

HOLE NO. I

GEOLOGIC LOG OF DRILL HOLE

PROJECT Garvey Reservoir ANGLE FROM HORIZ 90° BEARING -

LOCATION Sta. 24+00 20' Lt. BEGUN 7/1/54 COMPLETED 7/13/5

OVERBURDEN - DEPTH DRILLED INTO ROCK 99.5' TOTAL DEPTH OF HOLE 153.0

ELEV. WATER TABLE - NO. CORE BOXES - NO. SAMPLES TAKEN 6

CORE RECOVERY (%) - FEET - MODEL & MAKE OF DRILL CP-15

GROUND ELEV. 580.1' HOLE LOGGED BY M. Thiel DRILLER C. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
6" casing to 50'. 4" casing to 85'.							sample	0.0 - 30.0' - EMBANKMENT MATERIAL. GRAVELLY CLAYEY SAND, (SC), brown, moist, firm.
P-11 El. top of pipe = 580.89'. Length of tip & pipe = 30.5'. Filter sand to 13.0'. Impervious backfill to ground surface. Tip El. = 550.39'.						10		11.8 - 12.3' - GR-8,(SC).
								17.6 - 18.1' - GR-9. 18.6 - 19.9' - GR-10, (SM-SC).
						20		21.0 - 21.3' - GR-11. 21.3 - 23.4' - GR-12,(SC)
								27.6 - 28.8' - GR-13.
						30		30.0' - TOP OF FOUNDATION 30.0 - 85.0' - CONGLOMERATE, yellow brown, loosely cemented, firm.
P-12 El. top of pipe = 580.68'. Length of tip & pipe = 143.3'. Filter sand to 36.0'. Chemical grout to 32.0'. Tip El. = 437.38'.						40		
						50		
50 to 100% loss of drill water from 50 - 85'.						60		Numerous boulders below 66'.
						70		

Hole Size 6" & 4"

HOLE NO. I

SITE Garvey

PROJECT Garvey

SHEET 2 OF 3

HOLE NO. I

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
Chemical grout from 49 - 50' to facilitate drilling.						80, 90, 100, 110, 120, 130, 140, 150		CONGLOMERATE, as above. 85.0 - 104.3' - SILTSTONE, tan with a few thin (1/64") varved layers of gray fine sand and gravel. Firm and damp. 104.3 - 150' - CONGLOMERATE, moderately well cemented, firm. Mostly quartz and granite gravels.

Hole Size 6" and 4"

HOLE NO. I

SITE Garvey

PROJECT Garvey

SHEET 3 OF 3

HOLE NO. I

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
								150.0 - 153.0' - SILTSTONE, yellow brown, firm.
								Bottom of Hole. Depth - 153.0'.

Hole Size 6" & 4"

HOLE NO. I

SITE Garvey

BECHTEL CORPORATION

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 1
HOLE NO. J

PROJECT Garvey Reservoir
ANGLE FROM HORIZ 90°
BEARING -
LOCATION Sta. 38+00 180' Lt.
BEGUN 6/5/64
COMPLETED 6/9/6
OVERBURDEN -
DEPTH DRILLED INTO ROCK 20.0'
TOTAL DEPTH OF HOLE 52.0'
ELEV. WATER TABLE 517.1'
NO. CORE BOXES -
NO. SAMPLES TAKEN 2
CORE RECOVERY (%) -
FEET -
MODEL & MAKE OF DRILL CP-8
GROUND ELEV. 530.3'
HOLE LOGGED BY M. Thiel
DRILLER C. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
6" casing to 21.0'. 4" casing to 52.0'.							sample	0.0 - 32.0' - EMBANKMENT MATERIAL. GRAVELLY SILTY SAND, (SM-SC), brown, moist, firm.
P-13 El. top of pipe = 530.62'. Length of tip & pipe = 20.5'. Filter sand to 15.5'. Impervious backfill to ground surface. Tip El.=510.12'						10		5.0 - 6.5' - GR-1, (SM-SC).
						20		15.0 - 16.5' - GR-2, (SM)
						30		32.0' - TOP OF FOUNDATIO
P-14 El. top of pipe = 530.67'. Length of tip & pipe = 50.5'. Filter sand to 44.0'. Chemical grout to 36.0'. Impervious backfill to 22.0'. Tip El.=480.17'						40		32.0 - 52.0' - CONGLOMERATE, yellow brown, loosely cemented, firm.
						50		
						60		Bottom of Hole. Depth - 52.0'.

HOLE NO. J
SITE Garvey

BECHTEL CORPORATION

GEOLOGIC LOG OF DRILL HOLE

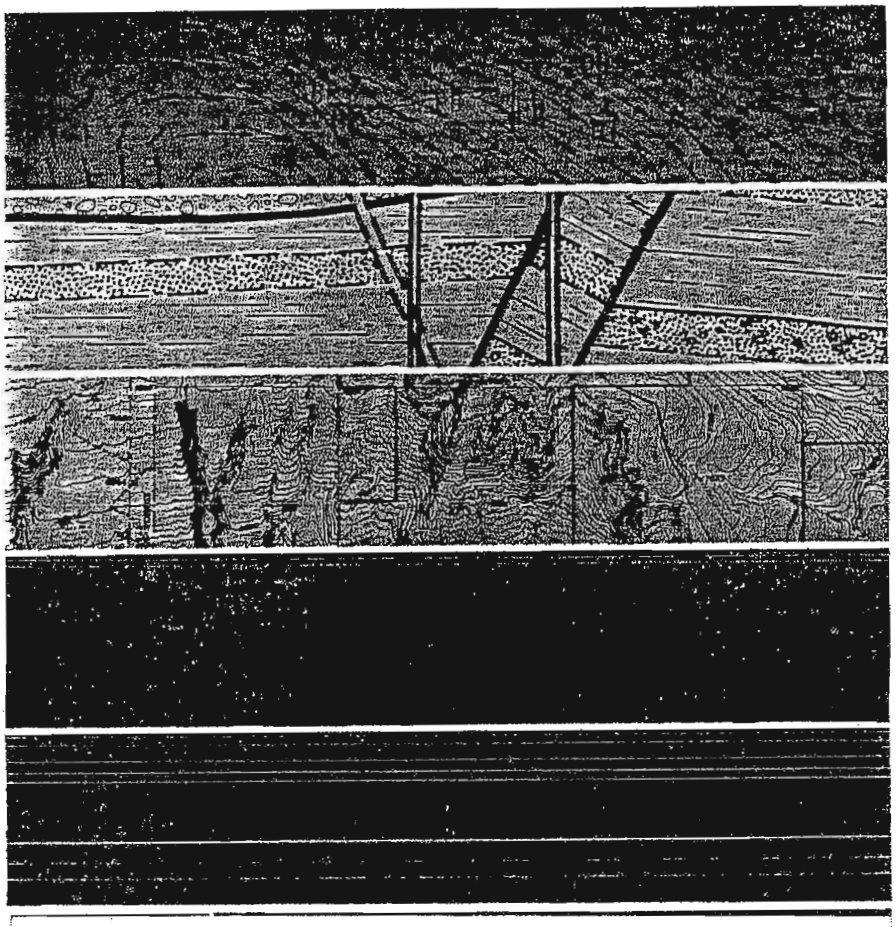
SHEET 1 OF 1
HOLE NO. K

PROJECT Garvey Reservoir ANGLE FROM HORIZ. - BEARING -
LOCATION Sta. 5+70 420' Lt. BEGUN 6/16/64 COMPLETED 6/17/6
OVERBURDEN - DEPTH DRILLED INTO ROCK 52.5' TOTAL DEPTH OF HOLE 52.5'
ELEV. WATER TABLE - NO. CORE BOXES - NO. SAMPLES TAKEN 0
CORE RECOVERY (%) - FEET - MODEL & MAKE OF DRILL CF-8
GROUND ELEV. 511.1 HOLE LOGGED BY M. Thiel DRILLER C. Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
4" casing to 40.0'.								0.0 - 52.5' - CONGLOMERATE, yellow brown, loosely cemented to 50', moderately well cemented from 50.0 - 52.5'.
G-1 El. top of pipe = 512.12'. Length of tip & pipe = 50.5'. Filter sand to 45.5'. Impervious back-fill to ground surface. Tip El. = 461.62'.						10		
						20		Numerous boulders from 20 - 40'.
Partial loss of drill water from 20 to 40'.						30		
						40		
						50		
								Bottom of Hole. Depth - 52.5'.

Hole Size 4"

HOLE NO. K
SITE Garvey



REPORT - PHASE II
SEISMIC STABILITY INVESTIGATION
GARVEY RESERVOIR
MONTEREY PARK, CALIFORNIA
FOR THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

JOB NO. 02269-011-02
DECEMBER 28, 1981

CR
D&M
82-0031

Dames & Moore

SAMPLES

. DISTURBED SAMPLE

■ INDICATES UNDISTURBED D & M SAMPLE BLOWS/FT. INDICATES NO. OF BLOWS OF SLIP JARS FALLING 18-INCHES TO DRIVE SAMPLER 12-INCHES.

BORINGS 1-5: 530-LB.
BORING 6: 320-LB.

◪ STANDARD PENETRATION TESTS (SPT) BLOWS/FT. (N VALUES) INDICATES NO. OF BLOWS TO DRIVE SPT SAMPLER 12-INCHES USING 140-LB. WEIGHT FALLING 30-INCHES

LABORATORY TESTS

SA:	SIEVE ANALYSIS, WASH SIEVE
MA:	COMBINED SIEVE AND HYDROMETER
-200:	PERCENT FINES (PASSING #200 SIEVE)
Gs:	SPECIFIC GRAVITY
AL:	ATTERBERG LIMITS
DS/CD:	SLOW DIRECT SHEAR TESTS ON SAMPLES AT FIELD MOISTURE
TX/CD:	SLOW TRIAXIAL COMPRESSION TESTS ON SAMPLES AT FIELD MOISTURE
TX/ICU/LIQ:	STRESS-CONTROLLED CYCLIC TRIAXIAL COMPRESSION TESTS
TX/ICU/CY:	STRAIN-CONTROLLED CYCLIC TRIAXIAL COMPRESSION TESTS
RC:	RESONANT COLUMN TESTS

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50 % OF MATERIAL IS LARGER THAN NO 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50 % OF COARSE FRACTION RETAINED ON NO 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO 4 SIEVE)	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50 % OF MATERIAL IS SMALLER THAN NO 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

FOR LABORATORY CLASSIFICATION OF FINE-GRAINED SOILS

NOTES

1. DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE CLASSIFICATIONS
2. WHEN SHOWN ON THE BORING LOGS, THE FOLLOWING TERMS ARE USED TO DESCRIBE THE CONSISTENCY OF COHESIVE SOILS AND THE RELATIVE COMPACTNESS OF COHESIONLESS SOILS

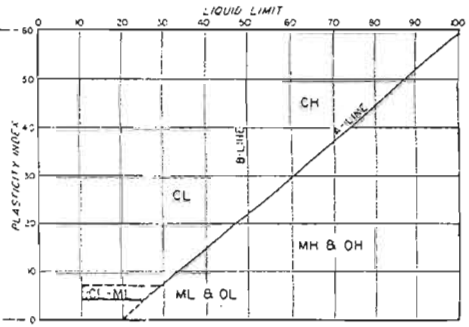
COHESIVE SOILS	(APPROXIMATE SHEAR STRENGTH IN KSF)	COHESIONLESS SOILS	"N" VALUE	RELATIVE DENSITY
VERY SOFT	LESS THAN .25	VERY LOOSE	0 TO 4	0 TO 15
SOFT	0.25 TO 0.5	LOOSE	4 TO 10	15 TO 35
MEDIUM STIFF	0.5 TO 1.0	MEDIUM DENSE	10 TO 30	35 TO 65
STIFF	1.0 TO 2.0	DENSE	30 TO 50	65 TO 85
VERY STIFF	2.0 TO 4.0	VERY DENSE	OVER 50	85 TO 100
HARD	GREATER THAN 4.0			

GRADATION CHART

MATERIAL SIZE	PARTICLE SIZE			
	LOWER LIMIT		UPPER LIMIT	
	MILLIMETERS	SIEVE SIZE*	MILLIMETERS	SIEVE SIZE*
SAND				
FINE	.074	#200*	0.42	#40*
MEDIUM	0.42	#40*	2.00	#10*
COARSE	2.00	#10*	4.76	#4*
GRAVEL				
FINE	4.76	#4*	19.1	3/4"+
COARSE	19.1	3/4"+	76.2	3"+
COBBLES	76.2	3"+	304.8	12"+
BOULDERS	304.8	12"+	914.4	36"

* U.S. STANDARD + CLEAR SQUARE OPENINGS

PLASTICITY CHART



UNIFIED SOIL CLASSIFICATION SYSTEM

DAMES & MOORE

PLATE 2-3

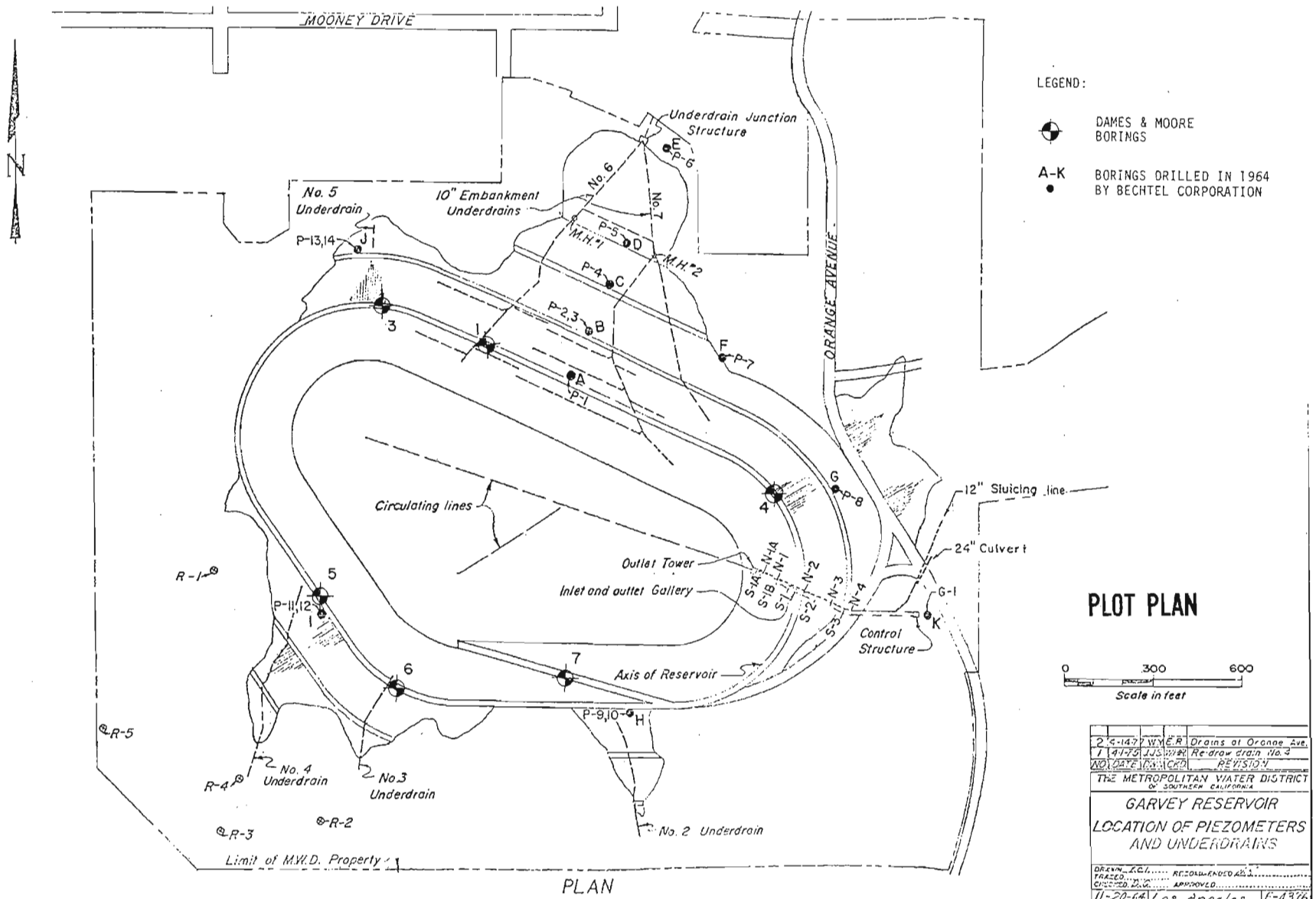

MOONEY DRIVE
ORANGE AVENUE
LEGEND:
DAMES & MOORE BORINGS
A-K BORINGS DRILLED IN 1964 BY BECHTEL CORPORATION
Underdrain Junction Structure
No. 5 Underdrain
10" Embankment Underdrains
No. 6
No. 7
M.H. #1
M.H. #2
P-13,14
P-5
P-4
P-2,3
P-1
P-7
P-8
P-6
P-11,12
P-9,10
Circulating lines
Outlet Tower
Inlet and outlet Gallery
Axis of Reservoir
Control Structure
12" Sluicing line
24" Culvert
R-1
R-2
R-3
R-4
R-5
No. 4 Underdrain
No. 3 Underdrain
No. 2 Underdrain
Limit of M.W.D. Property
PLAN
PLOT PLAN
0 300 600
Scale in feet
2 4-14-77 W.W. E.R. Drains at Orange Ave.
1 4-1-75 J.J.S. W.R. Re-draw drain No. 3
NO. DATE DRN. CKD. REVISION
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
GARVEY RESERVOIR
LOCATION OF PIEZOMETERS AND UNDERDRAINS
DRAWN K.C.L. RECOMMENDED
TRACED APPROVED
CHECKED
11-20-64 Los Angeles E-4376
DAMES & MOORE

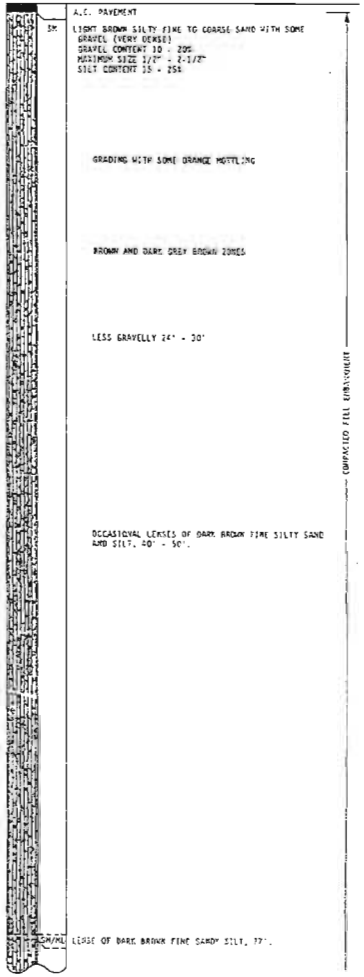
PLATE 2-1

BORING 1

SURFACE ELEVATION: 580.0 FEET

DEPTH IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	STRENGTH TEST DATA: TYPE OF TEST	STRENGTH TEST DATA: NORMAL OR CONFINING PRESSURE (PSF)	STRENGTH TEST DATA: SHEAR STRENGTH (PSF)	STRENGTH TEST DATA: DEVIATOR STRESS (PSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	BLOWS/FT.	SAMPLES
0											
5										51	
	SA									74	
10										70	
15										105	
20										105	
25	SG									105	
								9.0	127	3C5/10	
30										130	
										3D6/7	
35											
	Gs= 2.67							11.0	124	97	
40	SA									92	
45										110	
										62	
50										130	
55	SA									118	
60										130	
65										159	
70	TX/ICU/ LIQ. Gs= 2.67				9.700		44,000	11.3	125	85	
										127	
75	SA										
								9.1	126	120	
80											

SYMBOLS



DESCRIPTION

A.C. PAVEMENT

SM LIGHT BROWN SILTY FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE)
GRAVEL CONTENT 10 - 20%
MAXIMUM SIZE 1/2" - 2-1/2"
SILT CONTENT 15 - 25%

GRADING WITH SOME ORANGE MOTTLING

BROWN AND DARK GREY BROWN ZONES

LESS GRAVELLY 24' - 30'

OCCASIONAL LENSES OF DARK BROWN FINE SILTY SAND AND SILT, 40' - 50'.

CL/ML LENSE OF DARK BROWN FINE SANDY SILT, 77'.

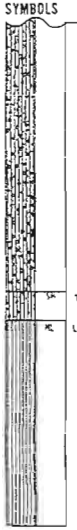
COMPACTED FILL EXPLORATION

BORING 1

SURFACE ELEVATION: 580.0 FEET

DEPTH IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	STRENGTH TEST DATA: TYPE OF TEST	STRENGTH TEST DATA: NORMAL OR CONFINING PRESSURE (PSF)	STRENGTH TEST DATA: SHEAR STRENGTH (PSF)	STRENGTH TEST DATA: DEVIATOR STRESS (PSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	BLOWS/FT.	SAMPLES
80										90	
85								9.1	124	106	
90	SA									100	
95	TX/ICU/ LIQ. Gs				10,500		31,000	10.5	127	85	
										82	
100										59	
105	-200= 75%									110/9	
110	Gs= 2.67							24.7	98	118	
										110/5	
115										150	
120	-200 81%									110/10	

SYMBOLS



DESCRIPTION

LENSE OF CLAYEY SAND, 83'

(SILT CONTENT 20%)

SM TAN MICACEOUS SILTY FINE SAND (VERY DENSE) (SANGUS FORMATION?)

ML LIGHT BROWN WITH RUST MOTTLING FINE SANDY SILT (HARD) (PICO FORMATION)

GRADES SANDIER, 114' - 118'.

2" LIGHT BROWN SILTY CLAY LENSE

NATURAL FOUNDATION MATERIAL

BORING COMPLETED AT 121.5 FEET, ON 2/24/80.
BAILED FOR WATER LEVEL MEASUREMENTS

WATER LEVEL 95.0 FEET ON 02/25/80

FILLED WITH RAINWATER ON 03/04/80
(HOLE OPEN TO 80.5 FEET)

BORING SUBSEQUENTLY CAVED TO 43';
VALID WATER LEVEL DATA NOT OBTAINED.

BACKFILLED.

LOG OF BORINGS

DAMES & MOORE

BORING 3

SURFACE ELEVATION: 580.0 FEET

DEPTH IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	STRENGTH TEST DATA: TYPE OF TEST	STRENGTH TEST DATA: NORMAL OR CONFINING PRESSURE (PSF)	STRENGTH TEST DATA: SHEAR STRENGTH (PSF)	STRENGTH TEST DATA: DEVIATOR STRESS (PSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	BLOWS/FT.	SAMPLES
0											
5										91	
										80	
10	TX/ICU/ LIQ. SA				1,700		10,700	11.2	123	105	
15	SA									91	
20										116	
25										86	
30										160/11"	
	-200= 50%									66	
35								25.4	98	122	
40	-200= 63%									104	
45	TX/ICU/ LIQ.MA				6,050		24,000	22.9	102	107	

SYMBOLS | DESCRIPTION

A.C. PAVEMENT

SM — LIGHT BROWN SILTY FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE).
MAXIMUM SIZE 1/2" - 1-1/2"
SILT CONTENT 15 - 20%
DARK BROWN ZONE WITH OCCASIONAL FINE SANDY SILT LENSES AT 4', MOTTLED BROWN AND TAN, 5' - 7'.

(GRAVEL CONTENT 30%)

COMPACTED FILL EMBANKMENT

SM — RUST AND LIGHT BROWN SILTY FINE TO MEDIUM SAND WITH SOME GRAVEL AND OCCASIONAL SILT LENSES. (VERY DENSE). GRAVEL INCLUDES 20% WEATHERED SILTSTONE FRAGMENTS. (SAUGUS FORMATION?)

ML — RUST AND LIGHT BROWN MICACEOUS FINE SANDY SILT (HARD) (PICO FORMATION)

NATURAL FOUNDATION MATERIAL

BORING COMPLETED AT 45 FEET ON 2/25/80
BAILED FOR WATER LEVEL MEASUREMENTS

DRY, 03/04/80 (OPEN TO 43')

DRY, 04/21/80 (OPEN TO 43')

BACKFILLED

LOG OF BORINGS

DAMES & MOORE

PLATE 2-4B

BORING 4

SURFACE ELEVATION: 580.0 FEET

DEPTH IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	STRENGTH TEST DATA: TYPE OF TEST	STRENGTH TEST DATA: NORMAL OR CONFINING PRESSURE (PSF)	STRENGTH TEST DATA: SHEAR STRENGTH (PSF)	STRENGTH TEST DATA: DEVIATOR STRESS (PSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	BLOWS/FT.	SAMPLES
0											
5										110	■
	SA									76	◪
10	RC SA							9.5		87	■
15										70	◪
20	TX/ICU/ CY,SA							10.6	125	95	■
25	SA									69	◪
30										150	■
										114	◪
35										160	■
40	SA									71	◪
45										149	■
										85	◪
50	TX/ICU/ LTD. SA				7,200		22,700	11.1	125	210	■
55	SA									85/6"	◪
60								10.8	127	120/6"	■
65										146	◪
70										150	■
	SA									45	◪
75								10.5	117	79	■
80											

SYMBOLS

DESCRIPTION

A.C. PAVEMENT

LIGHT BROWN VERY SILTY FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE)
GRAVEL CONTENT 5 - 20%
MAXIMUM SIZE 1/2" - 1-1/2"
SILT CONTENT 20 - 30%

OCCASIONAL WEATHERED SILTSTONE GRAVEL 45' - 70'

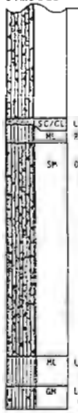
(SILT CONTENT 18%)

BORING 4

SURFACE ELEVATION: 580.0 FEET

DEPTH IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	STRENGTH TEST DATA: TYPE OF TEST	STRENGTH TEST DATA: NORMAL OR CONFINING PRESSURE (PSF)	STRENGTH TEST DATA: SHEAR STRENGTH (PSF)	STRENGTH TEST DATA: DEVIATOR STRESS (PSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	BLOWS/FT.	SAMPLES
80										110/6"	◪
85										111	■
										87	◪
90	TX/ICU/ CY,MA							10.3	129	106	■
95	SA									110/6"	◪
100								9.2	117	115	■
105										110	◪
110								14.2	116	220	■
	SA									52/6"	◪
115											

SYMBOLS



DESCRIPTION

LENSE OF DARK BROWN SANDY CLAY AT 89'.

RUST AND LIGHT BROWN MICACEOUS FINE SANDY SILT (HARD) (PICO FORMATION)

DARK GREY SILTY FINE TO MEDIUM SAND WITH A TRACE OF FINE GRAVEL (VERY DENSE), SANDY SILT LAYER AT 93' (PICO FORMATION).

GRADES TO LIGHT BROWN SILTY FINE TO COARSE SAND WITH SOME GRAVEL AND ZONES OF FINE TO MEDIUM SANDY SILT (VERY DENSE).

GRADES VERY SILTY

LIGHT BROWN AND RUST FINE SANDY SILT (HARD) (PICO FORMATION)

LIGHT BROWN GRAVEL - SAND IN A CLAYEY SILT MATRIX (VERY DENSE) (PICO FORMATION)

BORING COMPLETED AT 113 FEET ON 02/27/80
BAILED TO 105' FOR WATER LEVEL MEASUREMENTS
WATER LEVEL 71.4 FEET, 03/04/80 (OPEN TO 77.8')
WATER LEVEL 71.0 FEET, 04/21/80 (OPEN TO 77.5')
BACKFILLED.

LOG OF BORINGS

DAMES & MOORE

PLATE 2-4C

BORING 5

SURFACE ELEVATION: 580.0 FEET

LABORATORY TEST DATA

DEPTH IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	STRENGTH TEST DATA: TYPE OF TEST	STRENGTH TEST DATA: NORMAL OR CONFINING PRESSURE (PSF)	STRENGTH TEST DATA: SHEAR STRENGTH (PSF)	STRENGTH TEST DATA: DEVIATOR STRESS (PSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	BLOWS/FT.	SAMPLES
0											
								8.4	121	50	■
5											
										40	◪
10											
								8.2	125	62	■
15	SA									78	◪
20								7.9	126	89	■
25										82	◪
										85	■
30	SA									30	◪
35	TX/1CU/LIQ. SA				4,300		22,000	11.2	124	139	■
40										38	◪
45	TX/1CU/LIQ. MA				6,040		16,000	17.5	114	74	■
	-200* 63%									155	◪
50										220/9"	■
55	SA									75	◪
60	RC,SA							11.2	116	125	■
								7.9		130/6"	⊠
65											

SYMBOLS / DESCRIPTION

SYMBOLS	DESCRIPTION
	A.C. PAVEMENT
GM	LIGHT BROWN SILTY, GRAVELLY FINE TO COARSE SAND (VERY DENSE)
	VERY GRAVELLY IN UPPER 10'
SM	LIGHT BROWN SILTY FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE) GRAVEL CONTENT 15 - 25% MAXIMUM SIZE ½" - 1" SILT CONTENT 20%±
	CLAYEY SAND LENSE AT 20'
	CLAYEY SAND LENSE AT 28' GRADES TO SILTY FINE SAND WITH TRACE MEDIUM TO COARSE SAND AND GRAVEL AT 35'
	GRADES TO SILTY FINE TO COARSE SAND WITH SOME GRAVEL (DENSE)
	(VERY DENSE)
SM+ML +CL	LIGHT BROWN AND RUST ALTERNATING LAYERS OF SILTY FINE TO MEDIUM SAND, FINE SANDY SILT AND FINE SANDY CLAY WITH OCCASIONAL GRAVEL (DENSE - HARD)
CL	LIGHT BROWN SANDY CLAY WITH OCCASIONAL GRAVEL AND RUST SILT POCKETS (HARD)
ML	MOTTLED LIGHT BROWN AND RUST MICACEOUS SILT (HARD)
ML+SM	INTERBEDDED LAYERS OF MOTTLED TAN AND RUST MICACEOUS SILT AND SILTY FINE TO MEDIUM SAND WITH OCCASIONAL GRAVEL (HARD-VERY DENSE)
SM	LIGHT BROWN SILTY SAND WITH TRACE MEDIUM TO COARSE SAND AND GRAVEL AND OCCASIONAL POCKETS OF VERY MICACEOUS SAND (VERY DENSE)
	GRADES COARSER

COMPACTED FILL EMBANKMENT

NATURAL FOUNDATION MATERIAL (PICO FORMATION)

BORING COMPLETED AT 64.5 FEET, 2/28/80.
BAILED TO 55 FEET FOR WATER LEVEL MEASUREMENTS.
WATER LEVEL 45.7 FEET, 3/4/80 (OPEN TO 58.5')
DRY, 4/21/80 (OPEN TO 58').
BACKFILLED.

LOG OF BORINGS

DAMES & MOORE

PLATE 2-4D

BORING 6

SURFACE ELEVATION: 580.0 FEET

LABORATORY TEST DATA

DEPTH IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	STRENGTH TEST DATA: TYPE OF TEST	STRENGTH TEST DATA: NORMAL OR CONFINING PRESSURE (PSF)	STRENGTH TEST DATA: SHEAR STRENGTH (PSF)	STRENGTH TEST DATA: DEVIATOR STRESS (PSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	BLOWS/FT.	SAMPLES
0											
	Gs= 2.66							12.3	123	42	■
5											
	SA									59	◪
10											
										75/9"	■
15											
	SA									48	◪
20											
	Gs= 2.67			TX/CD	2,300		10,000	11.6	120	70	■
	SA									54	◪
25											
								17.1		90/9"	■
30											
	SA									76	◪
35											
	Gs= 2.66			TX/CD	4,750		20,700	10.0	125	50	■
40										52	◪
				DS/CD	3,000 6,000	3,400 6,200		12.5	114	70/6"	■
45											
	SA									100+	◪
50											
										125/6"	■
55											

SYMBOLS	DESCRIPTION	
SM	A. C. PAVEMENT LIGHT BROWN VERY SILTY FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE) GRAVEL CONTENT 5 - 15% MAXIMUM SIZE ½" - 1½" SILT CONTENT 20 - 30% GRADES DARK BLUISH-GRAY	COMPACTED FILL EMBANKMENT
SM	LIGHT REDDISH BROWN SILTY FINE TO COARSE SAND WITH SOME GRAVEL, (VERY DENSE) (SAUGUS FORMATION) TRACE OF CLAY	NATURAL FOUNDATION MATERIAL
SM	LIGHT BROWN SLIGHTLY SILTY FINE TO COARSE SAND (VERY DENSE) (SAUGUS FORMATION)	NATURAL FOUNDATION MATERIAL

BORING COMPLETED AT 53'. 1/17/80.
BAILED TO 48.8 FEET FOR WATER LEVEL MEASUREMENTS.

DRY, 1/30/80 (OPEN TO 50.8')
WATER LEVEL 48.3 FEET, 3/4/80
(POSSIBLE RAINWATER; OPEN TO 50.7')

DRY, 4/21/80 (OPEN TO 50.2')

BACKFILLED.

LOG OF BORINGS

DAMES & MOORE

PLATE 2-4E

BORING 7

SURFACE ELEVATION: 554 ± FEET

DEPTH IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	STRENGTH TEST DATA: TYPE OF TEST	STRENGTH TEST DATA: NORMAL OR CONFINING PRESSURE (PSF)	STRENGTH TEST DATA: SHEAR STRENGTH (PSF)	STRENGTH TEST DATA: DEVIATOR STRESS (PSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	BLOWS/FT.	SAMPLES
0											
5	SA										■
	-200= 66 %										■
10		39	21								⊠
	SA										■
											■
15											■

SYMBOLS		DESCRIPTION	
		A. C. PAVEMENT	
	SM	LIGHT BROWN SILTY FINE TO COARSE SAND WITH SOME GRAVEL TO 3" (VERY DENSE)	COMPACTED EARTH BLANKET
		GRADES SILTIER	
	ML	LIGHT BROWN AND RUST MICACEOUS FINE SANDY SILT (HARD)	
	CL	TAN SILTY CLAY (HARD)	NATURAL FOUNDATION MATERIAL
	SP	LIGHT BROWN FINE SAND (DENSE)	
	SM	TAN SILTY FINE TO MEDIUM SAND (DENSE)	

BORING COMPLETED AT 15 FEET ON 2/28/80.
NO WATER.
NO CAVING.
LOCATION SUBSEQUENTLY INUNDATED.

LOG OF BORINGS

DAMES & MOORE

PLATE 2-4F

LeROY CRANDALL and ASSOCIATES

GEOTECHNICAL CONSULTANTS

METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA
CENTRAL LIBRARY

GEOLOGIC, HYDROGEOLOGIC, AND

WELL COMPLETION REPORT

NORTHWEST AREA

GARVEY RESERVOIR

MONTEREY PARK, CALIFORNIA

FOR THE

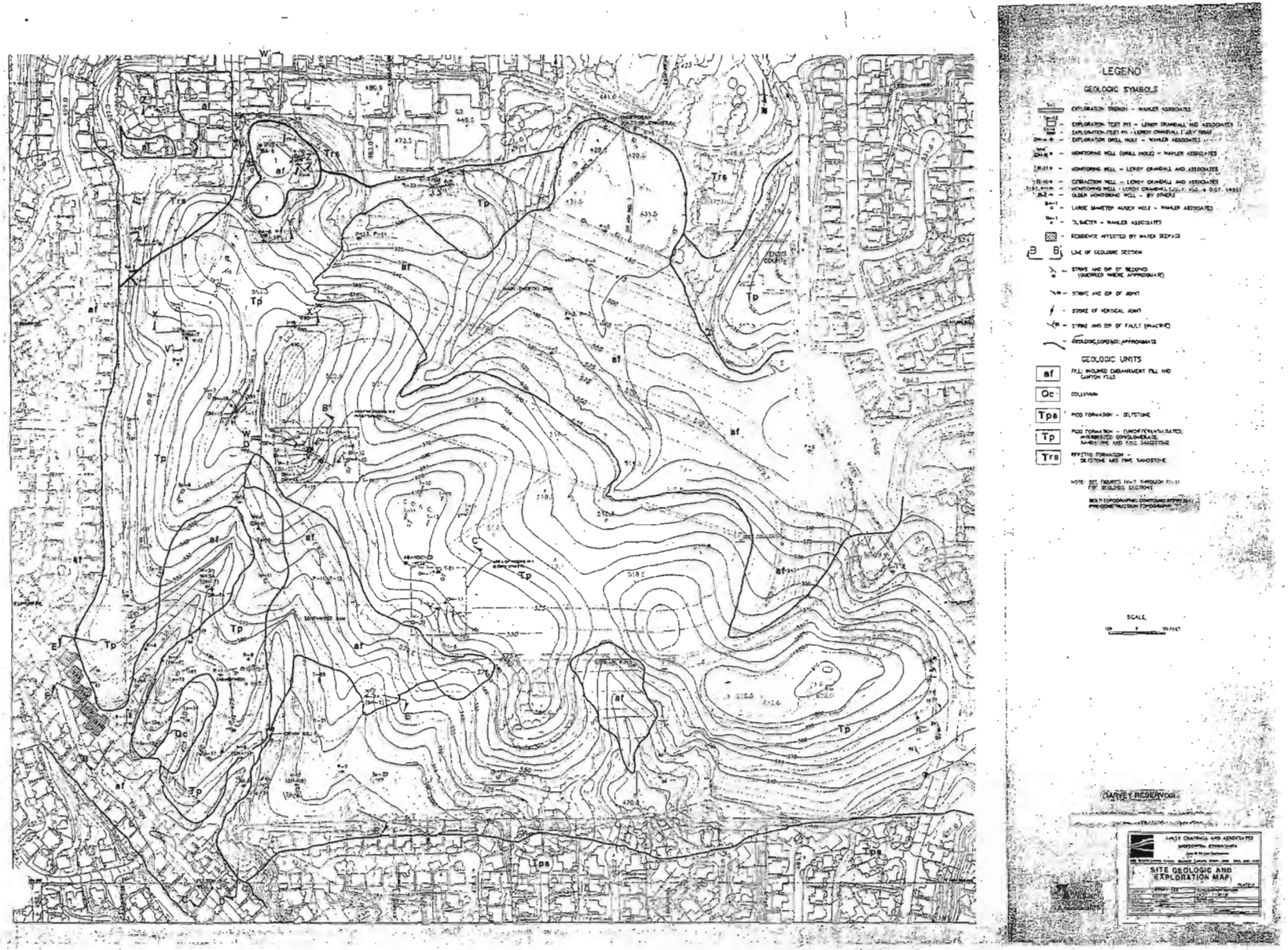
METROPOLITAN WATER DISTRICT OF

SOUTHERN CALIFORNIA

(LCA L89571.AEO)

MARCH 28, 1991

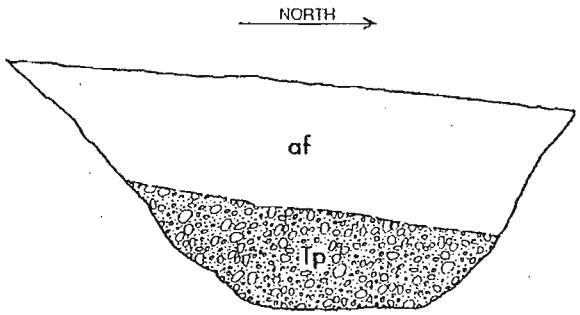
CR
LCAA
91-0112


LEGEND
GEOLOGIC SYMBOLS
GEOLOGIC UNITS
af
Qc
Tps
Tp
Trs
SCALE
HARVEY RESERVOIR
SITE GEOLOGIC AND EXPLORATION MAP

JOB 89571.AEO DATE 8-1-90 DR. JULIANA O.E. CHKD.

FORM 137-A

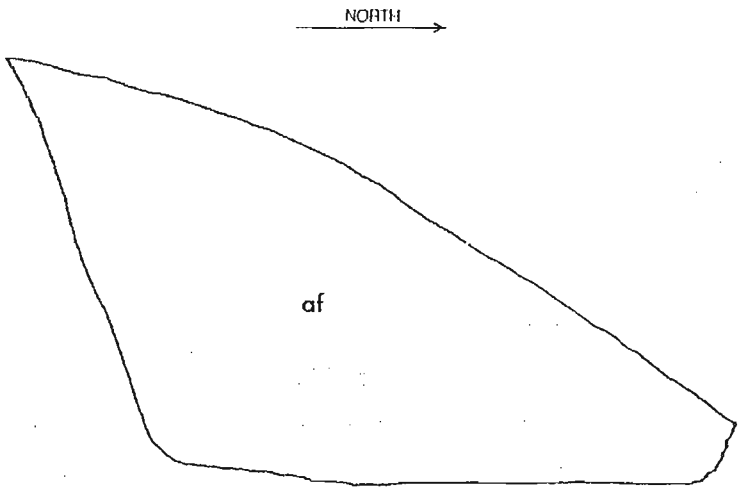
TEST PIT NO. A



0' - 2-1/2': Artificial Fill (af) - Dark reddish brown Clayey to Sandy Siltstone, damp and firm; generally structureless, Siltstone fragments.

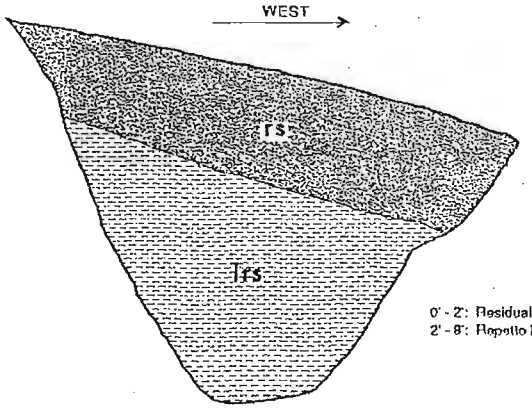
2-1/2' - 5': Pico Formation (Tp) - Light brown, Sandy to Silty Conglomerate, damp and dense.

TEST PIT NO. B



0' - 8': Artificial Fill (af) - Dark reddish brown, Clayey to Sandy Silt, damp and firm, generally structureless.

TEST PIT NO. C



0' - 2': Residual Soil (rs) - Dark brown, Clayey Silt, damp and moderately firm

2' - 8': Repetto Formation (Trs) - Light orangish brown, massive Siltstone damp and dense, limonite stains.

EXPLANATION:

- af — Artificial Fill
- rs — Residual soil
- Tp — Pico Formation Conglomerate
- Trs — Repetto Formation Siltstone

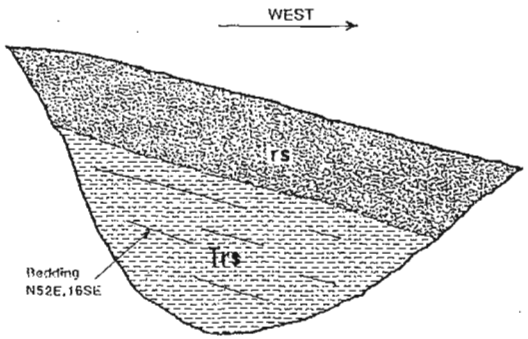
TEST PIT LOGS

0 — 5
SCALE FEET

LeROY CRANDALL AND ASSOCIATES

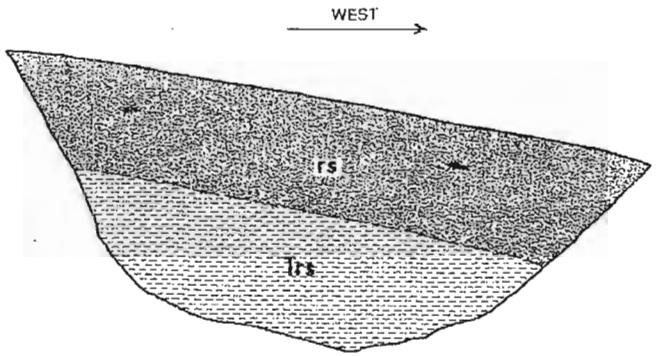
PLATE 5

TEST PIT NO. D



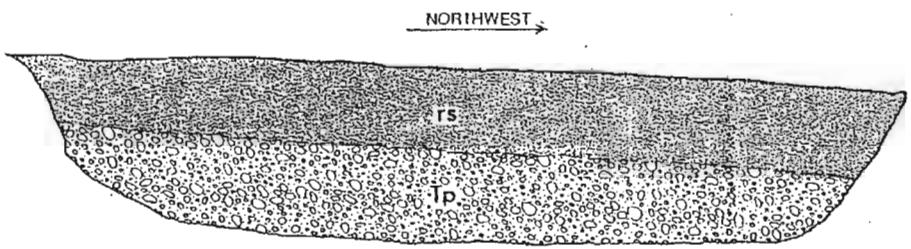
0' - 2-1/2': Residual Soil (rs) - Dark brown, Clayey Silt, damp and moderately firm.
2' - 5': Repetto Formation (Trs) - Light orangish brown, massive Siltstone, damp and dense, limonite stains.

TEST PIT NO. E



0' - 2-1/2': Residual Soil (rs) - Dark brown, Clayey Silt, damp and dense, few igneous rock clasts
2-1/2' - 5': Repetto Formation (Trs) - Light orangish brown, massive Siltstone, damp and dense, limonite stains

TEST PIT NO. F



0' - 2': Residual Soil (rs) - Dark to light brown, Clayey Silt with igneous rock clasts, damp and dense
2' - 4': Pico Formation (Tp) - Light brown, conglomeratic Sandstone and Siltstone, damp and dense

EXPLANATION:

- af — Artificial Fill
- rs — Residual soil
- Tp — Pico Formation Conglomerate
- Trs — Repetto Formation Siltstone

TEST PIT LOGS

0 — 6
SCALE — FEET

LeROY CRANDALL AND ASSOCIATES

PLATE 6

JOB L 8357.AEO DATE 8-1-90 DR. JULIANA O.E. CHKD.

FORM 137-A

BORING A - 1

DATE DRILLED: August 6 & 7, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841000 E6525640**
ELEVATION 578± *

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
575						
	5	51	6.0	128	24	■
570						
	10	68	10.0	121	21	■
565						
	15					
560						
	20	83	12.7	119	14	■
555						
	25					
550						
	30	92	8.8	134	28	■
545						
	35					
540						
	40					

3" Asphaltic Paving

PICO FORMATION

CONGLOMERATE - well graded Sand, large amounts of Gravel and Cobbles, some Clay, brown

SANDSTONE - fine to coarse Sand, some Gravel and Clay, brown

* Elevations refer to datum of reference survey; see Plate 1 for location and elevation of bench mark.

** Grid locations based on 1983 MWD topographical map coordinate system.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEQ DATE 8/29/90 F.T. GMC L O.E. FH W.P. pb CHKD MT

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.1a

BORING A - 1 (Continued)

DATE DRILLED: August 6 & 7, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841000 E6525640

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		78	14.9	111	26		Seam of Silty Clay, light grey
535							
	45						
530							More Gravel
	50	76	7.8	132	51		
525							
	55						Less Gravel
520							
	60	75	9.6	125	43		
515							
	65						
510							
	70	97	15.3	118	34		
505							
	75						CONGLOMERATE - well graded Sand, large amounts of Gravel, light brownish grey
500							
	80						

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.1b

BORING A - 1 (Continued)

DATE DRILLED: August 6 & 7, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841000 E6525640

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
		76	13.3	114	61	
495						
	85					
490						
	90	64	9.6	120	61	
485						
	95					
480						
	100	88	14.4	117	51	
475						
	105					
470						
	110	70	9.7	123	43	
465						
	115					
460						
	120					

Few Cobbles

SANDSTONE - fine to medium Sand, some Gravel, light brown

(CONTINUED ON FOLLOWING PLATE)

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.T. GMC O.E. FH W.P. pp CHKD MI

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.1c

BORING A - 1 (Continued)

DATE DRILLED: August 6 & 7, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841000 E6525640

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		79	9.3	128	>100		
455							
	125						
450							
	130	72	13.6	112	43		Light grey
445							
	135						
440							
	140	76	10.8	122	>100		
435							
	145						Light brown
430							
	150	67	12.3	112	51		(LOST DRILLING MUD, NO RETURN)
425							Light grey
	155	80	16.1	109	43		
420							Fine Sand
	160						

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571 AEO DATE 8/29/90 F.T. GMC J O.E. FH W.P. pb CHKD MT

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.1d

BORING A - 1 (Continued)

DATE DRILLED: August 6 & 7, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841000 E6525640

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		97	23.2	102	43		
415							
	165						
410							CONGLOMERATE - well graded Sand, large amounts of Gravel, light grey
	170						
405							
	175						
400							
	180						
395							
	185						Few Cobbles
390							
	190						
385							SANDSTONE - fine to medium Sand, some Gravel, light grey
	195						
380							
	200	71	10.8	120	>100		

NOTE: E-Z Mud and bentonite drilling mud used in drilling process. Mud removed at completion of drilling. Water level measured at 156' 40 minutes after removal of mud. Boring reamed to 12" in diameter. E-Z Mud used in reaming process. Two piezometers were installed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.T. GMC O.E. FH W.P. pb CHKD MT

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.1e

BORING A - 2

DATE DRILLED: August 1 & 2, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841300 E6525525
ELEVATION 562±

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
560		25	6.2	101	8		ML	SANDY SILT - some Clay, dark brown
	5						SM	SILTY SAND - fine to medium, about 10% Gravel, reddish brown
555								
	10	52	7.7	120	26			PICO FORMATION CONGLOMERATE - well graded Sand, about 20% Gravel, light brown
550								
	15							SANDSTONE - fine to medium Sand, some Gravel and Clay, greyish brown
545								
	20	62	9.3	120	51			
540								
	25							
535								SILTSTONE - light grey with some brownish red
	30	82	17.5	107	20			
530								
	35							
525								CONGLOMERATE - well graded Sand, some Gravel, reddish brown
	40	66	8.4	125	51			

(CONTINUED ON FOLLOWING PLATE)

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.T. GMC J O.E. FH W.P. pb CHKD MT

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.2a

BORING A - 2 (Continued)

DATE DRILLED: August 1 & 2, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841300 E6525525

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
520							
	45						
515							
	50	86	11.8	123	20		Mineralized hard layer
							REPETTO FORMATION
							SILTSTONE - some Clay, some Sandstone layers, brown and grey
510							
	55						
505							Bedded, thin fractures
	60	100	23.8	104	14		
500							
	65						
495							
	70	100	18.7	118	20		
490							(LOST DRILLING MUD. NO RETURN)
	75						(REGAIN CIRCULATION. STILL LOSING SOME MUD)
		87	18.0	108	26		
485							
	80						

(CONTINUED ON FOLLOWING PLATE)

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L895Z1.AEQ DATE 8/29/90 F.T. GMC J O.E. FH W.P. pp CHKD MT

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.2b

BORING A - 2 (Continued)

DATE DRILLED: August 1 & 2, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841300 E6525525

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
		100	22.2	106	46	
480						
	85					
475						
	90	87	17.3	110	41	
470						
	95					
465						
	100	100	19.2	112	41	
460						
	105					
455						
	110	100	23.0	105	20	
450						
	115					
445						
	120					

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.T. GMC O.E. FH W.P. pp CHKD

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING A - 2 (Continued)

DATE DRILLED: August 1 & 2, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841300 E6525525

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
		100	20.9	108	28	■
440						
	125					
435						
	130	96	18.8	110	41	■
430						
	135					
425						
	140	100	21.2	107	30	■
420						
	145					
415						
	150	93	22.4	102	26	■
410						
	155					
405						
	160					

6" cemented layer

SANDSTONE - fine Sand, some Siltstone layers, brown

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.2d

BORING A - 2 (Continued)

DATE DRILLED: August 1 & 2, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841300 E6525525

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		84	15.2	113	37		(LOST DRILLING MUD. NO RETURN)
400							
	165						
395							SILTSTONE - some Sandstone layers, light grey and brown
	170	99	21.5	106	30		
390							
	175						6" cemented layer
385							
	180	100	20.9	112	44		(STILL NO CIRCULATION)
380							
	185						

NOTE: E-Z Mud and bentonite drilling mud used in drilling process. Mud removed at completion of drilling. Water level measured at 133' 40 minutes after removal of mud. Boring reamed to 12" in diameter. Water only used in reaming process. Two piezometers were installed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571AEQ DATE 8/29/90 F.T. GMC D O.E. FH W.P. pb CHKD MT

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.2e

BORING A - 3

DATE DRILLED: July 23, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841290 E6525140
ELEVATION 541±

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
540		65	11.7	113	20	■	SM SILTY SAND - fine, light brown
							REPETTO FORMATION
							SILTSTONE - light grey
535	5						
							Some layers of Sandstone, grey
530	10	82	16.6	109	30	■	
525	15						
520	20	90	20.1	105	26	■	
515	25						
510	30	83	19.2	104	26	■	(MINOR MUD LOSS AT 30' TO 40')
505	35						
	40						

(CONTINUED ON FOLLOWING PLATE)

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEQ DATE 8/30/90 F.T. GMC b O.E. FH W.P. po CHKD MT

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.3a

BORING A - 3 (Continued)

DATE DRILLED: July 23, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841290 E6525140

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
500		71	16.0	104	43		
495	45						
490	50	100	21.1	108	18		(LOST DRILLING MUD. NO RETURN)
							6" cemented layer
485	55						(LOSING MUD AT 55' TO 60')
480	60	100	21.9	107	34		
475	65						(REGAIN CIRCULATION, STILL LOSING SOME MUD)
							6" cemented layer
470	70	92	18.5	109	38		
465	75						
	80						

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.3b

L89571.AEQ DATE 8/29/90 F.T. GMC I O.E. HH W.P. PD CHKD MF

BORING A - 3 (Continued)

DATE DRILLED: July 23, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841290 E6525140

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
460		86	16.6	111	38	
455	85					
450	90	97	21.0	106	>100	
445	95					
440	100	68	14.9	106	56	
435	105					
430	110	85	18.6	106	43	
425	115					
	120					

Some cemented layers

SANDSTONE - fine Sand, some Siltstone layers, grey

No Siltstone

(CONTINUED ON FOLLOWING PLATE)

L89571 AEO DATE 8/29/90 F.T. GMC b O.E. FH W.P. pb CHKD MT

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING A - 3 (Continued)

DATE DRILLED: July 23, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1841290 E6525140

ELEVATION (ft.)	DEPTH (ft.)		MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
420		86	19.1	105	51	
	125					
415						
	130	100	21.5	107	43	
410						
	135					
405						
	140	100	16.4	117	56	
400						
	145					
395						
	150	80	13.4	116	71	
390						
	155					
385						
	160	63	9.4	120	43	

SILTSTONE - brown and grey

SANDSTONE - fine Sand, brown

Some layers of Siltstone

NOTE: Bentonite drilling mud used in drilling process. Mud removed at completion of drilling. Water level measured at 123' 15-1/2 hours after removal of mud. Boring reamed to 12" in diameter. Water only used in reaming process. Two piezometers were installed.

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.I. GMC b O.E. FH W.P. P JHKD MT

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.3d

BORING A - 4

DATE DRILLED: July 26 & 27, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N184580 E6525450
ELEVATION 560±

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		40	8.5	107	4	■	ML SANDY SILT - dark brown
555	5						PICO FORMATION CONGLOMERATE - well graded Sand, some Gravel and Cobbles, small amount of Clay, brown
550	10	70	8.4	127	15	■	
545	15						
540	20	95	23.8	101	10	■	REPETTO FORMATION SILTSTONE - brown and grey
535	25						
530	30	95	23.2	101	14	■	
525	35						
520	40						

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/30/90 F.I. LS & Gmc O.E. RH W.P. JHKD

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.4a

BORING A - 4 (Continued)

DATE DRILLED: July 26 & 27, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N184580 E6525450

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		100	21.8	107	30	■	Greyish brown
							(MINOR DRILLING MUD LOSS AT 43')
515	45						
510	50	100	20.8	108	24	■	
							Some cemented layers from
505	55						(LARGE DRILLING MUD LOSS FROM 55' TO 60'. NO RETURN)
500	60	99	21.2	107	17	■	
495	65						Brownish grey
							(REGAIN CIRCULATION AT 68', STILL LOSING SOME DRILLING MUD)
490	70	100	20.9	109	36	■	
485	75						
480	80						

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.I. LS & GMC O.E. FH W.P. pw CHKD rT

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.4b

BORING A - 4 (Continued)

DATE DRILLED: July 26 & 27, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N184580 E6525450

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		99	20.8	108	36	■	Some layers of Sandstone, thin black Clay seam
475	85						
470	90	100	20.5	109	36	■	
465	95						
460	100	91	20.0	106	28	■	
455	105						
450	110	100	21.5	109	41	■	
445	115						
440	120						8" cemented layer

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.I. LS & GMC O.E. FH W.P. JR DRKD

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.4c

BORING A - 4 (Continued)

DATE DRILLED: July 26 & 27, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N184580 E6525450

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		100	22.0	108	26		Dark grey
435	125						6" cemented layer
430	130	95	20.2	107	26		
425	135						
420	140	99	21.4	106	26		Brownish grey
415	145						3" cemented layer
410	150	77	18.9	101	36		
405	155						
400	160						

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.T. GMC J O.E. FH W.P. pp CHKD MT

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

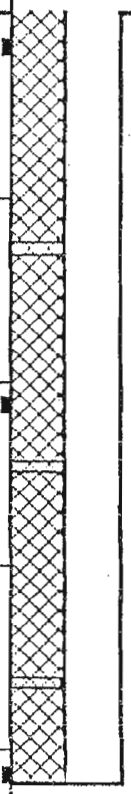
LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.4d

BORING A - 4 (Continued)

DATE DRILLED: July 26 & 27, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N184580 E6525450

ELEVATION (ft.)	DEPTH (ft.)		MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
		100	23.7	103	31	
395	165					
390	170	100	23.4	104	36	
385	175					
380	180	97	21.9	105	26	
375	185					



Some cemented layers

NOTE: E-Z Mud and bentonite drilling mud used in drilling process. Mud removed at completion of drilling. Water level measured at 135' 1-1/2 hours after removal of mud. Boring reamed to 12" in diameter. Water only used in reaming process. Two piezometers were installed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L8957LAEO DATE 8/29/90 F.I. LS & GMC D O.E. RH W.P. pb CHKD MT

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.4e

BORING A - 5

DATE DRILLED: August 13 & 14, 1990
EQUIPMENT USED: 8" - Diameter Auger (0' - 16')
5" - Diameter Rotary Wash (16' - 141')
APPROX. LOCATION: N1841750 E6525450
ELEVATION 525±

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		45	9.9	105	24	■	1" Asphaltic Paving REPETTO FORMATION SILTSTONE - light grey
525	5						
520	10	75	13.7	113	31	■	
515	15						
510	20	100	18.8	112	24	■	Thin fractures, brownish grey
505	25						Some cemented layers from 25' to 30'
500	30	51	10.2	109	55	■	Some layers of Sandstone
495	35						
490	40						

(CONTINUED ON FOLLOWING PLATE)

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571AEO DATE 8/30/90 F.I. GMC O.E. rH W.P. CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.5a

BORING A - 5 (Continued)

DATE DRILLED: August 13 & 14, 1990
EQUIPMENT USED: 8" - Diameter Auger (0' - 16')
5" - Diameter Rotary Wash (16' - 141')
APPROX. LOCATION: N1841750 E6525450

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
		99	18.7	112	55	
485	45					
480	50	100	22.6	105	43	
475	55					
470	60	100	21.3	108	77	
465	65					
460	70	100	27.1	101	41	
455	75					
450	80					

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L895Z1AEO DATE 8/29/90 F.I. GMC b O.E. FH W.P. JHKD

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING A - 5 (Continued)

DATE DRILLED: August 13 & 14, 1990
EQUIPMENT USED: 8" - Diameter Auger (0' - 16')
5" - Diameter Rotary Wash (16' - 141')
APPROX. LOCATION: N1841750 E6525450

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
		99	20.1	109	61	
445	85					
440	90	97	21.5	105	77	
435	95					
430	100	96	20.9	105	61	
425	105					
420	110	100	23.0	104	57	
415	115					
410	120					

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.T. GMG O.E. FH W.P. pb CHKD MI

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING A - 5 (Continued)

DATE DRILLED: August 13 & 14, 1990
EQUIPMENT USED: 8" - Diameter Auger (0' - 16')
5" - Diameter Rotary Wash (16' - 141')
APPROX. LOCATION: N1841750 E6525450

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
		97	22.5	104	57	
405	125					
400	130	99	21.1	107	51	
395	135					
390	140	99	22.2	105	43	
385	145					

Occasional cemented layers

NOTE: E-Z Mud drilling mud used in drilling process. Mud removed at completion of drilling. Water level measured at 110' after removal of mud. Boring reamed to 11" in diameter. Water only used in reaming process. Two piezometers were installed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEQ DATE 8/29/90 F.T. GMC b O.E. FH W.P. pb CHKD MT

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.5d

BORING A - 6

DATE DRILLED: August 14, 1990
EQUIPMENT USED: 8" - Diameter Auger (0' - 14')
5" - Diameter Rotary Wash (14' - 141')
APPROX. LOCATION: N1841775 E6525140
ELEVATION 522±

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
520		59	16.2	97	64	■
	5					
515						
	10	97	20.2	108	34	■
510						
	15					
505						
	20	96	20.5	107	26	■
500						
	25					
495						
	30	100	20.9	109	64	■
490						
	35					
485						
	40					

2-1/2" Asphaltic Paving - 9" Base Course
FILL - SILTSTONE - light brown

REPETTO FORMATION

SILTSTONE - some layers of Sandstone, grey

Some cemented layers

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEQ DATE 8/30/90 F.T. GMC D O.E. FH W.P. pp CHKD MT

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.6a

BORING A - 6 (Continued)

DATE DRILLED: August 14, 1990
EQUIPMENT USED: 8" - Diameter Auger (0' - 14')
5" - Diameter Rotary Wash (14' - 141')
APPROX. LOCATION: N1841775 E6525140

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
		76	12.9	116	64	■
480						
	45					
475						
	50	99	21.7	106	17	■
470						
	55					
465						
	60	96	21.7	105	17	■
460						
	65					
455						
	70	99	22.4	105	21	■
450						
	75					
445						
	80					

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.6b

189571.AEQ DATE 8/29/90 F.I. GMC O.E. RH W.P. PO CHKD MT

L89571 AEQ DATE 8/29/90 F.T. GMC O.E. FH W.P. pb CHKD HT

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING A - 6 (Continued)

DATE DRILLED: August 14, 1990
EQUIPMENT USED: 8" - Diameter Auger (0' - 14')
5" - Diameter Rotary Wash (14' - 141')
APPROX. LOCATION: N1841775 E6525140

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		100	22.6	105	17		
440							
	85						
435							
	90	100	22.4	105	26		
430							
	95						
425							
	100	100	21.2	107	26		
420							6" cemented layer
	105						4" cemented layer
415							
	110	100	21.5	107	18		
410							
	115						
405							
	120						

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.6c

BORING A - 6 (Continued)

DATE DRILLED: August 14, 1990
EQUIPMENT USED: 8" - Diameter Auger (0' - 14')
5" - Diameter Rotary Wash (14' - 141')
APPROX. LOCATION: N1841775 E6525140

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		100	22.1	106	20		
400							
	125						
395							
	130	100	20.1	110	51		
390							Dark grey
	135						
385							
	140	97	19.6	109	41		
380							
	145						

NOTE: E-Z Mud drilling mud used in drilling process. Mud removed at completion of drilling. Water level measured at 84' 1/2 day after removal of mud. Boring reamed to 12" in diameter. Water only used in reaming process. Two piezometers were installed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEQ DATE 8/29/90 F.T. GMC J O.E. FH W.P. pb CHKD MT

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.6d

BORING A - 7

DATE DRILLED: August 22 & 23, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1840980 E6525230
ELEVATION 545±

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
		77	7.3	134	50	■	SC	FILL - CLAYEY SAND - fine to medium, some pieces of asphaltic paving, some Gravel, greyish brown
540	5							PICO FORMATION SANDSTONE - fine to medium Sand, some Silt, brown
535	10	88	11.8	124	60	■		
530	15							CONGLOMERATE - well graded Sand, some Gravel and Clay, brown
525	20	90	10.9	127	67	■		
520	25							
515	30	86	7.7	136	>100	■		
510	35							
505	40							

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.7a

BORING A - 7 (Continued)

DATE DRILLED: August 22 & 23, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1840980 E6525230

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		72	7.1	133	>100		
500	45						
495	50	99	25.4	100	25		Some layers of Siltstone
490	55						
485	60	88	10.7	127	36		SILTSTONE - grey and brown
480	65						
475	70	100	23.6	103	22		
470	75						
465	80						

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEQ DATE 8/29/90 F.I. GMC O.E. HH W.P. pb CHKD rtt

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

L89571.AEQ DATE 8/29/90 F.T. GMC O.E. FH W.P. pb CHKD MT

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING A - 7 (Continued)

DATE DRILLED: August 22 & 23, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1840980 E6525230

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		100	21.2	108	34	■	(LOST DRILLING MUD, NO RETURN)
465	85						
460	90	65	16.5	100	25	■	Some layers of Sandstone
							(LOSING DRILLING MUD)
455	95						
							(STILL LOSING MUD)
450	100	91	20.1	105	50	■	SANDSTONE - fine Sand, layers of Siltstone, brown
445	105						
440	110	98	20.3	108	50	■	
435	115						
430	120						

(CONTINUED ON FOLLOWING PLATE)

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.7c

BORING A - 7 (Continued)

DATE DRILLED: August 22 & 23, 1990
EQUIPMENT USED: 5" - Diameter Rotary Wash
APPROX. LOCATION: N1840980 E6525230

ELEVATION (ft.)	DEPTH (ft.)	% SATURATION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		100	23.5	104	55		(STILL LOSING SOME MUD)
							Light grey
425	125						
420	130	83	14.5	115	60		
415	135						(REGAIN FULL CIRCULATION)
410	140	79	10.3	125	75		
405	145						Light brown and grey
400	150	79	10.0	126	>100		
395	155						NOTE: E-Z Mud and bentonite drilling mud used in drilling process. Mud removed at completion of drilling. Water level measured at 121' 14-1/2 hours after removal of mud. Boring reamed to 12" in diameter. Water only used in reaming process. Two piezometers were installed.
							Few Cobbles (LOSING SOME MUD)
390	160	57	7.2	126	>100		

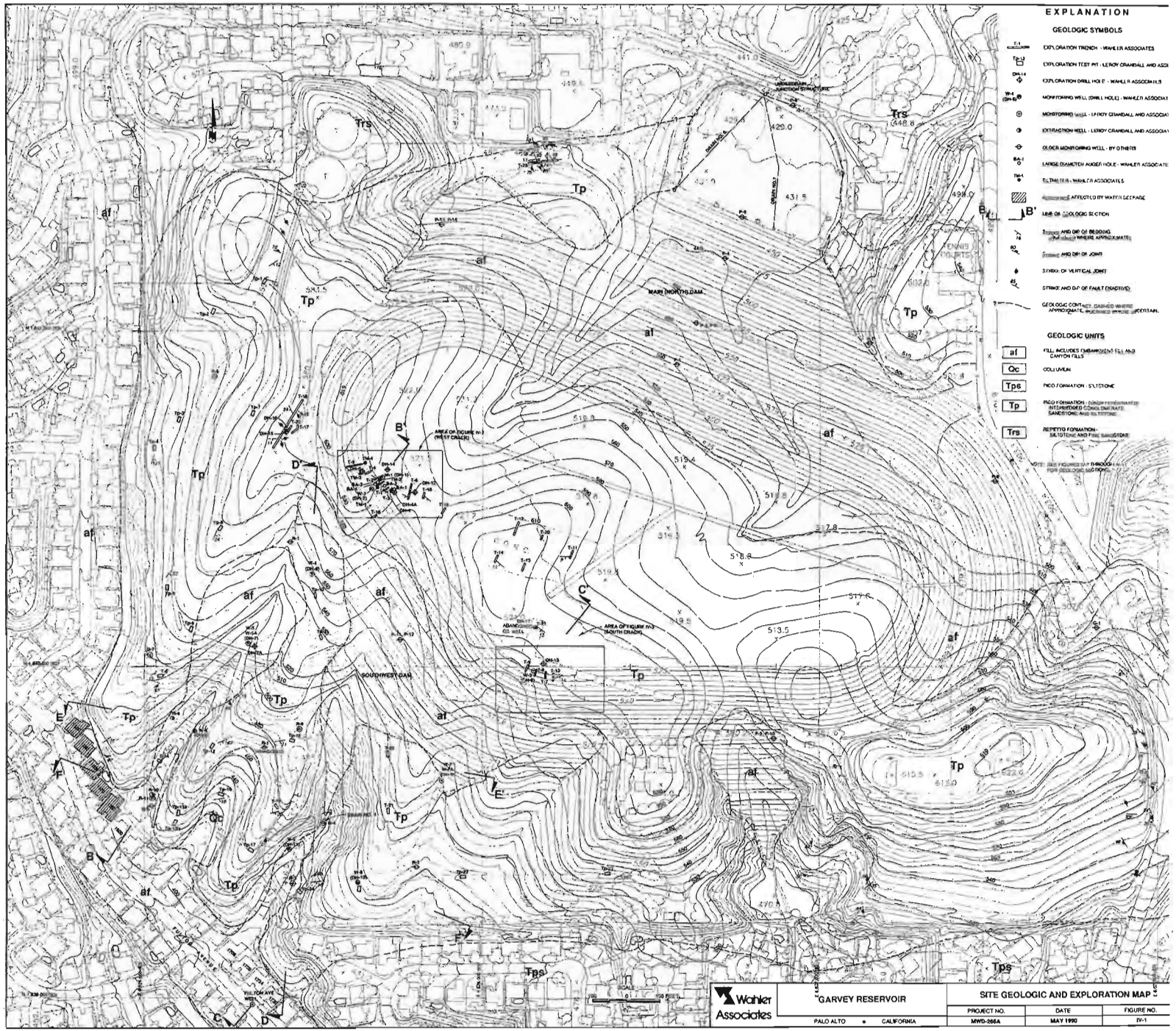
Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L89571.AEO DATE 8/29/90 F.I. GMC O.E. FH W.P. pp CHKD rf

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.7d


EXPLANATION
GEOLOGIC SYMBOLS
EXPLORATION TRENCH - WAHLER ASSOCIATES
EXPLORATION TEST PIT - LEROY CRANDALL AND ASSOC
EXPLORATION DRILL HOLE - WAHLER ASSOCIATES
MONITORING WELL (DRILL HOLE) - WAHLER ASSOCIAT
MONITORING WELL - LEROY CRANDALL AND ASSOCIAT
EXTRACTION WELL - LEROY CRANDALL AND ASSOCIAT
OLDER MONITORING WELL - BY OTHERS
LARGE DIAMETER AUGER HOLE - WAHLER ASSOCIATE
PIEZOMETER - WAHLER ASSOCIATES
AFFECTED BY WATER SEEPAGE
LINE OF GEOLOGIC SECTION
STRIKE AND DIP OF BEDDING
STRIKE AND DIP OF JOINT
STRIKE OF VERTICAL JOINT
STRIKE AND DIP OF FAULT (INACTIVE)
GEOLOGIC CONTACT
GEOLOGIC UNITS
af
FILL INCLUDES EMBANKMENT FILL AND CANYON FILLS
Qc
COLLUVIUM
Tps
PICO FORMATION - SILTSTONE
Tp
PICO FORMATION
Trs
REPETTO FORMATION
MAIN (NORTH) DAM
SOUTHWEST DAM
AREA OF FIGURE IV-3 (WEST CRACK)
AREA OF FIGURE IV-3 (SOUTH CRACK)
ADANDONED OIL WELL
Wahler Associates
GARVEY RESERVOIR
PALO ALTO • CALIFORNIA
SITE GEOLOGIC AND EXPLORATION MAP
PROJECT NO.
MWD-266A
DATE
MAY 1990
FIGURE NO.
IV-1

MWD CENTRAL LIBRARY
RP004850

Investigation and Evaluation of Cracking

Garvey Reservoir

Monterey Park, California

Volume II - Appendices A, B, and C

2/5/91

Prepared for

METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

CR-91
000075

January 1991

WAHLER ASSOCIATES
Consulting Geotechnical Engineers

Project MWD-266A

APPENDIX A

FIELD INVESTIGATION - WAHLER ASSOCIATES

A. GENERAL

The continued rise in piezometer levels exceeding historic maximum levels, the discovery of unusual seepage conditions in areas south of Garvey Reservoir, and the discovery of cracking in the reservoir floor in November 1989, prompted MWD to embark on a field exploration program to investigate and assess the cracking at the project site. The initial field activity consisted of drilling and installation of observation wells and extraction wells at the southwestern corner of the Garvey Reservoir property by LeRoy Crandall and Associates (LCA). This was performed in the last week of November and first week of December, 1989. The details of the LCA field exploration work are presented in Appendix D of this report. Wahler Associates (WA) was subsequently engaged by MWD to perform the geotechnical studies directed to the investigation and evaluation of reservoir floor cracking. An intensive field exploration program was conducted by WA during the period November 30, 1989 through March 17, 1990, and consisted of:

- geologic mapping;
- backhoe exploration trenching;
- large diameter auger drilling with downhole inspection and logging;
- exploration drilling and sampling of several small diameter holes and installation of piezometers in most of the exploration holes;
- field permeability tests in boreholes; and
- supervision of tiltmeter installation in boreholes near the west crack area.

Within this field exploration time period, MWD subcontracted Technos Inc. of Miami, Florida to perform a radar survey utilizing ground penetrating radar to investigate for possible shallow cracking beneath the hypalon cover throughout the entire reservoir. This radar survey is discussed in detail in Appendix H. Appendix A presents, in detail, the field investigation

program which WA conducted or directly supervised. Other aspects of the overall field exploration program performed by others are presented in the appropriate sections of this appendix.

B. MAPPING

Detailed geologic mapping was performed within the Garvey Reservoir property boundary and was specifically directed to defining areal distribution of stratigraphic units, bedding attitudes, and orientation and nature of fractures and joints. The mapping work was a joint effort between Wahler Associates and LeRoy Crandall and Associates. LCA augmented their mapping work with backhoe test pits outside the limits of the reservoir, but within MWD property.

C. BACKHOE EXPLORATION

A total of 23 backhoe exploration trenches were excavated and logged in detail during this investigation. A listing and summary of these trenches is presented in Table A-1.

The trenches were excavated with a rubber-tired JD710 turbo backhoe equipped with a 36-inch wide bucket. Maximum depths were on the order of 20 feet. Trenches greater than 5 feet were shored with heavy timber and hydraulic speed-shores. Trenches located in the reservoir floor required saw-cutting of the 3-inch thick asphalt liner to provide a clean break (and avoid disturbance, especially in the crack areas) between the asphalt and underlying earth liner. The backhoe, support equipment (dump trucks, concrete saw, shoring) and personnel were provided by MWD. The trenches were temporarily backfilled with excavated material with minimum compaction using the bucket. The locations of these trenches are shown on Figures IV-1, IV-2 and IV-3. The trenches were logged in detail by our engineering geologists and detailed graphical logs are presented at the end of this appendix.

D. LARGE DIAMETER AUGER DRILLING AND DOWN-HOLE INSPECTION

Four 30-inch diameter auger holes were drilled to depths of 44.5, 45.0, 50.0 and 84.0 feet in the west crack area to explore the vertical extent of the west crack. The locations of the auger holes were based on the orientation of the cracks as encountered in the exploration trenches. The auger holes were drilled with a crane-mounted (FMC Link Belt) auger rig provided by Malcolm Drilling Company of Sun Valley, California (Photo 16). Detailed downhole logging was performed by engineering geologists of Wahler Associates (Photo 17). Safety-related logistical support required for the downhole logging, including safety harness, air testers, air blowers and casing installation, was provided by MWD. The auger holes were backfilled using the auger rig to tamp the backfill material in accordance with specifications provided by MWD. Backfill material consisted of auger cuttings (gravelly silty sand material) which were placed in 12-inch lifts and compacted by dropping a round heavy metal plate (fabricated on-site) attached to the kelly bar, nine times. This was calculated to provide a compactive energy equivalent to 50,000 foot pounds per cubic foot of backfill. This procedure was followed up to a depth of about 20 feet (equivalent to the bottom of the nearby exploration trenches). Above 20 feet, the auger holes were backfilled with minimal compactive effort, because of the close proximity of deep exploratory trenches (and the potential for induced trench instability) that were left open at the time of hole backfill. Proper backfilling of the upper 20 feet of the auger holes, as well as nearby trenches, will be performed during remedial construction work.

The locations of the auger holes are shown on Figures IV-1 and IV-2. Detailed graphical and descriptive logs are included at the end of this appendix.

E. EXPLORATION DRILLING AND SAMPLING

A total of 23 exploratory borings were drilled at the Garvey Reservoir site for various purposes, as summarized in Table A-2.

The deep exploration holes (DH-1 through DH-11) were drilled with either a truck-mounted Failing 750 or crawler-mounted Failing 250 rotary wash rig. Both rigs were provided by Pitcher Drilling Company of East Palo Alto, California. The Failing 250 crawler rig was used to drill the two holes (DH-2 and DH-5) located on the reservoir slope at the west crack area, as well as DH-8 in the southwest corner of the reservoir property. Relatively undisturbed samples of the subsurface materials were obtained with various size Pitcher Barrel samplers, using 3-inch, 4-inch and 6-inch diameter by 36-inch long steel liners. Applied hydraulic pressure, time period of sampling run, sample recovery ratio, and condition of steel liners, were recorded in detailed logs. Tube samples were wax-sealed and transported to Wahler Associates' soils laboratory in Palo Alto, California. Disturbed samples were obtained via the Standard Penetration Test (SPT), using standard (1.4-inch diameter split-spoon) driven with a 140-pound hammer with a free fall of 30 inches. Extreme care was taken to assure that the recorded blow counts represented in-place material; this was done by cleaning out the drill hole with water to remove as much slough as possible prior to the SPT and recording the sample recovery in the split-spoon. Nine of these deep exploration holes were constructed as piezometer wells. Well construction is discussed in detail in the following section.

Five shallow exploratory holes were drilled with the Failing 750 rotary wash rig for the purpose of field permeability testing. Drill holes DH-12 and DH-13 were drilled into the Pico conglomerate foundation material in the west and south crack areas, respectively, to pressure test the foundation material. The holes were initially drilled with a 5-inch diameter tricone bit to 30 feet, and then cement grouted. After allowing time to set-up, the grout was then redrilled with a 3-inch diameter NX core barrel which was also used to core about 5 feet into the formation. The grout provided a seal between the hole and the formation, and the core hole in the grout provided a smooth surface for setting the rubber packer required for the water pressure test.

DH-14 was a 20-foot deep hole drilled about 10 feet into the foundation for field permeability (constant head and falling head) tests. All 3 holes were backfilled with cement grout after the permeability tests.

Drill holes DH-15 and DH-16 were drilled with the Failing 750 drill rig in the parking area west and outside the west crack. The intent of this drilling was to intersect pre-existing joints or fractures which would then be isolated for water pressure testing. The locations of the drill holes were based on the orientation of fractures exposed in nearby exploration trenches. Relatively continuous sampling with the Pitcher Barrel was performed in order to visually confirm the occurrence of fractures. No apparent fractures were noted in DH-15, which was drilled to 29.4 feet and was, therefore, abandoned and grouted with cement. Drill hole DH-16 encountered a steeply dipping fracture plane at a depth of about 9 feet. DH-16 was constructed as a well with the perforations and pea gravel backfill opened to the fracture. A cement grout backfill to the surface, provided the seal between the hole and formation.

Drill hole DH-17 was precisely located over the abandoned oil well. The concrete plug inside the 12-inch diameter well casing was cored with a 4-inch core barrel, through a 6-inch casing installed through the reservoir earth liner. (The top of the well casing is located about 9.5 feet below the asphalt liner of the reservoir.) The 6-inch casing was left in place and the hole was not grouted during this field investigation. The well should be regrouted during remedial construction work.

Drill holes DH-18, DH-19, DH-20 and DH-21 was advanced with a crawler-mounted Texoma 700 auger rig provided by Malcolm Drilling Company, equipped with a 12-inch diameter auger. These holes were located straddling the west crack and were drilled for the installation of borehole tiltmeters, which is discussed in detail below.

The locations of the exploration holes are shown on Figures IV-1, IV-2 and IV-3. Detailed exploration boring logs are presented at the end of this appendix. A key for soil exploration logs follows the exploration boring logs.

F. PIEZOMETER INSTALLATION

A total of 12 piezometers were installed by Wahler Associates in 9 deep exploratory holes at the Garvey Reservoir site. This is in addition to the 6 wells (wells B-6, B-7, R-8, R-9, R-10, and R-11) installed by LeRoy Crandall and Associates (LCA) during the initial phases of the present field investigation. Detailed information on drilling and construction of the LCA wells is presented in Appendix D.

The well construction summary of wells installed by Wahler Associates is shown on Table A-3 and a detailed construction diagram for each well is shown at the end of this appendix. The three piezometers, W-1 and W-2 in the west crack area, and W-3 in the south crack area, were installed as temporary piezometers to monitor groundwater conditions beneath the reservoir. These piezometers will require grouting during remedial construction work.

Of the six exploratory holes drilled on the southwest slopes outside the reservoir, three were constructed with single piezometers. The other three (DH-7, DH-9 and DH-11) were constructed with two-level piezometers, because of the occurrence of interbedded gravelly sand layers (possible aquifers) and less permeable siltstone layers, at different elevations.

Construction of the wells was carefully done by frequently probing depths of backfill material with a heavy weight suspended on a tape line. This also helped in preventing bridging of backfill material above the desired depth.

Well development was performed as part of the field permeability testing. This was done by alternate purging of the well water with compressed air and filling the well with water to saturate the sand filter pack (above the groundwater level) around the well screen. This procedure was followed for several hours until the purge water was relatively free of silt or drilling mud.

TABLE A-1

SUMMARY OF EXPLORATION TRENCHES

Trench Number	Location and Purpose
T-1,T-2,T-3,T-4 T-5,T-6,T-16	West crack area, reservoir area; investigate crack
T-17,T-18,T-22	West parking area outside reservoir; explore fractures and geology at northwest projection of west crack
T-7,T-8,T-9,T-10	South crack area, reservoir area; investigate crack
T-11,T-12,T-13,T-14 T-15,T-19,T-20	Reservoir floor; investigate ground penetrating radar anomalies
T-21	Reservoir floor; explore abandoned well
T-23	North of and outside reservoir near Monterey Park municipal yard; explore fault and geology

TABLE A-2

LIST AND SUMMARY INFORMATION OF EXPLORATION HOLES BY WAHLER ASSOCIATES

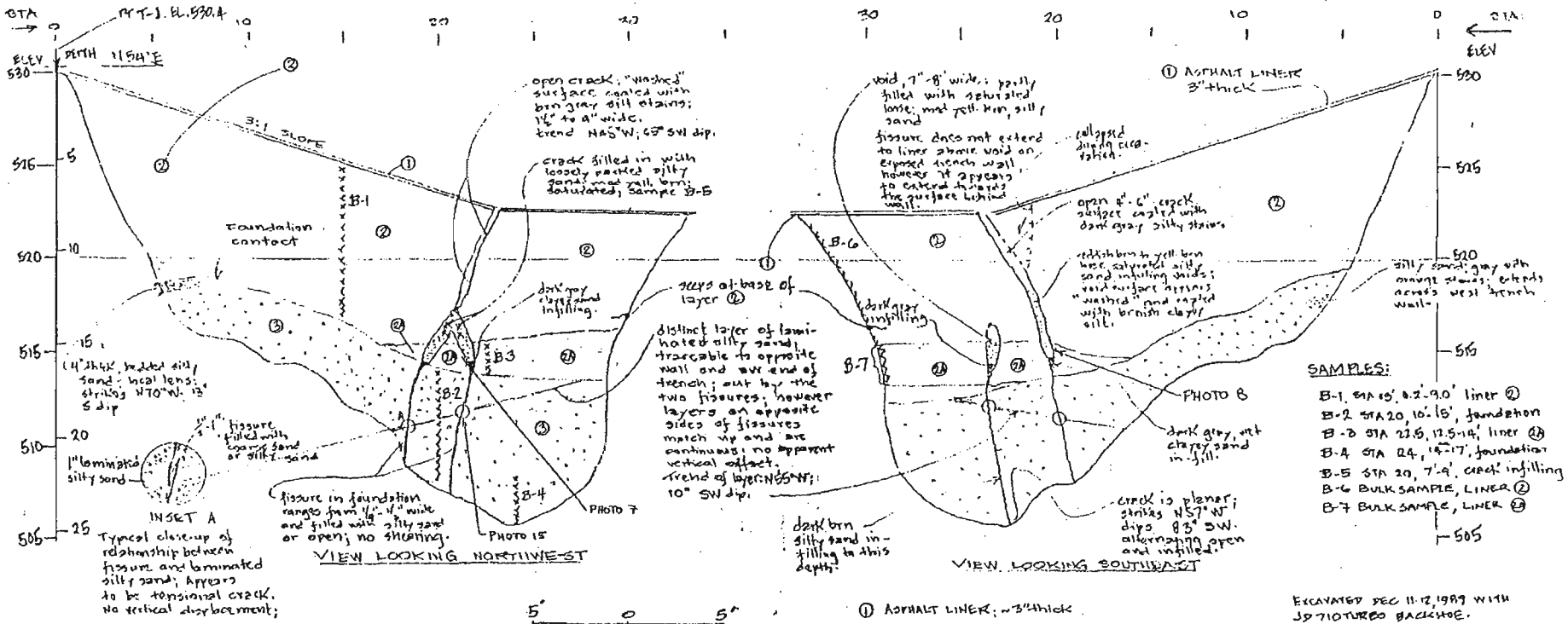
Drill Hole Number (total depth in feet) (well/tiltmeter no.)	Location and Purpose
DH-1 (121.5) (W-1) DH-2 (112.7) (W-2) DH-4 (91.7) DH-4A (65.8) DH-5 (92.9)	West crack area, reservoir floor: explore subsurface conditions; obtain disturbed (SPT) and undisturbed samples; convert DH-1 and DH-2 into temporary piezometers W-1 and W-2, respectively.
DH-3 (101.2) (W-3)	South crack area, reservoir floor: explore subsurface conditions; obtain disturbed (SPT) and undisturbed samples; convert into temporary piezometer W-3.
DH-6 (141.0) (W-4) DH-7 (140.9) (W-5,W-5A) DH-7A (37.3) DH-8 (110.3) (W-6) DH-9 (124.2) (W-7,W-7A) DH-10 (121.5) (W-8) DH-11 (125.5) (W-9,W-9A)	Southwest slope outside reservoir: explore subsurface conditions; obtain disturbed/ undisturbed samples; install permanent piezometer, including three 2-level piezometers.
DH-12 (34.5)	West crack area: shallow hole for field permeability test including water pressure test.
DH-13 (35.0)	South crack area: shallow hole for field permeability test including water pressure test.
DH-14 (20.5)	West crack area: shallow hole for field permeability test.
DH-15 (29.4) DH-16 (16.4)	Parking lot on west side of reservoir, west of west crack: shallow holes to explore subsurface conditions, specifically to intercept pre-existing fractures; water pressure test in DH-16.
DH-17 (42.0)	Hole through abandoned oil well to determine thickness and nature of plug and backfill.
DH-18 (30.2) (TM-1) DH-19 (30.3) (TM-2) DH-20 (30.0) (TM-3) DH-21 (30.3) (TM-4)	Holes for tiltmeter (TM) installation, west crack area, reservoir floor.

TABLE A-3

SUMMARY OF WELL CONSTRUCTION DATA

WELL NO. (DRILLHOLE NO.)	LOCATION: NORTHING EASTING (1927 NAD)	ELEVATION: GROUND(GRD) TOP OF PIPE (TP) (FT)	TOTAL HOLE DEPTH (FT)	WELL CASING DIAMETER (SCH 40 PVC) (INCHES)	SCREENED INTERVAL (0.02" SLOTS) (FT)	#3 SAND FILTER PACK INTERVAL (FT)	BENTONITE SEAL INTERVAL (FT)	GROUT INTERVAL (FT)	DATE INSTALLED
W-1 (DH-1)	N: 4,130,627.7 E: 4,251,981.9	GRD: 522.1 TP: 522.4	121.5	2	60.0-120.0	56.0-120.0	53.0-56.0	10.0-53.0	1/11/90
W-2 (DH-2)	N: 4,130,597.8 E: 4,251,949.6	GRD: 533.1 TP: 534.1	112.7	2	62.0-112.0	58.0-112.0	55.0-58.0	0.0-55.0	1/19/90
W-3 (DH-3)	N: 4,130,061.7 E: 4,252,438.4	GRD: 520.6 TP: 521.1	101.2	2	49.5-99.5	44.5-99.5	41.0-44.5	5.0-41.0	1/17/90
W-4 (DH-6)	N: 4,130,334.5 E: 4,251,777.9	GRD: 550.0 TP: 552.1	141	2	79.0-139.0	76.0-141.0	73.4-76.0	0.0-73.4	1/23/90
W-5 (DH-7)	N: 4,130,131.5 E: 4,251,580.2	GRD: 530.3 TP: 532.0	140.9	2	80.0-115.0	76.5-115.5	71.0-76.5	0.0-71.0	2/2/90
W-5A (DH-7)	N: " E: "	GRD: 530.3 TP: 532.0	140.9	CERAMIC TIP W/3/4" RISER	138.5-140.5	125.0-140.5	115.5-125	SEE W-5	2/2/90
W-6 (DH-8)	N: 4,130,120.3 E: 4,251,599.9	GRD: 441.1 TP: 441.9	110.3	2	89.0-109.0	84.0-109.0	81.0-84.0	0.0-81.0	1/22/90
W-7 (DH-9)	N: 4,129,723.5 E: 4,252,162.9	GRD: 513.4 TP: 515.3	124.2	2	54.0-104.0	51.7-105.2	40.9-51.7	0.0-40.9	2/5/90
W-7A (DH-9)	N: " E: "	GRD: 513.4 TP: 515.3	124.2	2 W/3/4" RISER	114.0-124.0	111.5-124.2	105.2-111.5	SEE W-7	2/5/90
W-8 (DH-10)	N: 4,129,423.6 E: 4,251,902.2	GRD: 479.0 TP: 480.7	121.5	2	68.0-118.0	63.0-121.5	55.0-63.0	0.0-63.0	2/8/90
W-9 (DH-11)	N: 4,129,515.5 E: 4,251,701.2	GRD: 418.7 TP: 420.5	125.5	2	18.0-33.0	13.0-36.5	9.0-13.0	0.0-9.0	2/16/90
W-9A (DH-11)	N: " E: "	GRD: 418.7 TP: 420.4	125.5	2 W/3/4" RISER	107.0-122.0	101.1-122.0 47.5-90.5	90.5-101.0 36.5-47.5	SEE W-9	2/16/90

EXPLORATION TRENCH LOGS



① ASPHALT LINER; ~3" thick

② LINER: SILTY SAND (SM), mod. yell. brn; 10-20% non-plastic fines; 20-30% subrounded to rounded gravel; fine to coarse sand; moist to locally saturated; very easy excavation.

③ LINER: SANDY CLAY TO CLAYEY SAND (CL-SC); dark gray; fine sand; traces gravel; med. plastic fines; stiff to v. stiff; sl. damp to damp; compact.

④ FOUNDATION: predominantly GRAVELLY SILTY SAND (SM-SP); yellow brown to reddish orange; fine to coarse sand; 20-30% subrounded to rounded gravel to 3" max; 5-15% non-plastic fines; moist to locally saturated; medium dense to dense; associated sand lenses as noted.

EXCAVATED DEC 11-12, 1989 WITH JD 710 TURBO BACKHOE.

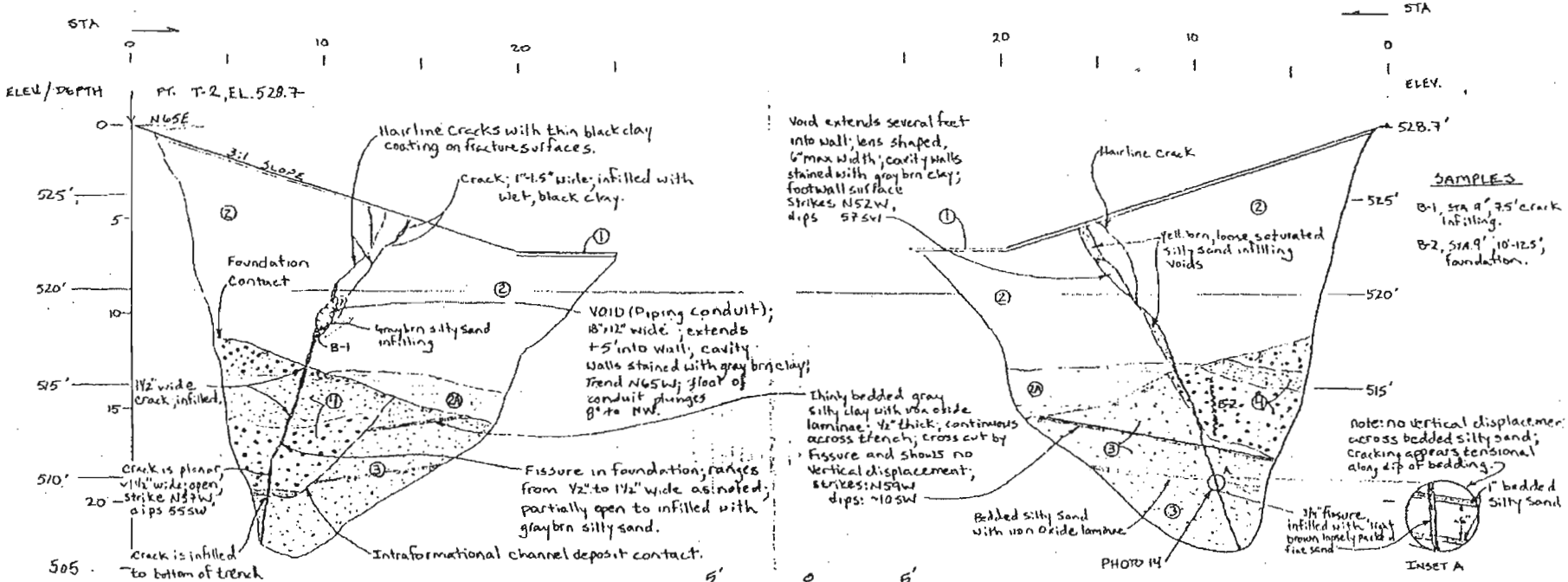
LOGGED BY: R. BUNKER AND J. MOZZIO

WALLER ASSOCIATES

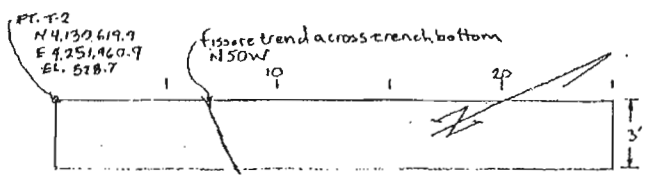
REVISED 3/12/90 TO SHOW ADDITIONAL SAMPLES B-6 AND B-7 TAKEN 2/15/90

1/7/90

EXPLORATION LOG
TRENCH T-1



EXCAVATED DEC. 12, 1989, WITH JD 710 TURBO BACKHOE.
LOGGED BY: A.S. BUANGAN AND J. MUZZIO.
WAHLER ASSOCIATES.



PLAN VIEW

① ASPHALT LINER: ~3" THICK.

② LINER: SILTY SAND (SM), mod yell. brn; moist; fine to coarse; 10-20% non-plastic fines; 20-30% subrounded gravels;

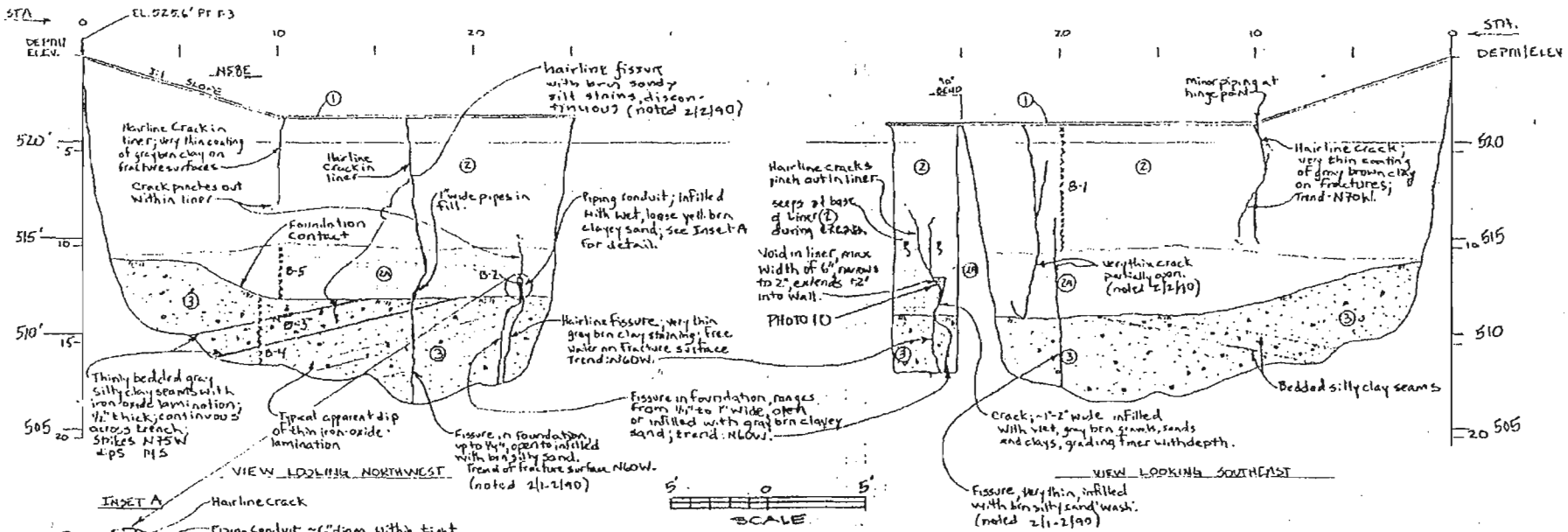
②A LINER: SANDY CLAY (CL): dark gray; damp; mod. plasticity fines; fine sands; trace gravels; compact; stiff.

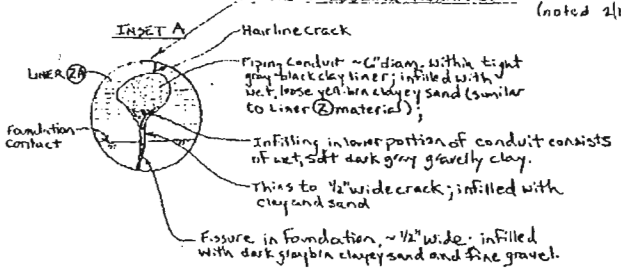
③ FOUNDATION: SILTY SAND (SM); yell. brn with iron-oxide staining; slightly moist to moist; fine to coarse sand; 10-15% non plastic fines; weakly cemented; friable; associated sand and clay lenses as noted; occasional gravels.

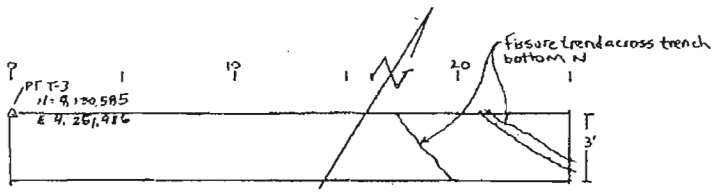
④ FOUNDATION: (Intraformational channel deposits) SILTY SANDS AND SANDY GRAVELS (SM-GW); reddish orange; slightly moist; fine to coarse gravels; fine to coarse sands; 10-20% non plastic fines; heavy iron oxide staining; weakly cemented; friable; damp.

1/7/90

EXPLORATION LOG
TRENCH T-2







① ASPHALT LINER: ~3" thick

② LINER: CLAYEY SAND (SC); mod yell-brn-like reddish brn; slightly moist to locally very moist; fine to med sand, 10-30% low plasticity fines; scattered gravels to 2"; occasional sandy clay layers throughout.

(2A) LINER: SANDY CLAY (CL); dark grey black damp; mod. plastic fines; 20-30% fine to med. sands; occasional fine gravels; stiff; compact

③ FOUNDATION: predominately SILTY SAND (SM); buff gray with iron-oxide lamination; moist; fine to med. sand; ~10% non plastic fines; up to 20-30% subrounded gravels with occasional sandy gravel lenses; med. dense to dense; weakly cemented; friable.

SAMPLES:
B-1, STA 20', 0'-6', LINER (2)
B-2, STA 22', 9', crack infill.
B-3, STA 10', 11', SILT/CLAY SEAM
B-4, STA 9', 10'-12.5', FOUNDATION.
B-5, STA 10', 7'-9.5', LINER (2A)

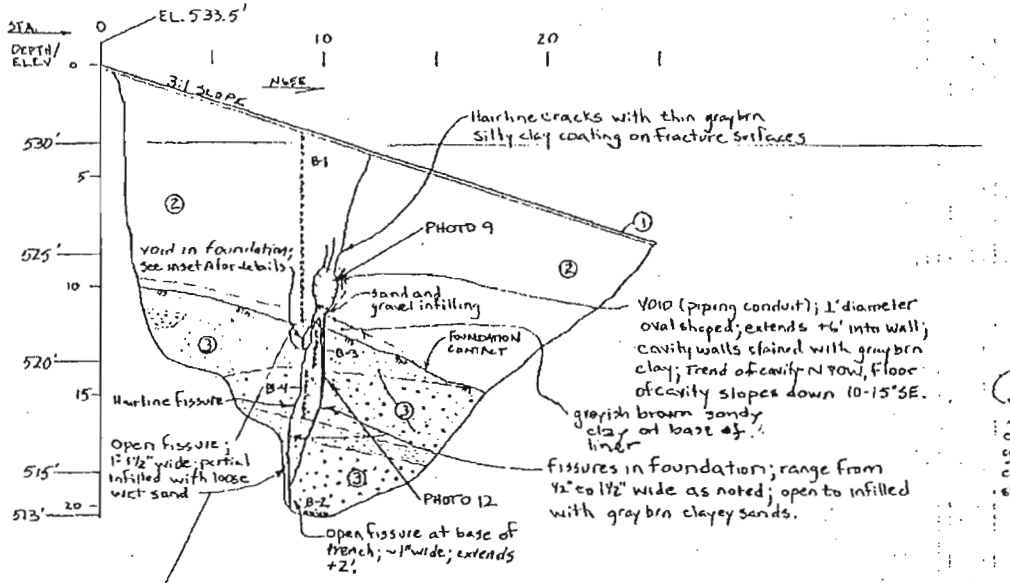
EXCAVATED DEC 14, 1989 WITH JD 710 TURBO BACKHOE
LOGGED BY: J. MUZZIO/A.S. BUCHANAN

WAHLER ASSOCIATES

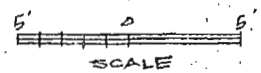
1/7/90

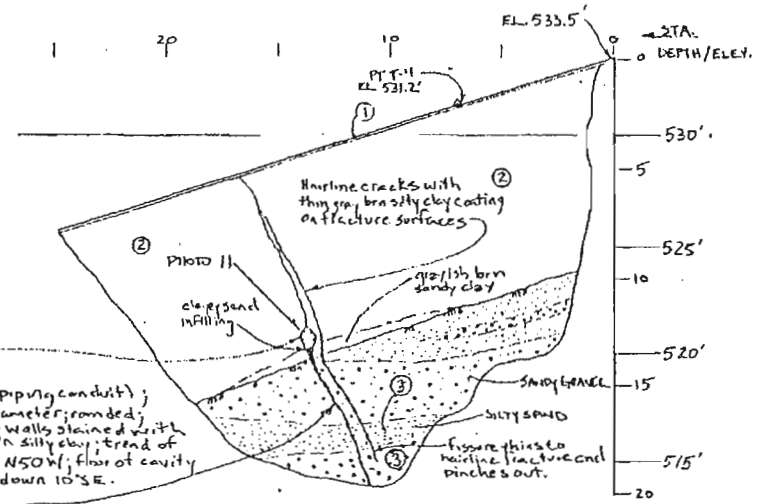
REVISED 3/2/90 TO SHOW ADD'TL FISSURE

EXPLORATION LOG
TRENCH T-3



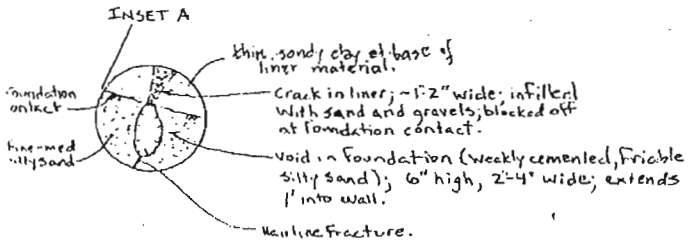
VIEW LOOKING NORTHWEST.

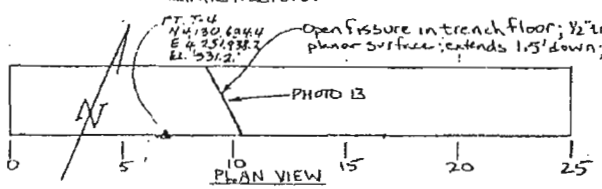




VIEW LOOKING SOUTHEAST

INSET A





PLAN VIEW

SAMPLES:

B-1, STA 9, 0-8', LINER ②
B-2, STA 10, 17.5', FOUNDATION
B-3, STA 10, 8'-10', FOUNDATION.
B-4, STA 10, 10'-13', FOUNDATION.

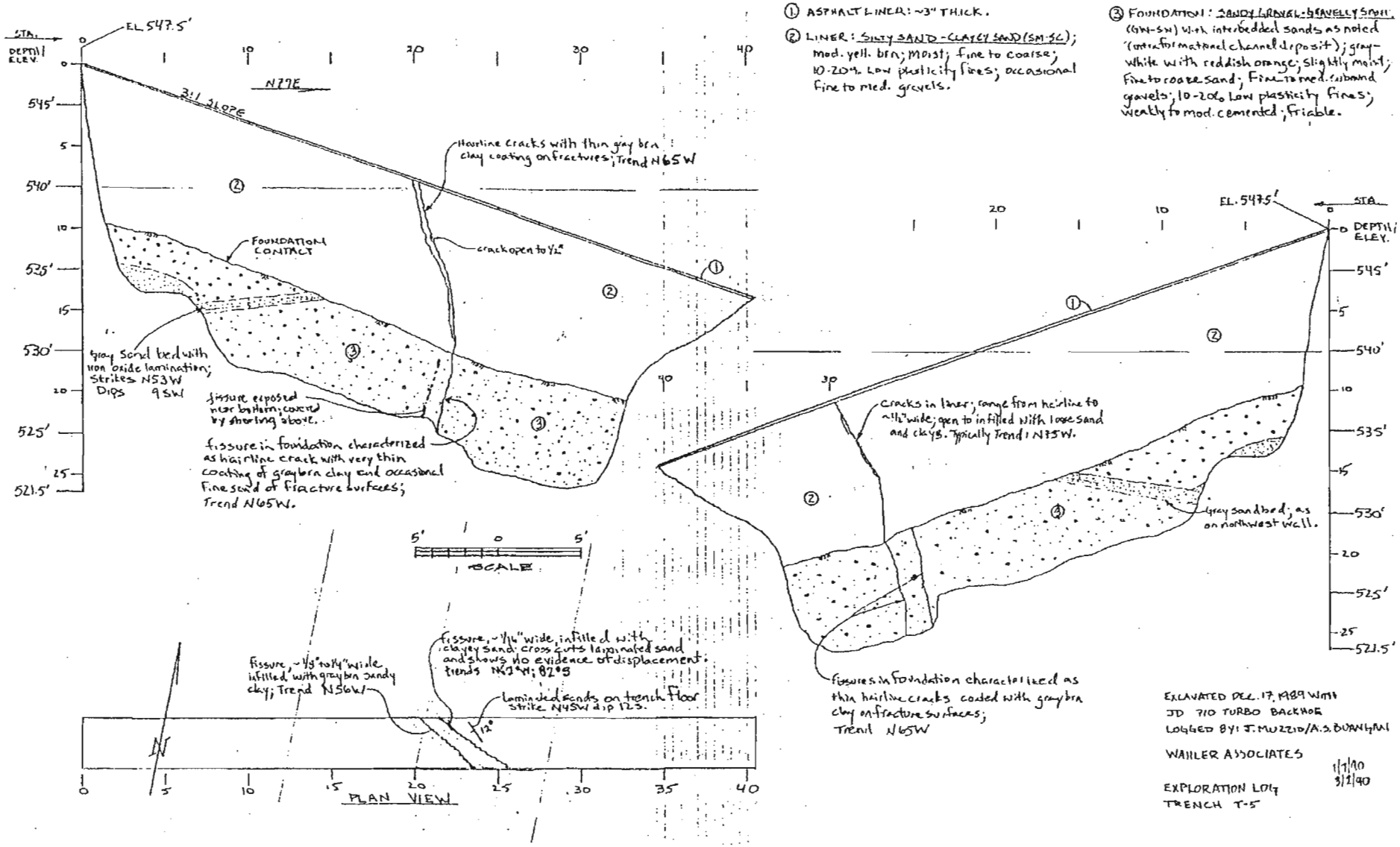
1. ASPHALT LINER: ~3" thick.
2. LINER: SILTY SAND-CLAYEY SAND (SM-SC): Mod yell. brn; moist; fine to coarse; 10-20% low plastic fines; occasional fine to med. gravels.
3. FOUNDATION: SILTY SANDS AND SANDY GRAVELS (SM-GW) (interformational channel deposits); yell. brn to reddish orange. s. moist; fine to coarse sand; fine to med. subrounded gravels; 10-20% low plastic fines; occasional heavy iron-oxide staining in gravels and thin iron oxide lamination in sands; weakly to mod. cemented.

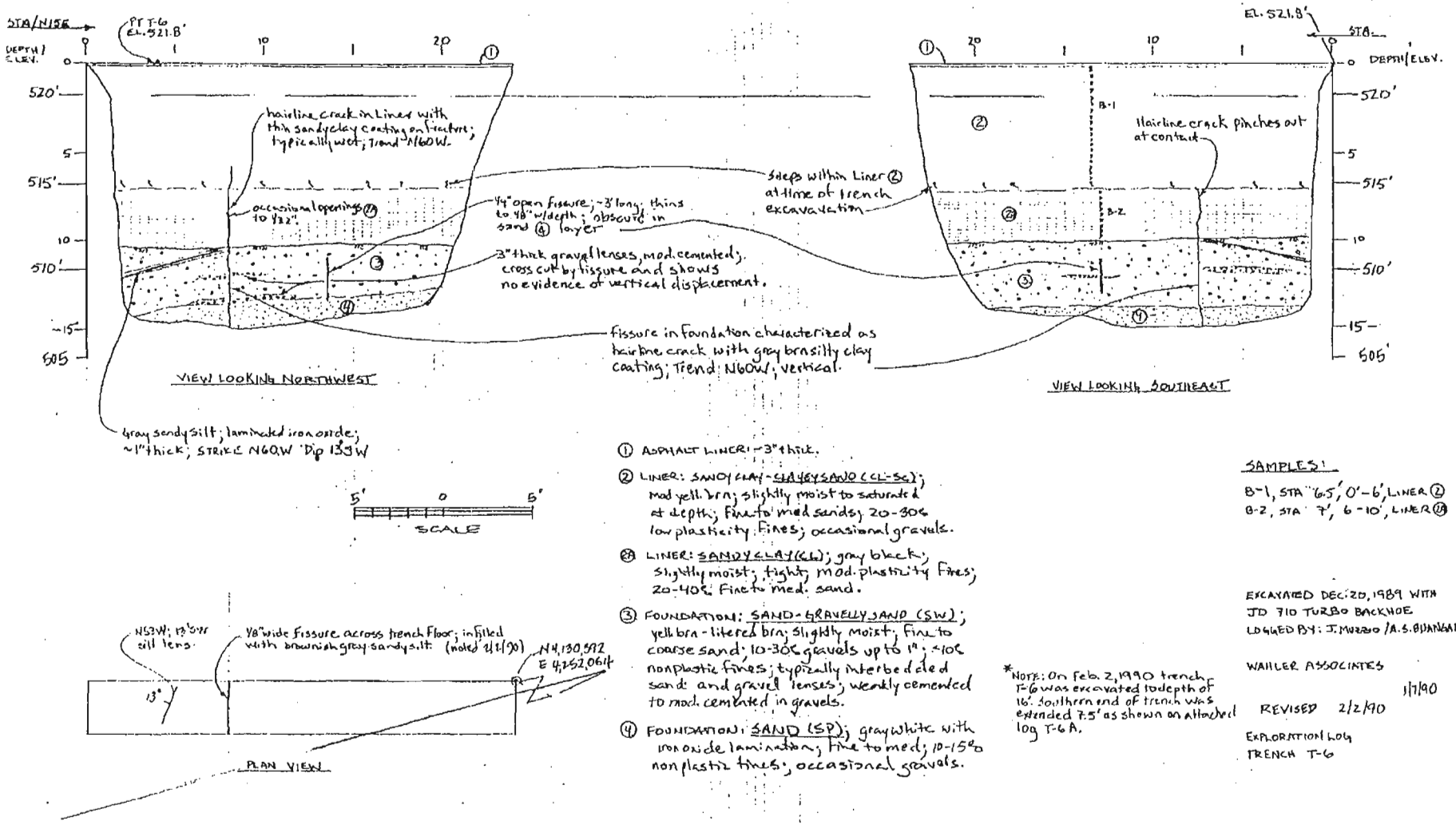
EXCAVATED DEC. 14, 1989 WITH JD 710 TURBO BACKHOE
LOGGED BY: J. MUZZIO / A.S. BUANNAN

WAHLER ASSOCIATES

1/7/90

EXPLORATION LOG
TRENCH T-4


① ASPHALT LINER: ~3" THICK.
② LINER: SILTY SAND - CLAYEY SAND (SM-SC); mod. yell. brn; moist; fine to coarse; 10-20% low plasticity fines; occasional fine to med. gravels.
③ FOUNDATION: SANDY GRAVEL - GRAVELLY SAND (GW-SW) with interbedded sands as noted (interformational channel deposit); gray-white with reddish orange; slightly moist; fine to coarse sand; fine to med. subrnd gravels; 10-20% low plasticity fines; weakly to mod. cemented; friable.
STA.
DEPTH/ ELEV.
EL. 547.5'
N77E
3:1 SLOPE
hairline cracks with thin gray brn clay coating on fractures; Trend N65W
crack open to ½"
FOUNDATION CONTACT
gray sand bed with iron oxide lamination; strikes N53W Dips 9SW
fissure exposed near bottom; covered by shoring above.
fissure in foundation characterized as hairline crack with very thin coating of graybrn clay and occasional fine sand of fracture surfaces; Trend N65W.
cracks in liner; range from hairline to ~1/8" wide; open to infilled with loose sand and clays. Typically Trend: N75W.
gray sand bed; as on northwest wall.
fissures in foundation characterized as thin hairline cracks coated with graybrn clay on fracture surfaces; Trend N65W
SCALE
fissure, ~1/8" to 1/4" wide infilled with graybrn sandy clay; Trend N56W
fissure, ~1/16" wide, infilled with clayey sand; cross cuts laminated sand and shows no evidence of displacement. Trends N72°W; 82°S
laminated sands on trench floor strike N45W dip 12S.
PLAN VIEW
EXCAVATED DEC. 17, 1989 WITH JD 710 TURBO BACKHOE
LOGGED BY: J. MUZZIO/A.S. DUANGMAI
WAHLER ASSOCIATES
1/1/90
3/1/90
EXPLORATION LOG
TRENCH T-5



① ASPHALT LINER: ~3" thick.

② LINER: SANDY CLAY - CLAYEY SAND (CL-SC); mod yell. brn; slightly moist to saturated at depth; Fine to med sands; 20-30% low plasticity fines; occasional gravels.

⑦ LINER: SANDY CLAY (CL); gray black; slightly moist; tight; mod. plasticity fines; 20-40% fine to med. sand.

③ FOUNDATION: SAND - GRAVELLY SAND (SW); yell brn - litered brn; slightly moist; fine to coarse sand; 10-30% gravels up to 1"; <10% nonplastic fines; typically interbedded sand and gravel lenses; weakly cemented to mod. cemented in gravels.

④ FOUNDATION: SAND (SP); gray white with iron oxide lamination; fine to med; 10-15% nonplastic fines; occasional gravels.

*NOTE: On Feb. 2, 1990 trench T-6 was excavated to depth of 16'. Southern end of trench was extended 7.5' as shown on attached log T-6A.

SAMPLES:

B-1, STA 6.5', 0'-6', LINER ②
B-2, STA 7', 6-10', LINER ⑦

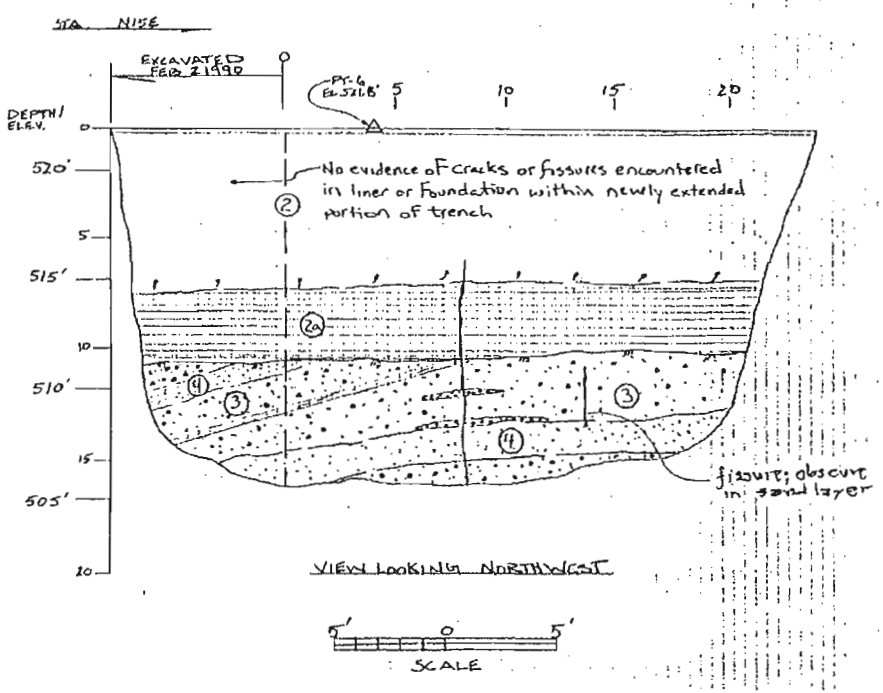
EXCAVATED DEC. 20, 1989 WITH JD 710 TURBO BACKHOE
LOGGED BY: J. MUZZIO / A.S. BUCHANAN

WAHLER ASSOCIATES

1/7/90

REVISED 2/2/90

EXPLORATION LOG
TRENCH T-6

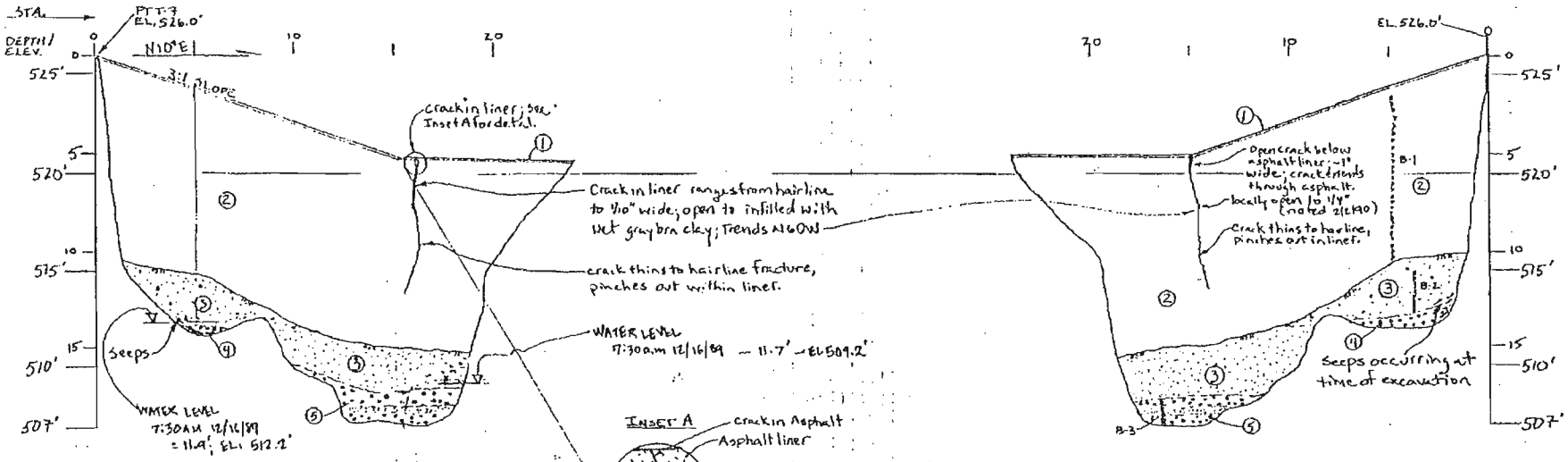


SEE LOG T-6 FOR EXPLANATION OF UNITS.

SOUTHERN END OF TRENCH EXCAVATED FEB 2, 1990 WITH JD 710 TURBO BACKHOE. LOGGED BY: A.S. BINKAM AND J. MUZZIO.

WAHLER ASSOCIATES

EXPLORATION LOG
TRENCH T-6A



① ASPHALT LINER: ~3" thick.

② LINER: SILTY SAND TO CLAYEY SAND (SM-SC) mod. yell. brn; moist to locally wet near base; fine to coarse sand; 10-30% low plasticity fines; 10-20% fine to med. gravels; excavates easily with hammer.

③ FOUNDATION: SILTY SAND-SAND; (SM-SP); lt. gray; slightly moist; fine to medium; <10% fines; thin iron-oxide lamination; weakly cemented friable.

④ FOUNDATION: SANDY GRAVEL (GW); gray-white; wet (with seeps); fine to coarse gravels; 10-20% sand; <10% fines; intermittent thin sand lenses.

⑤ FOUNDATION: SANDY GRAVEL (GW); red orange; moist to wet; fine to med. gravels; 20-40% sand; <10% fines; localized seeps; dense; mod. cemented.

NOTE: Trench re examined 2/2/90; J.Muzzio A.S. Buangan
Backfilled (temporary) 2/7-9/90

SAMPLES:

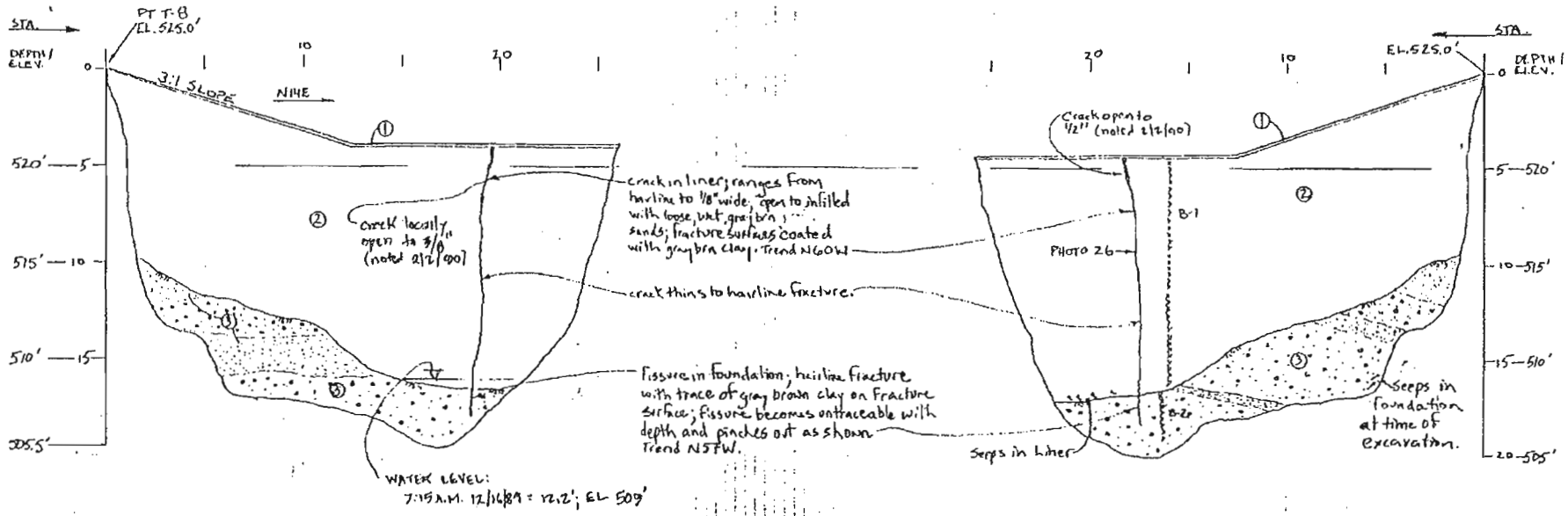
B-1, STA 5, 0'-7', LINER 2
B-2, STA 4, 10'-12', FOUNDATION
B-3, STA 16.5, 12.5'-13.5', FOUNDATION

EXCAVATED DEC. 15, 1989 WITH JD 710 TURBO BACKHOE
LOGGED BY: J. MUZZIO/ A.S. BUANGAN

WAHLER ASSOCIATES

REVISED 3/2/90 1/7/90

EXPLORATION LOG
TRENCH T-7



VIEW LOOKING WEST.

VIEW LOOKING EAST.

5' 0 5'
SCALE

① ASPHALT LINER: ~3" thick.

② LINER: SILTY SAND TO CLAYEY SAND (SM-SC); mod. yellow brown, moist to locally wet at base; fine to coarse; 10-30% low plasticity fines; occasional gravels.

③ FOUNDATION: predominately GRAVELLY SAND to SANDY GRAVEL (SW-GW) with intermittent SAND (SW); gray-white to reddish orange, slightly moist; fine to coarse gravels, fine to coarse sand; <10% fines; localized heavy iron-oxide staining in gravels; thin iron-oxide lamination in sands; mod. cemented

NOTE: Trench re examined, 2/2/90: J. MUZZIO/A.S. BUANGAN

SAMPLES:
B-1, STA 11, 0'-8', LINER②
B-2, STA 11.5', 13'-16', FOUNDATION

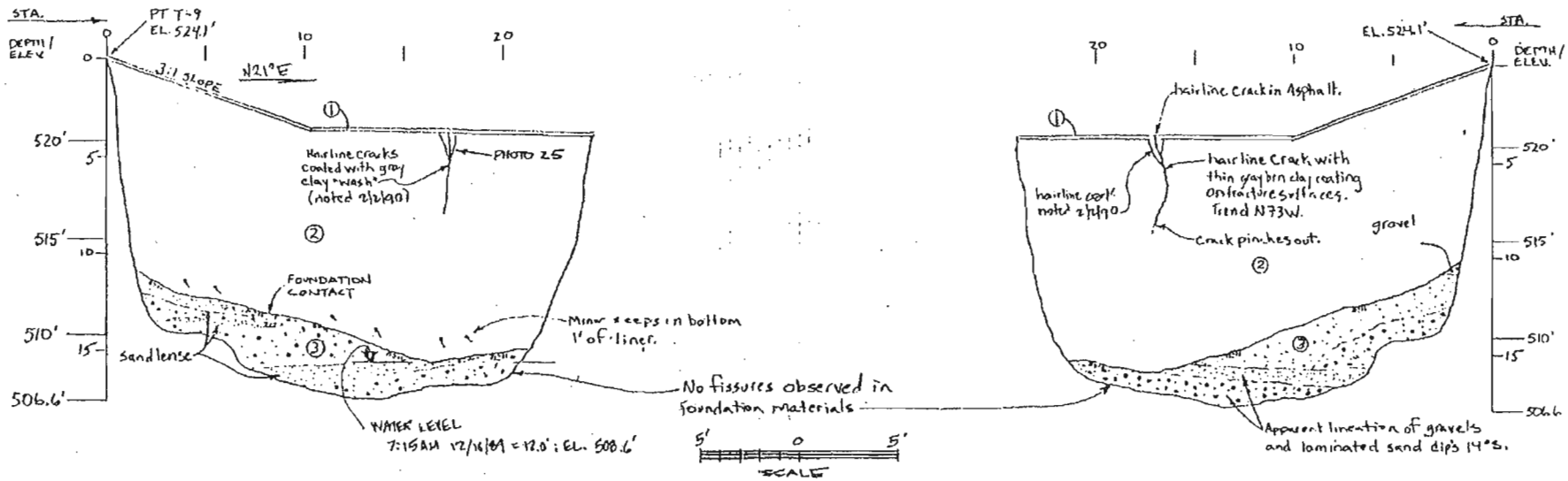
BACKFILLED (TEMP) - 2/7-9/90

EXCAVATED DEC. 6, 1989 WITH JD 710 TURBO BACKHOE.
LOGGED BY: J. MUZZIO/A.S. BUANGAN

WAHLER ASSOCIATES

REVISED 3/2/90 1/7/90

EXPLORATION LOG
TRENCH T-B



① ASPHALT LINER: ~3" Thick.

② LINER: CLAYEY SAND (SC); mod. yellow; moist to locally wet at base; fine to coarse; 10-30% low plasticity fines; occasional gravels.

③ FOUNDATION: predominantly GRAVELLY SAND to SANDY GRAVEL (SW-GW) with lenses of SAND (SW); gray-white to reddish orange; slightly moist; fine to coarse gravels; fine to coarse sands; <10% fines; localized heavy iron-oxide staining in gravels; thin iron-oxide lamination in sand, mod. cemented.

NOTE: Trench re-examined 2/2/90: J. MUZZIO/A.S. BUANGAN

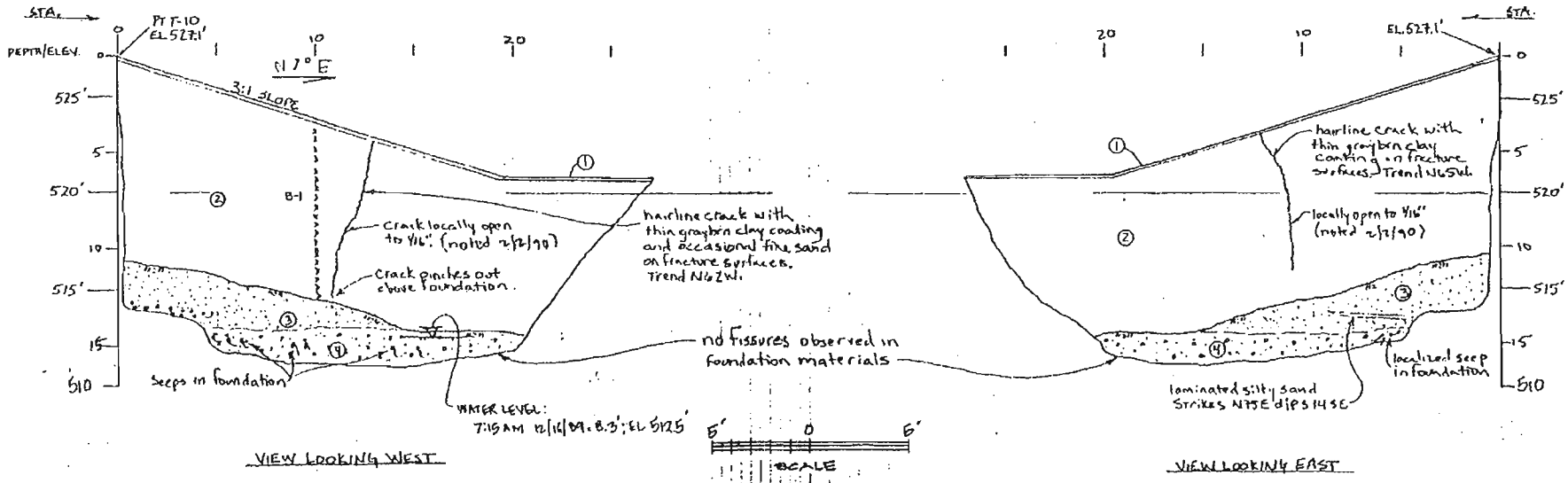
BACKFILLED (TEMP) 2/7-9/90

EXCAVATED DEC. 15, 1989 WITH JD 710 TURBO BACKHOE.
LOGGED BY: J. MUZZIO/A.S. BUANGAN

WAHLER ASSOCIATES

REVISED 3/2/90 1/1/90

EXPLORATION LOG
TRENCH T-9



① ASPHALT LINER: ~3" thick.

② LINER: SAND-CLAYEY SAND (SW-SC); mod yell. brn; moist to locally saturated; fine to coarse sand; 10-20% low plasticity fines; 10-20% gravels.

③ FOUNDATION: SILTY SAND TO SAND (SM-SP); white-gray; slightly moist; fine to medium; <10% fines; thin iron-oxide lamination; weakly cemented; friable.

④ FOUNDATION: SANDY GRAVEL (GW); gray white; moist to wet; fine to coarse gravels; 20-40% sand; <10% fines; occasional sand lenses.

NOTE: Trench re examined 2/2/90: J. MUZZIO/A.S. BUANGAN

SAMPLES:

B-1, STA 10', 0'-9', LINER.

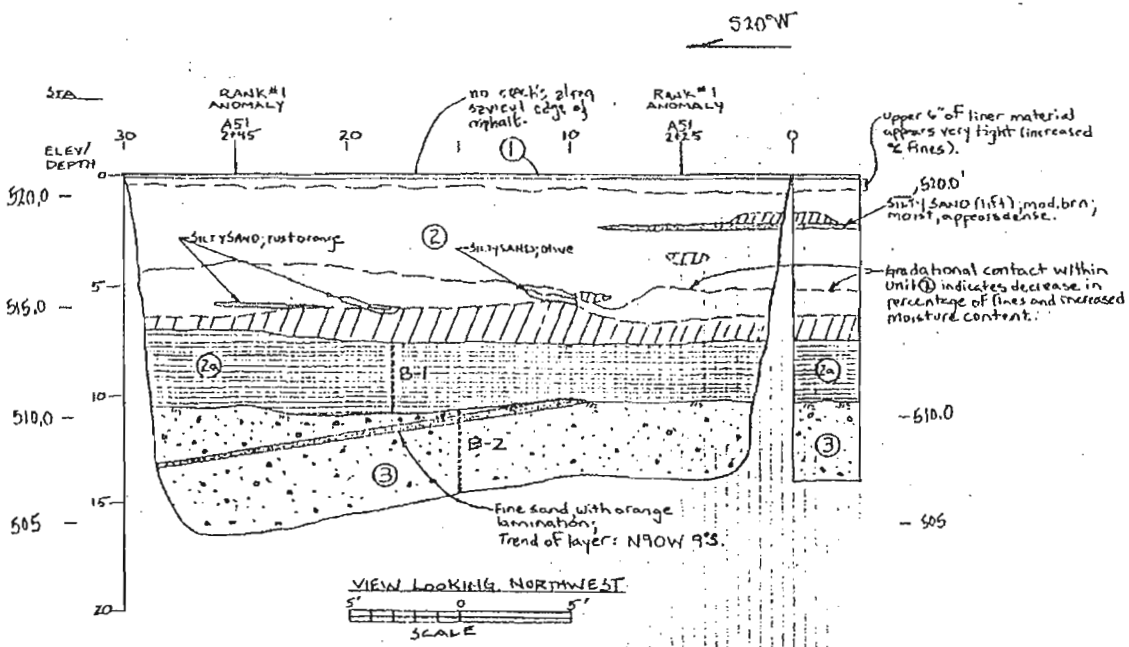
BACKFILLED (TEMP) - 2/7-9/90

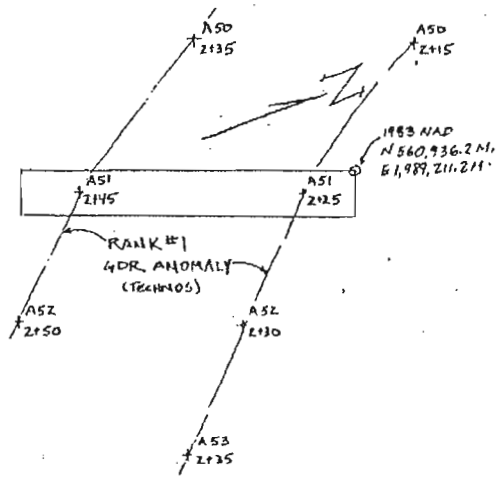
EXCAVATED DEC. 5, 1989, WITH JD 710 TURBO BACKHOE.
LOGGED BY: J. MUZZIO/A.S. BUANGAN

WAHLER ASSOCIATES.

REVISED 5/2/90 1/7/90
TO SHOW CRACK WIDTH

EXPLORATION LOG
TRENCH T-10





① - ASPHALT LINER: ~3" THICK

② - LINER: SILTY SAND (SM), mod yell brn; moist to locally saturated; fine to med sand; 15-30% low plasticity fines; varying amounts of subang gravels, varying amounts of fines as noted.

②a - LINER: SILTY SAND (SM), dark grey black; damp; fine sands; 30-40% low plasticity fines; 10% fine-med gravels; compact.

③ - FOUNDATION: GRAVELLY SAND (SW); light reddish brown w/ heavy red Fe-ox stains; damp; fine to coarse sand; 20-40% fine-med. subround gravels; ~10% non plastic fines; weakly cemented.

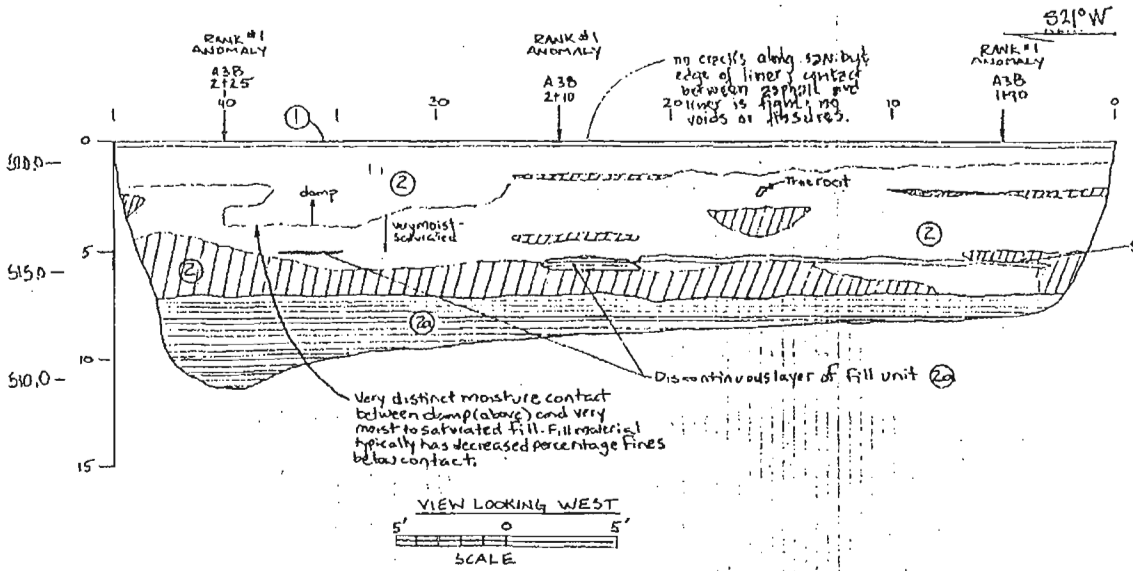
- Hatches indicate areas of heavy seepage immediately follow excavation of trench.

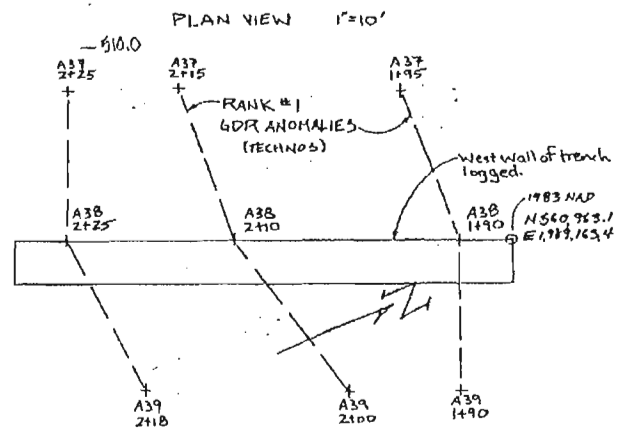
Note: No evidence of cracks within fill liner or foundation. Fill typically comprises silty sand with varying percentage of fines and other materials, constructed in horizontal lifts with occasional discontinuous layers of wet sands or stiff clays.

EXCAVATED JAN 31, 1990 WITH JD 710 TURBO BACKHOE.
LOGGED BY: A.S. BANOGHAN AND J MURRO.
WAHLER ASSOCIATES.

EXPLORATION LOG
TRENCH T-11

EXCAVATED JAN 31, 1990 WITH JD710 TURBO BACKHOE.
LOGGED BY: A.S. BUANGAN AND F. MUZZO.





① ASPHALT LINER; ~3" THICK.

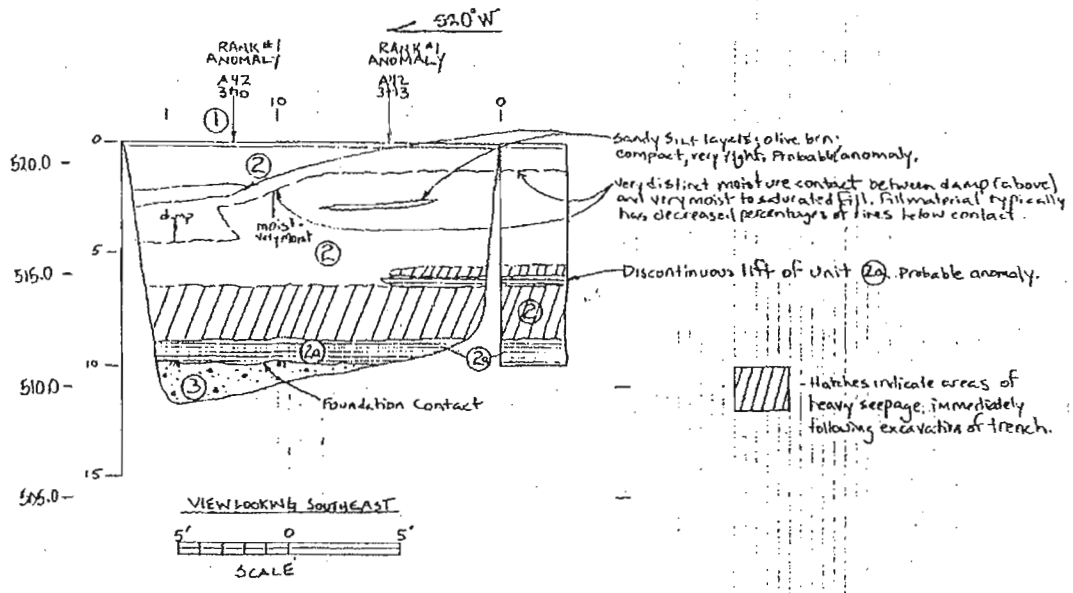
② LINER: SILTY SAND (SM); mod yell brn; moist to locally saturated; fine to coarse sand; 15-30% low plasticity fines; varying amounts of subang. gravels; varying amounts of fines as noted.

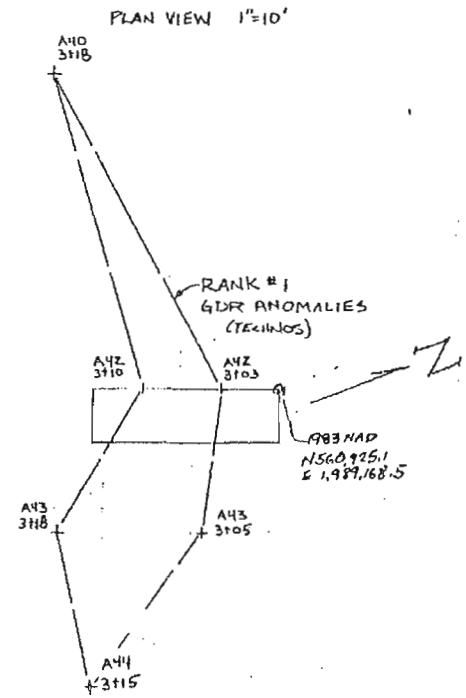
2a LINER: SILTY SAND (SM); dark grey black; damp; fine sands; 30-40% low plasticity fines; 10% fine med subround gravels; compact.

Hatches indicate areas of heavy seepage immediately following excavation of trench.

NOTE: No evidence of cracks within fill liner or foundation. Fill typically comprises silty sand with varying percentage of fines and other materials, constructed in horizontal lifts with occasional discontinuous layers of wet sands or stiff clays.

EXPLORATION LOG
TRENCH T-12





① - ASPHALT LINER: ~3" THICK.

② LINER - SILTY SAND (SM); mod yell. brn; moist to locally saturated; fine to coarse sands; 15-20% low plasticity fines; 15-20% fine to med gravels; varying amounts of fines as noted.

2a - LINER - SILTY SAND (SM); dark grey black; damp to moist; fine to medium sand; 30-40% low plasticity fines; ~10-15% gravels; compact.

③ FOUNDATION - GRAVELLY SAND (SW); reddish brown mottled with grey and yell brn, heavy Fe-ox staining; damp to moist; fine to coarse sand; 15-20% gravels; 10% low plasticity fines; weakly cemented.

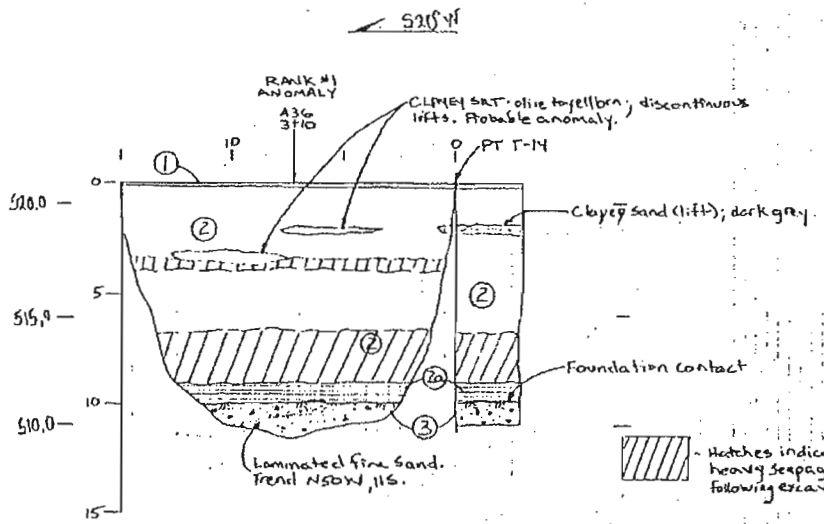
Note: No evidence of cracks in asphalt, liner or foundation. Fill typically comprises silty sand constructed in horizontal lifts with occasional discontinuous layers of wet sands or stiff clays.

EXCAVATED FEB 1, 1990 WITH JD 710 TURBO BACKHOE.
LOGGED BY: A.S. BUANAN AND J. MUZZIO.

WAHLER ASSOCIATES.

EXPLORATION LOGG

TRENCH T-13



VIEW LOOKING NORTHWEST

5' 0 5'
SCALE

NOTE: No evidence of cracks within fill liner or foundation material. Fill typically comprises silty sand constructed in horizontal lifts with occasional discontinuous layers of wet sands or stiff clays.

Hatches indicate areas of heavy seepage immediately following excavation of trench.

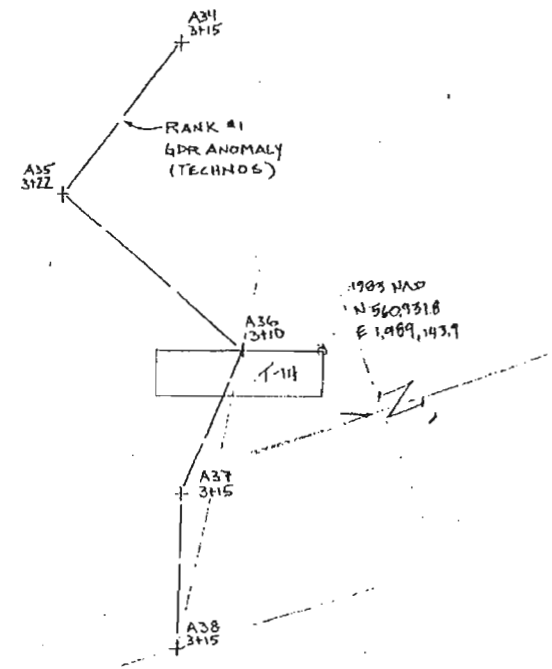
① · ASPHALT LINER: ~3" THICK.

② · LINER: GRAVELLY SILTY SAND (SM); mod yellbrn; moist to locally saturated; fine to coarse sand; 20-30% low plasticity fines; 15-25% fine gravel.

②a · LINER: SILTY SAND (SM); dark grey black; damp to moist; fine to med/m sand; 30-40% low plasticity fines; <10% gravel; compact.

③ · FOUNDATION: GRAVELLY SAND (SW); dusky yell brn; damp to moist; fine to coarse sands; 20-30% gravel; typically occurring as interbedded lenses; <10% low plasticity fines; weakly cemented.

PLAN VIEW 1"=10'

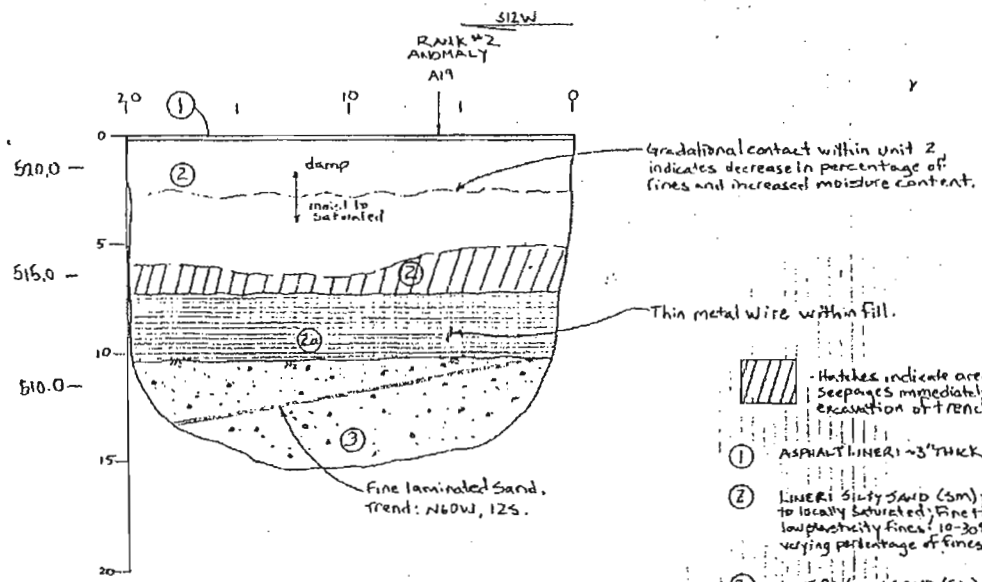


EXCAVATED FEB 1, 1990 WITH JD 710 TURBO BACKHOE.
LOGGED BY: A.S. BUANGAN AND J. MUZZIO.

WAHLER ASSOCIATES.

EXPLORATION LOG

TRENCH T-14

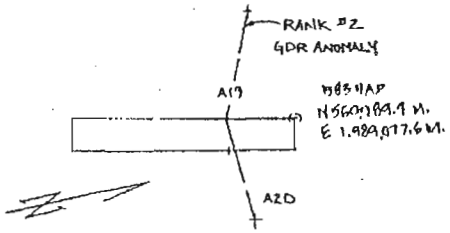


VIEW LOOKING NORTHWEST

5' 0 5'

SCALE

PLAN VIEW 1"=10'



Hatches indicate areas of heavy seepages immediately following excavation of trench.

(1) ASPHALT LINER: ~3" THICK

(2) LINER: SILTY SAND (SM); mod yell. brn. moist to locally saturated; fine to coarse sand; 20-30% low plasticity fines; 10-30% fine to coarse gravels; varying percentage of fines as noted.

(2a) LINER: SILTY SAND (SM); dark gray black; damp to moist; fine to medium sands; 30-40% low plasticity fines; 10-15% fine to medium gravels; compact.

(3) FOUNDATION: GRAVELLY SAND (SW); damp to moist; fine to coarse sand; 20-30% fine to coarse gravels; 10% nonplastic fines; typically occurs as interfingering deposits.

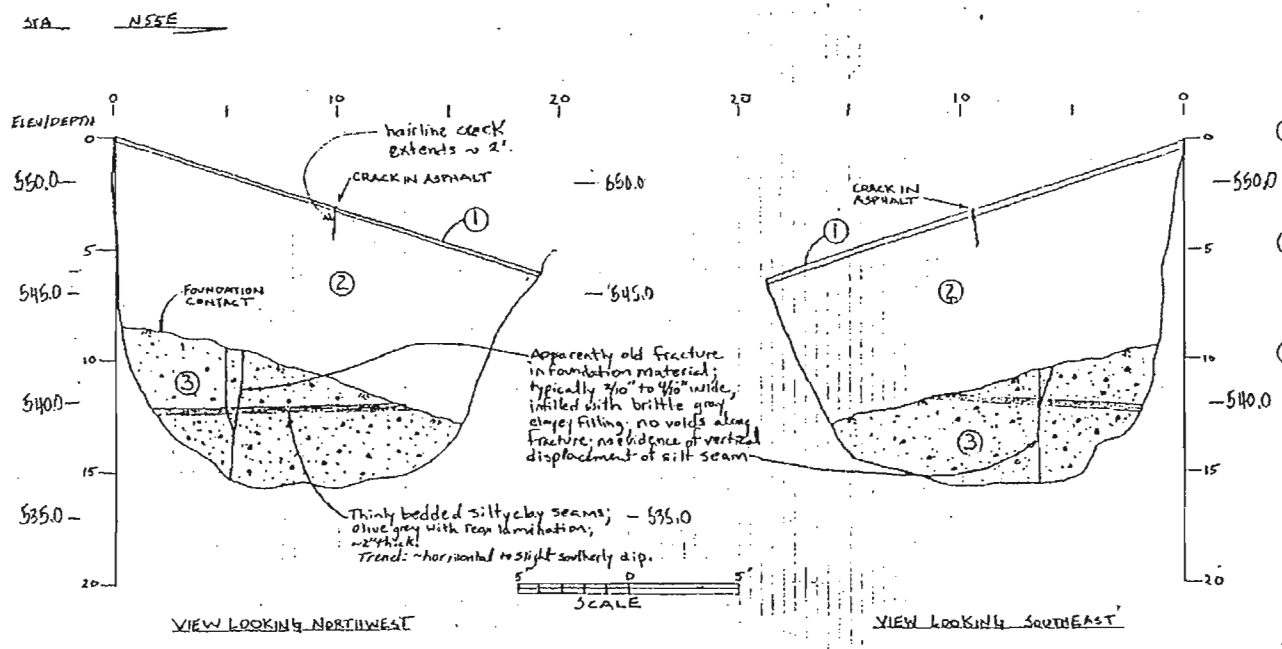
NOTE: No evidence of cracks within fill liner or foundation. Fill typically comprises silty sand with varying percentage of fines and contrasting moisture content, constructed in horizontal lifts.

EXCAVATED FEB 3, 1990 WITH JD 710 TURBO BACKHOE.
LOGGED BY: A.S. BUANGAN AND J. MUZNO.

WAHLER ASSOCIATES

EXPLORATION LOG

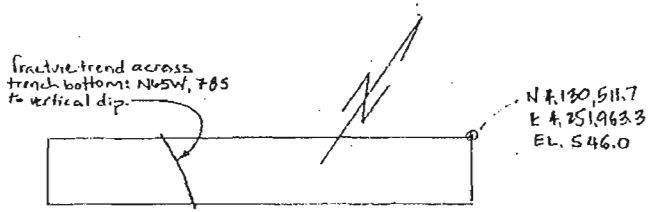
TRENCH T-15



① · ASPHALT LINER: ~3" THICK

② · LINER · SILTY SAND (SM); mod yell. brn; damp to locally wet; fine to crse sand; 10-30% non plastic fines; 20-30% fine-med gravels.

③ FOUNDATION: predominantly GRAVELLY SAND (SW); mottled yell. brn to lightred brn; damp; fine to crse sand; fine to crse gravels to 30%; ~10-20% non plastic fines; occasional clean sand lenses oxroted.

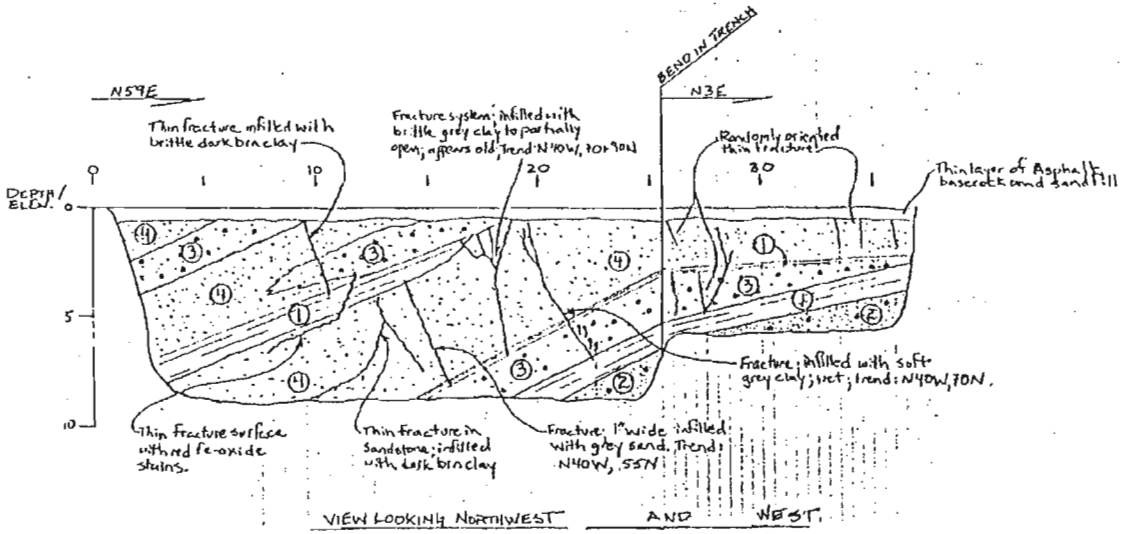


EXCAVATED FEB 6, 1990 WITH JD 710 TURBO BACKHOE. LOGGED BY: A.S. BUANGAN AND J. MURRIO.

WAHLER ASSOCIATES

EXPLORATION LOG

TRENCH T-16



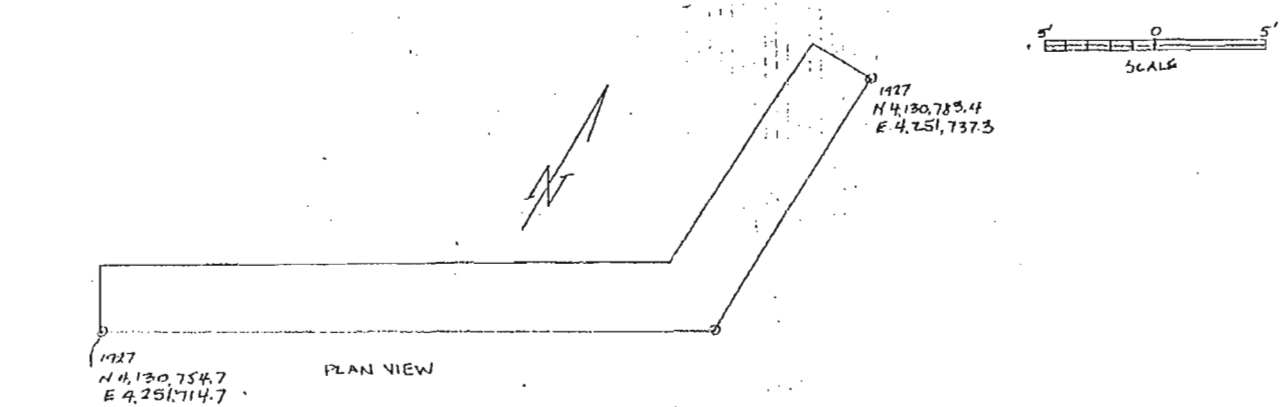
PICO FORMATION/FOUNDATION

1. SILTSTONE (ML); light grey with orangish Fe-ox and black min-ox stains on fracture surfaces; damp; low plasticity fines; 10-20% very fine sand.

2. SANDSTONE (SP); reddish brown; moist to very moist; fine to medium sand; 10% fine to medium gravels; ~10% fines; weakly cemented.

3. GRAVELLY SANDSTONE (SW); mottled yell. brn to light red brown; fine to coarse sands; 10-30% fine to medium gravel; 10-15% low plasticity fines; typically occurs as interfingering fluvial deposits; moderately cemented.

4. SANDSTONE (SP); yellow; damp; fine sand; 10% fines; thin Fe-ox laminations moderately to well cemented; slightly fractured; fractures stained with thin coating of red-black oxides. Fractures typically occur in locally well cemented areas.

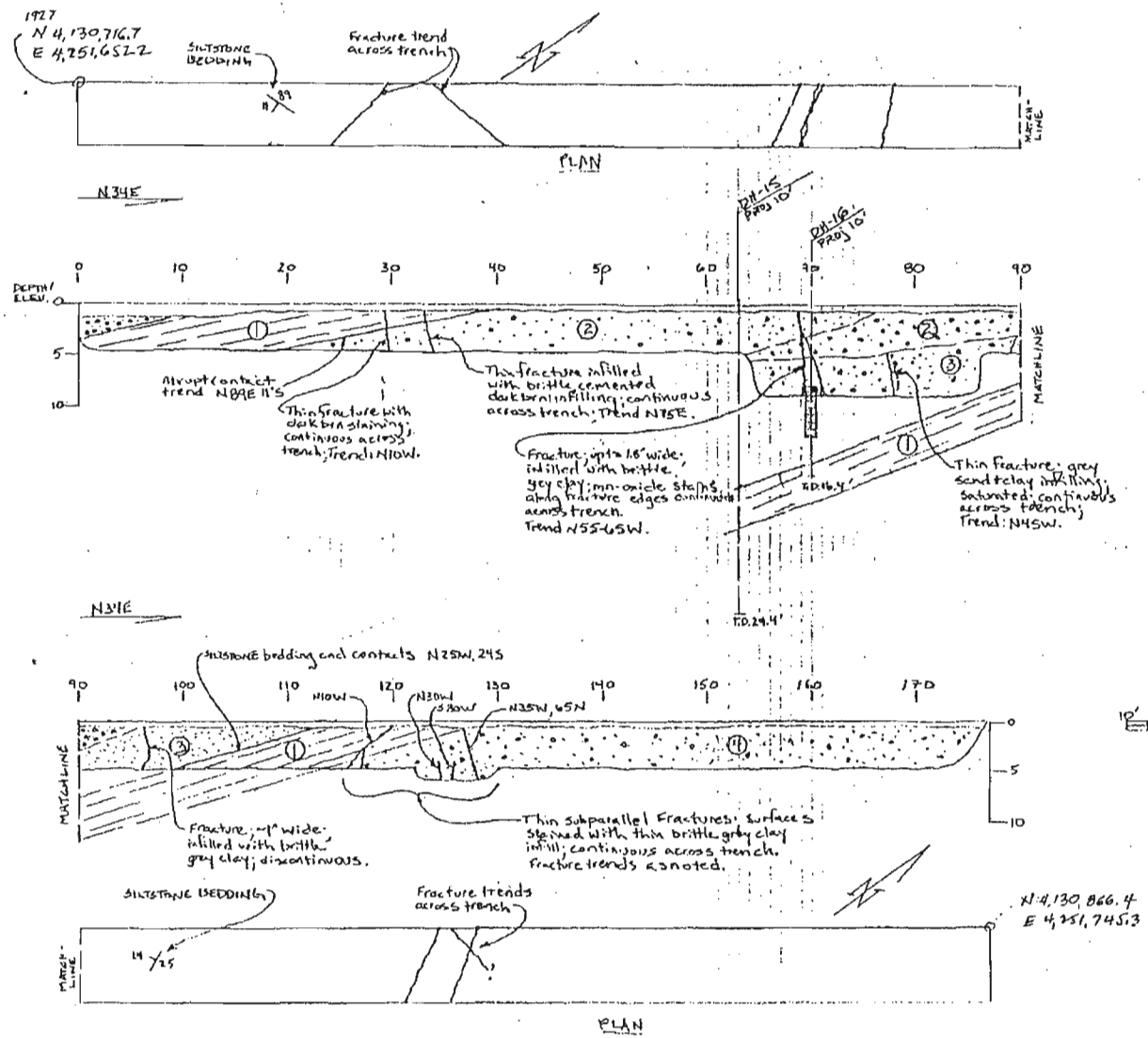


EXCAVATED FEB 16, 1990 WITH JD 410 RABO BACKHOE.
LOGGED BY: A.S. BUANGAN AND J. MUZZIO,

WALLER ASSOCIATES

EXPLORATION LOG

TRENCH T-17



PICO FORMATION:

① SILTSTONE (ML); light grey with orange mottling; damp; low plasticity fines; 10-20% very fine sand; occasional interbedded fine sand and thin brittle mn-oxide laminations; slight random fractures throughout.

② GRAVELLY SAND (SW); yellbrn with light olive tint; damp; fine-coarse sand; fine to medium gravels. <10% fines; occasional thin interbedded sand; moderately cemented.

③ SANDSTONE (SP); yellbrn with orange Fe-oxide laminations; damp to locally moist; very fine-fine sand. <10% fine gravels and non plastic fines; massive; weakly cemented.

④ GRAVELLY SILTY SAND (SM); dark yell. brn with dark brown mottling; damp to moist; fine to coarse sand; 15-25% non plastic fines; fine to coarse gravels up to 20%; faint clast imbrication; weak to moderately cemented.

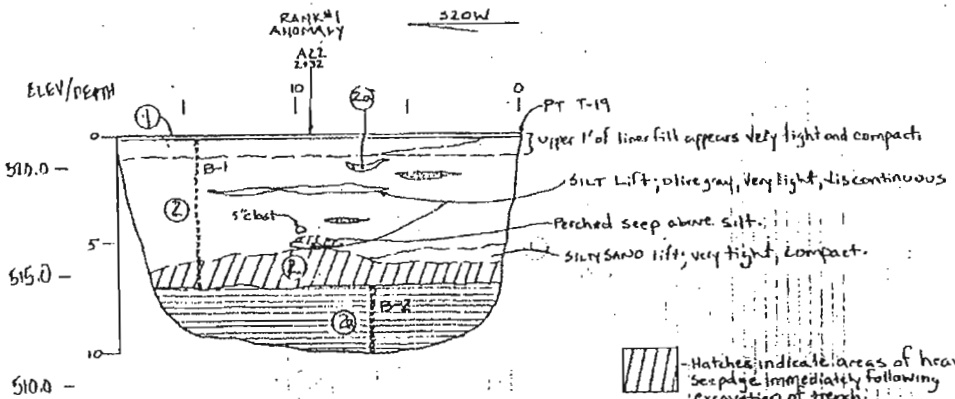
10' 0 10'
SCALE

EXCAVATED FEB 14, 1990 WITH JD 710 TURBO BACKHOE. LOGGED BY: A.S. BUANGAN AND J. MUZZIO.

WAHLER ASSOCIATES

EXPLORATION LOG

TRENCH T-18



VIEW LOOKING NORTHWEST

SCALE

NOTE: No evidence of cracks within fill liner or asphalt. Fill typically consists of silty sand with varying percentage of fines and other materials, constructed in horizontal lifts with occasional discontinuous layers of wet sands or stiff clays and silts;

- Hatches indicate areas of heavy seepage immediately following excavation of trench.

(1) - ASPHALT LINER: ~3" THICK.

(2) - LINER: SILTY SAND (SM); mod yell. brn; moist to locally saturated; fine to coarse sand; 15-30% low plasticity fines; fine to coarse gravels to 30%; occasional sand and silt lifts throughout.

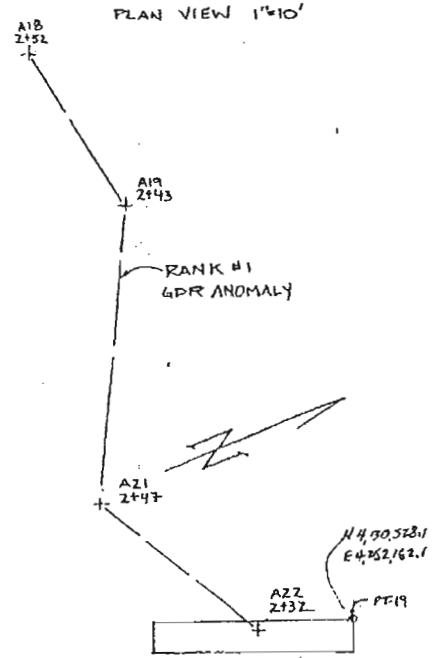
(2a) - LINER: Silty SAND (SM); dark grey black; damp to moist; fine to medium sand; 30-40% low plasticity fines; occasional fine to coarse gravels; compact.

BULK SAMPLES

B-1; 0'-7' liner (2)

B-2; 7'-10' liner (2a)

PLAN VIEW 1"=10'

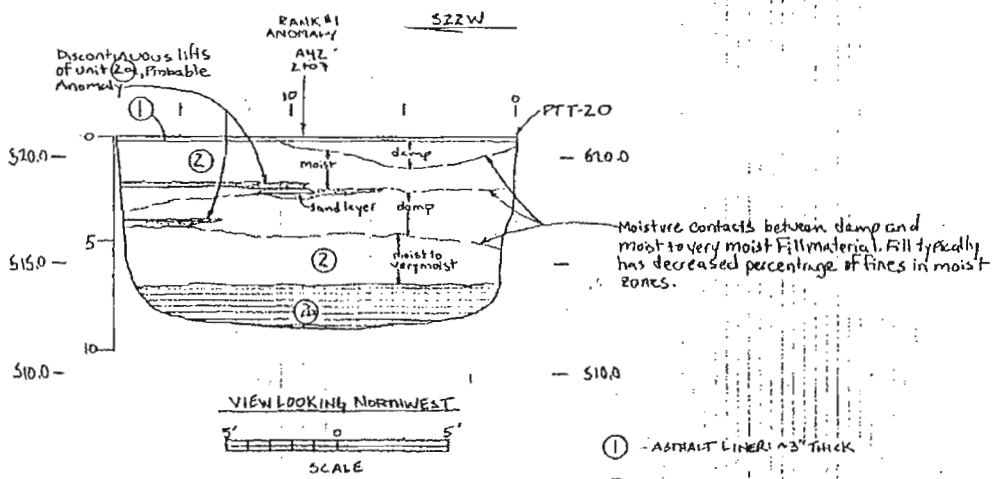


EXCAVATED FEB 15, 1990 w/ IH JD 710 TURBO BACKHOE.
LOGGED BY: AS. BUANGAN AND J. MUZZIO.

WAHLER ASSOCIATES

EXPLORATION LOG

TRENCH T-19



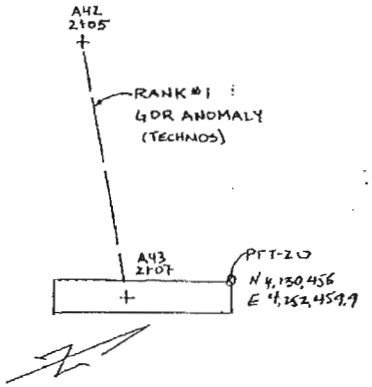
NOTE: No evidence of cracks within Fill liner or asphalt. Fill typically comprises silty sand with varying percentage of fines and other materials constructed in horizontal lifts with occasional discontinuous layers of silt or sand.

(1) - ASPHALT LINER: ~3" THICK

(2) - LINER: SILTY SAND (SM); mod yell. brn; damp to very moist; fine to coarse sand; 20-80% low plasticity fines; 10-30% fine to coarse gravels; occasional sandy silt or sand lifts.

(2a) - LINER: SILTY SAND; dark grey black; damp; fine to medium sand; 30-40% low plasticity fines; 10% fine to medium gravels; compact.

PLAN VIEW 1" = 10'

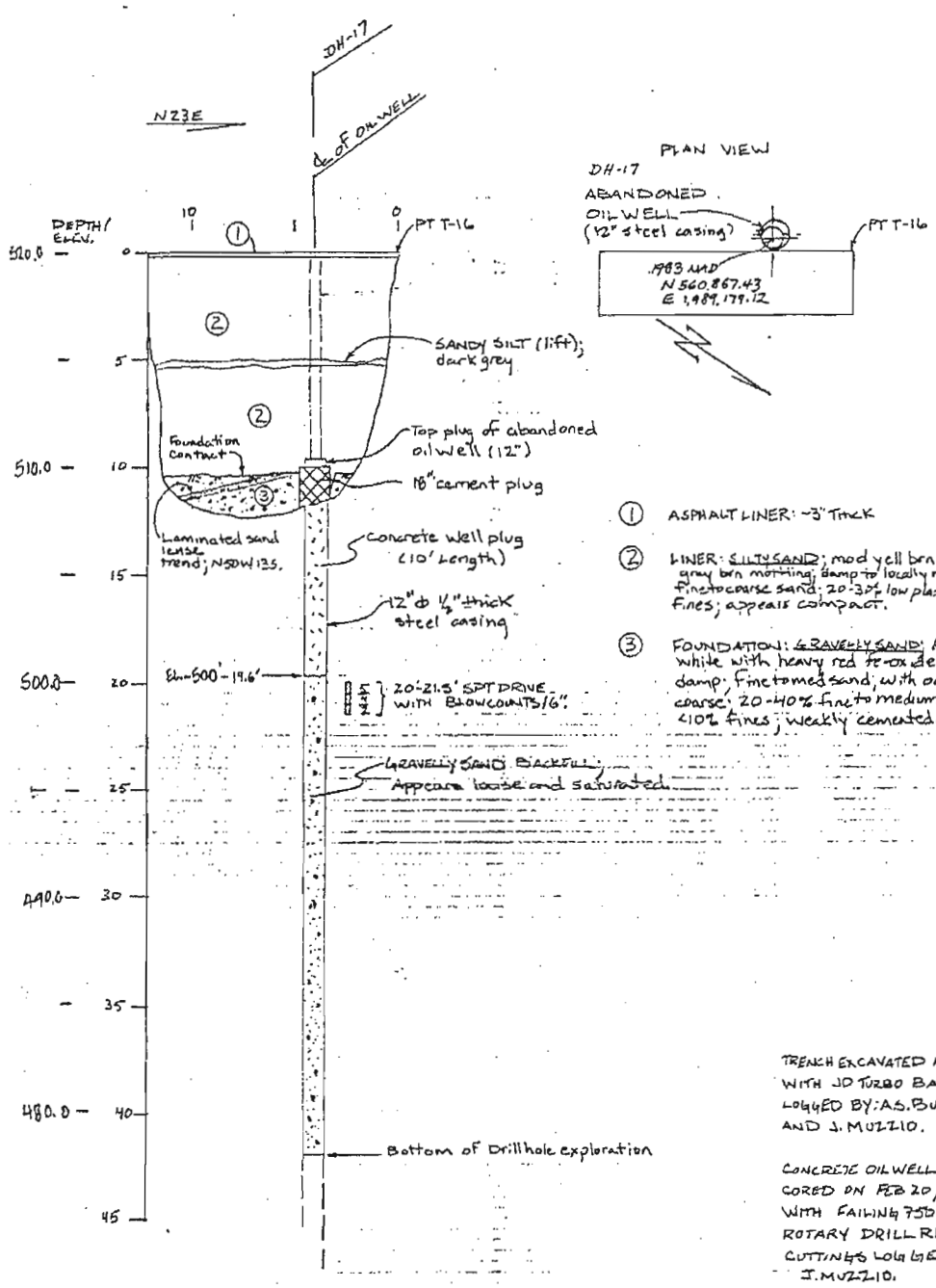


EXCAVATED FEB 15, 1990 WITH JD 710 TURBO BACKHOE.
LOGGED BY: A. S. BUANAN AND J. MUZZIO.

WAHLER ASSOCIATES.

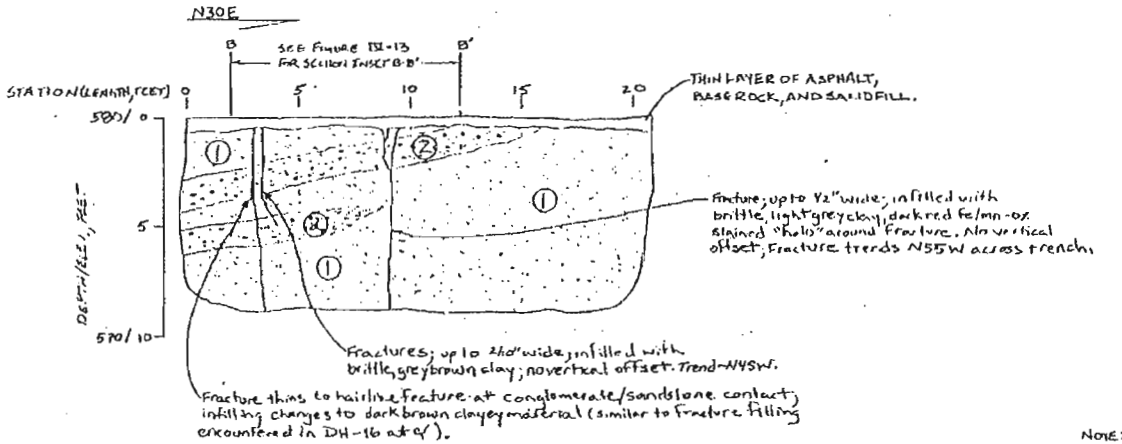
EXPLORATION LOG

TRENCH T-20

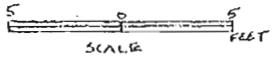


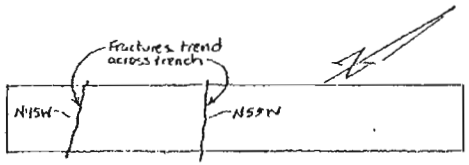
WAHLER ASSOCIATES

EXPLORATION LOG
TRENCH T-21



VIEW LOOKING NORTHWEST





PLAN VIEW

PICO FORMATION

(1) SANDSTONE (SP); yellow brown with orange brown mottling; damp; fine to medium sand; <10% fines; occasional fine gravel and gravelly lenses; weakly cemented.

(2) CONGLOMERATE (SP-SM); mottled yellow brown to red brown; damp; fine to coarse sand; 15-20% fine to medium gravel; 10% fines; moderately cemented.

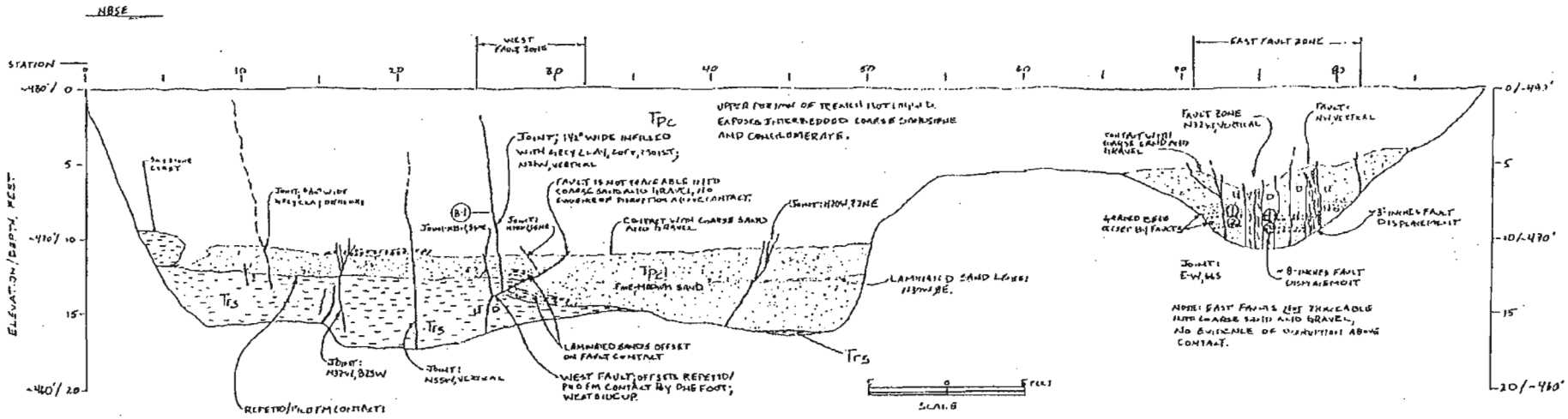
NOTE: SEE CHAPTER IV SECTION C.5 FOR RESULTS OF WATER PRESSURE TESTS ON PRE-EXISTING FRACTURES IN T-22.

EXCAVATED FEB. 16, 1990 WITH JD 710 TURBO BACKHOE.
LOGGED BY: A.S. LONERGAN AND J. MUZZIO.

WAHLER ASSOCIATES.

EXPLORATION LOG

TRENCH T-22



SAMPLE

B-1 - GREY CLAY INFILLING, SOFT AND MOIST SUBMITTED FOR X-RAY DIFFRACTION ANALYSIS. (SEE CHAPTER IV FOR RESULTS).

EXPLANATION

Tpcg - PICO FORMATION - SANDSTONE AND CONGLOMERATE; YELLOW BROWN TO ORANGE BROWN, WEAKLY TO MODERATELY CEMENTED; BASAL UNIT IS FINE-MEDIUM SAND OVERLAIN BY COARSE SANDSTONE AND CONGLOMERATE.

Trs - REPETTO FORMATION - SILTSTONE; TAN TO GREY; MASSIVE.

U/D - FAULTS SHOWING APPARENT DIRECTION OF MOVEMENT: U = UP D = DOWN

- JOINTS; TYPICALLY ½" TO 1½" WIDE; INFILLED WITH SOFT TO BRITTLE GREY CLAYEY MATERIAL. JOINTS SHOW NO EVIDENCE OF OFFSET.

NOTE: SEE LORN CANDALL AND ASSOCIATES FAULT INVESTIGATION (APPENDIX E) FOR DETAILED DISCUSSION OF FINDINGS.

EXCAVATED MARCH 12/13, 1990 WITH JD 710 TURBO BACKHOE.
LOGGED BY:
AS. BUANLAN & J. WEEID
WALLER ASSOCIATES

EXPLORATION LOG
TRENCH T-23

EXPLORATION HOLE LOGS

BORING LOCATION GARVEY RESERVOIR FLOOR - EAST SIDE		GROUND EL. 572.1'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING	TOTAL DEPTH 121.5'
DRILL RIG FALLING 750/MUD ROTARY	BORING DIA. / DATE DRILLED 1.9.90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	LINER FILL	0.0					Start 8:00 a.m. 1/9/90 Cored 3" asphalt. Attempt to push 4" Shelby tube; refusal. [illegible] Second attempt with 4" [illegible] at 5; refusal. Augered to 4'. Set 6" casing. Cleaned out hole with 5 7/8" tricone bit and drill rod.
ASPHALT	0.0-0.25' - ASPHALT LINER						
SM-SC	0.25-7.5' - SILTY GRAVELLY SAND; mod. yellowbrown, moist; fine to coarse, poorly graded; 15-20% non plastic fines; 10-15% fine-med. subround gravels.	2.0				AS	
		4.0	S-1	200 PSI / 500 PSI	5.5 / 2.5	PB 4"	4.0-6.5 - 4' Pitcher Sampler (PS sampler) 7 min. slight chatter, no rods crumbled, sample is loose in tube
	-5.5'-increase gravels	6.0					
			S-2	200 / 500	1.5 / 1.5	PB 4"	6.5-8.0 : 7 min. sl. chatter @ 7' mod. chatter, rods slightly crumpled
SM-SC	7.5-10.0' - SILTY SAND; dark grey; slightly moist; fine to coarse; 40% low plasticity fines; <10% fine to med. gravels.	8.0	S-3	300 / 500	2.5 / 2.5	PB 4"	8.0-10.5 : 9 min. smooth drilling, mod. chatter at 10' in gravel [illegible] toe; [illegible] apparently at 10'
	PICO FM (FOUNDATION)	10.0					
SP-SM	10.0'-121.5' - CONGLOMERATE: (SILTY GRAVELLY SAND); moderate yellow brown with orange fe-oxide mottling; moist; fine to coarse, poorly graded; 10-30% subangular-subrounded gravels; 5-15% low plasticity fines; weakly to moderately cemented; very dense. Occasional thin lenses of silt (at 55' and 60') and interbedded sandstones, weakly cemented.		S-4	300 / 550	2.5 / 2.5	PB 4"	10.5-13.0 : 28 min. mod. chatter, rods sl. crumpled.
	-14'-18' - occasional sand lenses.	12.0				RD	13.0 [illegible] with 5 7/8" tricone bit. Smooth to slight chatter
		14.0					
		16.0					
		18.0	S-5	400 / 500	2.5 / 2.5	PB 4"	18.0-20.5 : 35 min. moderate drill chatter.
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD 266A / SHEET NO. 1 OF 7	DH-1 (PIEZ W-1)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10'-121.5'- CONGLOMERATE)						
	-20'-20.5'- increase to 35% gravels up to 1½".	20.0				PB	
			R-1	85/0.5	0.5/0.5	DR	20.5-21.0 Drive 2½" Calif Mod. (CM) sampler w/ 320# slip jar falling 30"
	-20'- moisture increase to very moist.					RD	
SP-SM		22.0					
		24.0					
	~26'-30'- decrease gravel content.	26.0					
		28.0					
		30.0	S-6	300 ↓ 550	2.5/2.5	PB 4'	30.0-32.5, 12 min; mod chatter. 30.5-31 [illegible] crumpled [illegible] loose in [illegible]
SM	-31.5'-32'- SILTY SAND; yellow brown; fine.	32.0					
	32'-35'- CONGLOMERATE		R-2	100/0.45		DR	32.5-32.9 CM
SP-SM						RD	
		34.0					
? SM	-35'-36'- SILTY SAND lense (?)						35-36' smooth drilling
?	36'-39'- CONGLOMERATE	36.0					
SP-SM							
		38.0					
? SM	-39'-40'- SILTY SAND lense (?)						39'-40' smooth drilling
?	40'-42.5'- CONGLOMERATE	40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR.	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD 266A	SHEET NO. 2 OF 7	DH-1 (PIEZ W-1)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10'-121.5'- CONGLOMERATE)	40.0					
SP-SM			S-7	400	2.5/2.5	PB 4"	40.0-42.5; 10 min; Smooth drilling; mod chatter @ 41'; tip slightly crumbled
		42.0		550			
SP	-42.5-44'-SAND; grey white with orange mottling; fine with occasional medium grain; trace fine-medium gravel; <5% fines; very dense		R-3	100%/0.5	0.5/0.5	DR	42.5'-43.0'-cm
						RD	Slight chatter and less gravels in mud
		44.0					
SP-SM	44'-50'-CONGLOMERATE						45-50 mod chatter
		46.0					
		48.0					
	-50'-54'- moderately cemented.	50.0					
			S-8	500 / 700	0.8/0.8	PB 4"	50.0-50.8; 14 min; Sl chatter occ mod chatter rough chatter @ 50.9'
			R-4	100%/0.4	0.4/0.4	DR	50.3'-51.4'-cm.
						RD	Smooth drilling
		52.0		300 psi			
		54.0					Mod chatter @ 54.5' increase pressure to 300psi on trocank @ 55' Smooth drilling with clay and coarse sand from cutting
?- M -?	-55'-55.5'- SILTSTONE lense (?)						
		56.0					
			S-9	450 / 700	0.9/1.4	PB 4"	56.5-57.9; 20min; mod chatter. very hard coring refusal up to 300psi no penetration: Tip slightly crumbled (no scarring)
		58.0				RD	Slight to mod chatter
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 3 OF 7	DH-1 (PIEZ W-1)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(10'-121.5'- CONGLOMERATE)	60.0				RD	Smooth drilling
?- ML ?	-60.5'-61'- SILTSTONE lense; light grey.						60.5-61.0 driller notes. Soft drilling (clay or silty sand
SP-SM		62.0		200 psi			61-62 mod chatter.
		64.0					
			S-10	090 / 800	0.5 / 2.5	PB 4"	65.0-66.5: 15 min; smooth to sl chatter. Sample disturbed
		66.0	S-11	250 / 700	1.2 / 1.2	PB 4"	66.5-66.7; slight to mod chatter; tip slightly crumbled.
	-67.5'- Very moist; trace free water on grains.		S-12	450 / 600	1.4 / 1.4	PB 4"	66.7-68.1; 16 min; slight chatter
		68.0	S-13	500	0.4 / 0.4	PB 4"	68.1-68.5; 37 min; slight chatter; very hard
GW	-68.4'-70'- SANDY GRAVEL; mottled orange-yellow brown; very moist; fine to coarse subround clasts, well graded; 40% fine to coarse sand; moderately cemented.		S-14	400 / 500	1.0 / 1.0	PB 4"	68.5-69.5: 40 min; slight chatter; mod chatter @ 68.7
		70.0	S-15	600	1.3 / 1.3	PB 4"	69.5-70.8: 45 min: slight chatter. mod rough chatter @ 69.5'
SP-SM			B-1	100% 3	7.3/3.3	DR	70.8'-71.1'- cm.
		72.0				RD	Smooth drilling @ 72.5'
		74.0					
		76.0	S-16	500 / 700	1.8 / 1.8	PB 4"	75.0-76.8; 20 min; Slight chatter
		78.0					
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 4 OF 7	DH-1 (PIEZ W-1)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	(10'-121.5'- CONGLOMERATE)	80.0					
SP	-80'-84'- SANDSTONE (SAND); Yellow brown; trace orange mottling; moist; fine; <10% fines.		S-17	400	1.3/1.3	PB 4"	80.0-81.3: Slight chatter
			B-2	50/.3	.3/.3	DR	81.3-81.6 Standard Penetration Test (SPT) 140# hammer 30" free fall.
		82.0				RD	
SP-SM	84'-114'- CONGLOMERATE	84.0					Mod-rough chatter @ 84.0'
		86.0					Smoother drilling and slight fluid loss @ 86'
		88.0					Rough chatter @ 88'
	-90'-94'- heavy red Fe-oxide staining; moderately cemented; appears brittle.	90.0	S-18	450	0.7/0.7	PB 4"	90.0-90.7: 15 min; 90.7-90.9'-SPT; No recovery.
			—	50/0.2	0.2/0.2	DR	91-95 slight fluid loss
						RD	
		92.0					
		94.0					
	-95'- CONGLOMERATE; As above; moist.		S-19	250 / 350	0.7/1.0	PB 3"	95.0-96.0: 22 min; Smooth coring
		96.0	B-3	50/0.25'	.25/.25	DR	96.0'-96.25'-SPT.
						RD	
		98.0					
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR.	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 5 OF 7	DH-1 (PIEZ W-1)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10'-121.5' - CONGLOMERATE)	100.0					
SP-SM			S-20	150 / 350	0.6 / 0.7	PB 3"	100.0-100.7; 20 min; Slight - mod chatter
						RD	
		102.0					
		104.0					-104'-107'; harder drilling
		106.0					
		108.0					
		110.0					
			S-21	350 / 700	0.8 / 1.1	PB 3"	110.0-111.1; smooth coring
			B-4	50/0.3	0.3/0.3	DR	111.1'-111.4'; SPT.
						RD	
		112.0					
		114.0					
SP	114'-120' - SANDSTONE (SAND); moderate yellow brown; very moist to wet; fine to medium; <10% fines; weakly cemented.		S-22	500 / 600	0.5 / 0.6	PB 3"	115.0-115.6
		116.0					
	- occasional gravelly sand lenses to 120.8',						117'-120'; rough loud drill chatter
		118.0					
	120'-121.5' - CONGLOMERATE	120.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 6 OF 7	DH-1 (PIEZ W-1)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SP-SM	(10'-121.5' CONGLOMERATE)	120.0	S-23	300 / 500	1.1 / 1.3	PB 3"	120.0-121.3; 30 min; Slight chatter, rough chatter @ 120.5'
			B-5	50/0.2	0.3/0.2	DR	121.3-121.5 SPT
	Total Depth = 121.5' note: hole caved to 120' when rods pulled.	122.0					BORING TERMINATED 4:30pm 1/10/90 Fluid level at 0'. 1/11/90-7:30AM Fluid level at 28'. Construct Well W-1 on 1/11/90. WELL CONSTRUCTION 0'-60': 2"Ø blank sch 40 PVC 60-120': Well screen; 0.02" slotted. 56'-120': Filter pack; #3 sand. 53'-56': Bentonite seal; 3/8" pellets 0'-53': Grout seal; cement bentonite mix.
		124.0					
		126.0					
		128.0					
		130.0					
		132.0					
		134.0					
		136.0					
		138.0					
		140.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 7 OF 7	DH-1 (PIEZ W-1)

BORING LOCATION WEST CRACK AREA - UPSLOPE OF T-1		GROUND EL. 533.0
DEPTH/ELEV. WATER	DRILL CONTRACTOR	TOTAL DEPTH 112.7'
DRILL RIG FAILING 250 HOLE MASTER	BORING DIA. / DATE DRILLED 1/16/90	LOGGED BY JM.

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	LINER FILL						Start 10:34 am 1/16/90
AC	0.0'-0.25' - ASPHALT LINER	0.0				RD	Rotary Drill (RD) with 5 7/8" tricone bit and drill mud to 6'. Set 3.5' casing
SP/SM	0.25'-10.0' - SILTY GRAVELLY SAND; mottled brown-yellowbrown; moist; appears dense; fine to coarse; ~35% fine to coarse subrounded gravel to 1"; ~10% low plasticity fines. - occasional lifts of silty sand and sand.	2.0					
		4.0					
		6.0	S-1	250 / 400	1.4 / 2.5	PB 4"	6.0-8.5 - 4" Pitcher Barrel (PB) sampling: 4 min; smooth drilling; sample is loose in tube.
		8.0	S-2	350 / 450	1.9 / 2.5	PB 4"	8.5-11.0; 3.5 min; slight chatter
SP-SM	10.0'-112.7' - CONGLOMERATE: (SILTY GRAVELLY SAND); yellow brown with orange and red Fe-oxide mottling and banding; moist to 22'; fine to medium with some coarse; poorly graded; up to 35% fine to coarse subrounded gravels; 10-15% low plasticity fines; vuggy to moderately cemented	10.0					
		12.0	S-3	400 / 550	1.9 / 2.5	PB 4"	11.0-13.5; 3.5 min; slight chatter; tube bent
		14.0				RD	change to 4 7/8" tricone bit
		16.0					
		18.0					
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 1 OF 6	DH-2 (PIEZ W-2)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10'-112.7' - CONGLOMERATE)	20.0					
SP-SM			S-4	350 / 400	2.1/2.5	PB 3"	20.0-22.5; 1 min; Slight chatter.
	-22' - increase moisture to very moist.	22.0					
			B-1	64/0.5	0.5/0.5'	DR	22.5-22.9 Standard Penetration Test (SPT) 140 ± hammer. 30" free fall
	-24'-26' - increased fine sands in cuttings.	24.0				RD	
	~26'-34' - SANDSTONE (SAND); moderate yellowish brown; moist to very moist; very dense; fine with some medium and coarse sand; <10% fines; weakly cemented.	26.0					
SP		28.0					
		30.0	S-5	350	2.2/2.5	PB 3"	30.0-32.5; 2 min; Smooth to Slight chatter
		32.0					
			B-2	34/50/0.2	0.7/0.7	DR	32.5-33.2 SPT
	34'-51.8' - CONGLOMERATE	34.0				RD	
SP-SM		36.0					
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 2 OF 6	DH-2 (PREV W-2)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10'-112.7'-CONGLOMERATE)						
SP-SM	-40'-increased moisture; trace free water on grains.	40.0	S-6	300	2.4/2.5	PB 3"	40.0-42.5; 4 min; slight chatter.
		42.0	B-3	50/0.3	0.8/0.8	DR	42.5-42.8 SPT
						RD	Drill out to 50'; moderate drill chatter.
		44.0					
		46.0					
		48.0					
		50.0	S-7	300 / 350	1.0/1.8	PB	50.0-51.8; 9 min
ML	-51.8'-51.9'-SILTSTONE; light grey with orange laminations; laminations display apparent dip of ~10°-20°.	52.0	B-4	38/50/0.3	0.8/0.8	DR	Hard drilling @ 51.8' 51.8-52.6 SPT
	-51.9'-70'-CONGLOMERATE					RD	
		54.0					Driller notes slower drilling from 50'-60' than 40'-50'
		56.0					
		58.0					
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 3 OF 6	DH-2 (PIEZ W-2)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10'-112.7'-CONGLOMERATE)						
SP-SM	-60-80'-conglomerate color change to light reddish brown; moist to locally damp.	60.0	S-8	450 / 600	0.8 / 1.2	PE 3"	60.0-61.2; 9 min
			E5	E0/0.2	0.2/0.2	DR	61.2-61.4 SPT
		62.0				RD	Drill out to 70'; moderate drill chatter.
		64.0					
		66.0					
		68.0					
SP-SM	-70'-72'-SANDSTONE (SILTY SAND); yellow brown; moist; very dense; Fine to medium; some gravel.	70.0	S-9	400 / 500	0.95 / 1.1	PE 3"	70.0-71.1; 14 min;
			S-6	50/0.2	0.2/0.2	DR	71.1-71.3 SPT
SP-SM	72'-80'-CONGLOMERATE	72.0				RD	Drill out to 80'; moderate drill chatter.
		74.0					
		76.0					
		78.0					
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 4 OF 6	DH-2 (PIEZ W-2)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10'-112.7' - CONGLOMERATE)						
SP	-80'-80.5' - SANDSTONE (SAND); yellow grey with orange mottling; <10% fines; moist.	80.0	S-10	450 / 650	1.2 / 1.6	PB 3"	80.0-81.6 : 13 min; tip crumbled.
SW	-80.5'-87.5' - CONGLOMERATE (SILTY GRAVELLY SAND); well graded fine to coarse sand and gravel; very moist.	82.0	S-11	300 / 600 / 300	1.0 / 2.0	PB 3"	81.6-83.6 : 11 min
		84.0	B-7	50/0.3	0.3/0.3	DR	83.6-83.9 SPT; Most sample fell out of sampler
		86.0				RD	
	-87.5'-92' - SANDSTONE (SILTY SAND) yellow brown with orange mottling; very moist; very dense; fine to medium; ~10% low plasticity fines; weakly cemented.		S-12	300 / 350	1.2 / 1.5	PB 3"	86.5-88.0 : 19 min; tip dented
SP-SM		88.0	B-8	50/0.2	0.3/0.3	DR	88.0 - 88.3 SPT
		90.0				RD	
SM / SP-SM	92-92.5' laminated silty sandstone lense. 92.5'-93.7' - CONGLOMERATE	92.0	S-13	450 / 700	1.5 / 1.5	PB 6"	92.0-93.5 : 57 min; slight chatter; hard drilling
SM	93.7'-94.2' - laminated silty sand lense.	94.0	B-9	48 50/0.3	0.6/0.8	DR	93.5-94.3 SPT
SP-SM	94.2'-105' - CONGLOMERATE					RD	
		96.0					
		98.0	S-14	500 / 700	1.1 / 1.5	PB 6"	97.0-98.5 ; 45 min; mod chatter
			B-10	50/0.3	0.3/0.3	DR	98.5-98.7 SPT
		100.0				RD	

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 5 OF 6	DH-2 (PIEZ W-2)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(10'-112.7' - CONGLOMERATE)	100.0					
		102.0	S-15	600 / 700	1.0 / 1.0	PB 6"	102.0-103.0 ; 43 min ; slight chatter
			B-11	50/0.3	0.3/0.3	DR	103.0-103.2 SPT End of Day
		104.0				RD	
SP	105'-107' - SANDSTONE (SAND); yellow brown; very moist; fine to medium with some coarse; occasional gravel to 1", <10% fines.	106.0	S-16	300 / 450	2.5 / 2.5	PB 4"	105.0-107.5 ; 7 min ; Slight chatter.
GW	107-107.5' - CONGLOMERATE (SANDY GRAVEL); fine to coarse gravel and sand; well graded; reddish brown.		B-12	50/0.3	0.3/0.3	DR	107.5-107.7 SPT
SM	107.5'-110' - SANDSTONE (SILTY SAND); yellow brown; very moist; fine to medium; <5-10% fines.	108.0	S-17	400 / 600	2.0 / 2.3	PB 4"	107.7-110.0 ; 13 min
SP-SM	110'-112.7' - CONGLOMERATE.	110.0	S-18	300 / 400	2.0 / 2.5	PB 4"	110.0-112.5 ; 6 min. Slight chatter.
		112.0	B-13	50/0.2	0.2/0.2	DR	112.5-112.7 SPT
		114.0					BORING TERMINATED 1/19/90 CONSTRUCT WELL W-2 ON 1/19/90
		116.0					WELL CONSTRUCTION 0-62' - 2" blank sch 40 PVC 62'-112' - Well screen 0.02" slotted.
		118.0					58'-112' - Filter pack; #3 sand. 55'-58' - Bentonite seal; 5/8" pellets 0'-55' - Grout seal; cement-bentonite mix.
		120.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 6 OF 6	DH-2 (SEE W-2)

BORING LOCATION EAST CRACK AREA ~ S WEST OF T-8		GROUND EL. 520.60
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING	TOTAL DEPTH 101.2
DRILL RIG FAILING 750/MUD ROTARY	BORING DIA. / DATE DRILLED 1/12/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	LINER FILL	0.0					
"AC"	0.0'-0.25'- ASPHALT LINER					AD	Augered to 4' with 8" Flight Auger. Clean out hole with 5 7/8" tricone bit and drill mud
SM	0.25'-6.5'- SILTY SAND; yellow brown; moist to very moist; fine to medium occasional coarse sand; 10-20% low plasticity fines; ~5-10% fine-medium subround gravel.	2.0					
		4.0	S-1	250 psi	2.0 / 2.5	PB 3"	4.0-6.5 - 3" Pitcher Barrel (PB) Sampling is min; Smooth drilling to slight chatter.
SM	6.5'-10.5'- SILTY GRAVELLY SAND; as above; increased gravels to 15-25%.	6.0				RD	6.5 - Drilled with 5 7/8" tricone bit. Slight to mod chatter.
		8.0	S-2	250 psi	2.2 / 2.5	PB 3"	8.0-10.5; slight chatter.
	PICO FM (FOUNDATION)	10.0					End of Day 1/12/90 Start 7:41 am 1/13/90
SM	10.5'-17'- SANDSTONE (SILTY SAND); dusky yellow brown; very moist; very dense; fine sand with some medium and coarse; 15% low to moderate plasticity fines; 5-10% gravels; weakly cemented.		S-3	150 / 500	1.5 / 1.5	PB 4"	10.5-12.0: 9 min; slight chatter
		12.0	B-1	21 / 34 / 39	1.5 / 1.5	DR	12.0-13.5 Standard Penetration Test (SPT) 140# hammer 30" free fall
		14.0				RD	
		16.0	S-4	250 / 500	1.6 / 2.3	PB 4"	15.0-17.3; Smooth drilling to slight chatter; rough chatter from 17.0 to 17.25; Tip mod crumpled
SP-SM	17'-51.1' CONGLOMERATE (GRAVELLY SAND); yellow brown; very moist to wet; fine to coarse; 15-20% fine to medium subangular gravels; 10% low plasticity fines; weakly cemented.	18.0	B-2	40 / 50/0.3	0.8 / 0.8	DR	18' - driller notes harder drilling.
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 1 OF 6	DH-3 (SEE W-3)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(17'-51.1'-CONGLOMERATE)	20.0	S-5	425 / 500	2.4 / 2.6	PB 4"	20.0-22.5; 29 min; mod chatter; tip slightly crumpled
SP / ML	22.8'-23.6'-SANDSTONE; yellow-brown w/red Fe-oxide lamination; fine grained; laminations dip ~10°-15° off of horizontal; very moist.	22.0	B-3	27 / 44 / 50	1.5 / 1.5	DR	22.6-24.1 SPT
SP-SM	23.6'-24.2'-SILTSTONE; mottled grey-orange; laminated; plastic.	24.0				RD	
			—	350 / 500	0 / 0.5	PB 4"	25.0-25.5; 5 min; smooth to sl chatter; rock fragment block off the tube, no return
	-24.2'-CONGLOMERATE; As above.	26.0	B-4	50/0.2	0.3/0.2	DR	25.5-25.8 SPT
						RD	
		28.0					
		30.0	S-6	350 / 550	1.6 / 1.9	PB 4"	30.0-31.9; 19 min; slight chatter, mod chatter @ 32'
		32.0	B-5	50/0.3	0.3/0.3	DR	31.9-32.2 SPT
ML	32.5'-thin siltstone seam (?)					RD	note: siltstone in return fluid at 32.5'
SP-SM	-CONGLOMERATE as above.	34.0					
		36.0					
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 2 OF 6	DH-3 (PREV W-3)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(17'-51.1' - CONGLOMERATE)	40.0					
SP-SM			S-7	250 / 550	1.1 / 2.5	PB 3"	40.0 - 47.5; 16 min; smooth drilling to sl. chatter
		42.0	B-6	50/0.3	0.3/0.3	DR	42.5 - 42.8 SPT
						RD	
		44.0					
		46.0					
		48.0					
		50.0	S-8	400 / 500	1.1 / 1.3	PB 3"	50.0-51.3; 23 min; slight chatter; soft drilling @ 51'
ML	51.1'-51.7' - Laminated Siltstone; grey w/red fe-oxide staining on sandy partings; hard.		B-7	50/0.4	0.4/0.4	DR	51.3 - 51.7 SPT
		52.0				RD	
SP	51.7'-94' - SANDSTONE (SAND); dusky yellowbrown w/red fe-oxide stains; moist; fine to medium; >5% fines; occasional gravels; occasional siltstone fragments.	54.0					
	~55' - increase fines to 5-12%.						
SP-SM	- intermittant gravelly layers.	56.0					
		58.0					
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 3 OF 6	DH-3 (PIER W-3)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(51.7-94' SANDSTONE)	60.0					
ML	~60'-61'- SILTSTONE seam (?)		S-9	450 / 600	0.9 / 2.5	PB 3"	60.0-62.5; 9 min; slight chatter; fast coring from 60' to 61'; sample blocked off @ 61'.
SP-SM	-SANDSTONE as above; moist to very moist.						
	-interbedded conglomerates	62.0					
			B-8	50/0.3		DR	67.5-67.8 SPT
						RD	
		64.0					End of Day Start 7:30 a.m. 1/16/00
	66'-66.3'- gravel lense	66.0	S-10	250 / 500	1.3 / 2.5	PB 3"	65.0-67.5; 11 min; fast coring from 65' to 66'. Very hard coring from 66' to 66.3'; rock in tip block off sample from 66.3' to 67.5'
			B-9	50/0.3	0.3/0.3	DR	67.5-67.8 SPT
		68.0				RD	
		70.0	S-11	250 / 500	1.4 / 1.6	PB 3"	70.0-71.6; 25 min; fast coring from 70' to 71.5'
			—	50/0.3	0/0.3	DR	71.6-71.9 SPT, no recovery.
	-occasional siltstone seams (based on drill action).	72.0				RD	
		74.0					fine to medium sands with occasional siltstone fragments in return fluid.
		76.0					
		78.0					
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MW0266A	SHEET NO. 4 OF 6	DH-3 (PIEZ W-3)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(51.1-94'- SANDSTONE)	80.0					
SP-SM	- occasional gravel lenses		S-12	250 / 500	0.85 / 1.0	PB 3"	80.0-81.0; 19 min; 5mm drilling to mod chatter
			B-10	50/0.2	0.2/0.2	DR	81.0 - 81.2 SPT
		82.0				RD	
		84.0					
		86.0					
		88.0					
		90.0	S-15	350 / 550	1.2 / 1.3	PB 3"	90.0-91.3; 3 min; 3L chatter
			—	50/0.3	0/0.3	DR	91.3-91.6 SPT, Sample lost.
		92.0				RD	
SP-SM	94'-101.3'- CONGLOMERATE (SILTY GRAVELLY SAND); orange-yellow brown; moist; very dense; fine to coarse; 20-40% gravels up to 1 1/2"; 5-12% low plasticity fines; moderately cemented; friable.	94.0					
			S-16	500	0.9 / 1.2	PB 3"	95.0-96.2; 45 min; Slight to mod chatter
		96.0	—	50/0.3	0/0.3	DR.	96.2-96.5 SPT, sample lost
		98.0					
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 5 OF 6	DH-3 (PIEZ W-3)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(94'-101.3 - CONGLOMERATE)	100.0	S-17	300 / 600	1.0 / 1.1	PB 3"	100.0-101.1
			A-11	50/0.7	0.2/0.2	DR	101.1-101.3 SPT
	TD=101.3	102.0					BORING TERMINATED 1/16/90.
		104.0					Construct Well W-3 on 1/17/90.
							WELL CONSTRUCTION
		106.0					0'-49.5' - 2" blank, sch 40 PVC
							49.5'-99.5' - Well Screen, 0.02" slotted.
							44.5-99.5' - Filter pack; #3 sand.
		108.0					41'-44.5' - Bentonite Seal; 3/8" pellets
							0-41' - Grout seal; cement/bentonite mix.
		110.0					
		112.0					
		114.0					
		116.0					
		118.0					
		120.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 6 OF 6	DH-3 (PIEZ W-3)

BORING LOCATION WEST CRACK AREA 832W, 5.5' OF BA-1		GROUND EL. 522.0'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING	TOTAL DEPTH 21.7'
DRILL RIG FAILING 750 MUD ROTARY / BORING DIA. 5 7/8"	DATE DRILLED 1/17/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	FILL LINER	0.0					
AC	0.0'-0.25'- ASPHALT LINER					FA/RD	Auger to 4' with 6" Flight Auger. Cleaned out hole with 5 7/8" tricone bit.
SM-SC	0.25'-7.2'- SILTY GRAVELLY SAND; moderate yellow brown; moist to very moist; dense; fine to medium; 10-20% fine to coarse gravel; 15-20% low to moderate plasticity fines.	2.0					
		4.0	S-1	300 psi ↓ 400 psi	2.5 / 2.5	PB 3"	4.0-6.5 - 3" Pitcher Barrel (PB) sampling; 5 min; slight chatter
		6.0	B-1	25 / 28 / 29	1.5 / 1.5	DR	6.5-8.0 Standard Penetration Test (SPT) 140# hammer 30" free fall
SM	7.2'-10.0'- GRAVELLY SILTY SAND; dark grey; damp-moist, dense; fine to medium; 20-40% low plasticity fines; 10-30% fine to coarse gravel.	8.0				RD	
	PICO FM (FOUNDATION)	10.0					
SP-SM	10'-21'- CONGLOMERATE (SILTY GRAVELLY SAND); yellow brown; moist; appears dense; fine to coarse, mostly medium; fine to coarse gravel; 5-12% fines.	12.0					
		14.0					
		16.0					
		18.0					
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-4
		PROJECT NO. MWD266A / SHEET NO. 1 OF 5	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(10'-21' CONGLOMERATE)	20.0					
SP-SM	21'-~25'-SANDSTONE (SILTY SAND); yellow brown with faint orange mottling, moist; very dense; fine to coarse; 5-10% fine-medium subround-subangular gravel; 10% fines; weakly cemented.	22.0	S-2	250 / 500	2.5/2.5	PB 4"	20.0-22.5: 7min; smooth drilling to slight chatter
			B-2	50/0.4	0.4/0.4	DR	22.5-22.9 SPT
		24.0				RD	Slight fluid loss from 22.5' down.
	-25'-increased gravel content.	26.0					
SP-SM	~26'-~41'-CONGLOMERATE (SANDY GRAVEL to GRAVELLY SAND); moderate yellow brown; moist to very moist; fine to medium subround gravel; fine to coarse sand; ~10% fines; weakly cemented.	28.0					
	-30'-32'-SILTSTONE SEAM? (based on drill action).	30.0	S-3	250	1.1/2.5	PB 3"	30.0-32.5: 4min: Soft coring siltstone seam?
		32.0					
		34.0					Drill out to 41' slight to moderate drill chatter; fine-coarse sand and gravels in return fluid.
		36.0					
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 2 OF 5	DH-4

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(~26'~41'-CONGLOMERATE)	40.0					
						RD	
		42.0	S-4	25.0	1.8/2.0	PB 3"	41.0-43.0; 2 min; Slight chatter; lost circulation @ 43'
Fissure	42.5'~50'-SANDSTONE (SAND-SILTY SAND); dusky yellowbrown, faint orange mottling; fine to medium; 5-15% fines; occasional gravel.		E-3	17 / 44	0.5/1.0	DR	43.0-44.0 SPT
SP-SM	-43'-44'-Fissure in Formation (Based on loss of fluid circulation)	44.0	S-5	15.0	2.1/2.5	PB 4"	44.0-46.5; 5 min; Slight chatter.
ML	-44'-50'-occasional interbedded grey siltstone seams dipping 5°-10° off horizontal.	46.0					46.5' End of day; Fluid level = 7'. 1/18/90-Fluid level = 27.5'
ML	-46.5'-SANDSTONE (SAND); As above; appears "spongy" to touch.		—	50/0.4'	0/0.4	DR	46.5'-46.9'; SPT; No recovery
SP-SM		48.0				RD	
SP-SM	50'-91.7'-CONGLOMERATE (SILTY GRAVELLY SAND); dusky yellow brown w/orange fe-oxide stains; moist; very dense; fine to coarse, mostly fine; 20-30% subround gravels; 10-15% fines; weakly cemented.	50.0	S-6	19.0	1.0/2.4	PB	50.0-52.5; 4 min; Slight chatter.
		52.0	B-4	50/0.5	0.5/0.5	DR	52.4-52.9 SPT
						RD	
		54.0					
		56.0					
	-increase moisture to very moist.		S-7	19.0	2.1/2.5	PB 3"	56.0-58.5; 3 min; smooth drilling to mod chatter.
		58.0					
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 3 OF 5	DH-4

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(50-91.7' - CONGLOMERATE)						
SP-SM		60.0				RD	
SP-SM	~61-62.25' - SANDSTONE (SILTY SAND); yellow brown; moist; fine to medium.						
		62.0					
SP-SM			S-8	25.0 / 500	0.8 / 1.0	PB 4"	62.0-63.0: 20 min; Slight chatter; gravels blocked of portion of tube.
GP	-63'-63.8' - SANDY GRAVEL lense.		S-9	25.0 / 650	0.7 / 0.8	PB 4"	63.0-63.8; 15 min; Smooth drilling to sl chatter.
SP-SM	63.8' - CONGLOMERATE (cemented) (CA-1C) as above.	64.0	S-10	25.0	1.4 / 1.7	PB 3"	63.8-65.5; 3 min; Slight fluid loss @ 64.2'
	64'-67' - thin (1"-2") interbedded sandstone lenses.	66.0	S-11	25.0 / 400	1.6 / 1.6	PB 3"	65.5-67.1; 5 min; Slight chatter
				50/0.3	0.3/0.3	DR	67.1-67.4 SPT
		68.0	S-12	300 / 400	1.5 / 1.5	PB 3"	67.4-68.9; 8 min; Smooth drilling to slight chatter
	70.5'-91.7' - CONGLOMERATE moderately cemented.	70.0	S-13	300	1.4 / 1.6	PB 3"	68.9-70.5; 6 min; slight drill chatter.
		72.0	S-14	300 / 500	1.4 / 1.8	PB 3"	70.5-72.3; 26 min; Slight chatter. 71.5' harder drilling
	72.8'-74' - SILTSTONE SEAM.		S-15	300 / 400	1.5 / 1.8	PB 3"	72.3-74.1; 14 min; Slight chatter.
ML		74.0				RD	
SP-SM		76.0					
	▽ 1/20/00 77.5' stabilized groundwater.	78.0					
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 4 OF 5	DH-4

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(50'-91.7' CONGLOMERATE)	80.0					
SP-SM	- CONGLOMERATE (S.-y GRAVELLY SAND); as above; moist to wet.		S-16	300 / 500	1.7 / 2.0	PB 3"	80.0-82.0; 14min; Slight chatter.
		82.0				RD	
		84.0					
			S-17	250 / 550	1.0 / 1.0	PB 3"	85.0-86.0; 5 min; Slight chatter.
		86.0				RD	
		88.0					
		90.0	S-18	400 / 500	1.4 / 1.6	PB 3"	90.0-91.6; 13 min 91.6'-91.7': SPT
	TD=91.7'	92.0		50/.1'	.1/.1	DR	BORING TERMINATED 1/19/90; Fluid level @ 0'. 1/19/90 - Fluid level @ 20.5', hole caved to 87'. Drillhole fluid called to 83'. Groundwater stabilized at ~77.5' after 2.5 hrs. Drillhole grouted with cement bentonite mix via tremie pipe on 1/20/90.
		94.0					
		96.0					
		98.0					
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MW0266A	SHEET NO. 5 OF 5	DH-4

BORING LOCATION 10' southeast of DH-4, west crack area.			GROUND EL. 522.0'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING CO.		TOTAL DEPTH 65.8'
DRILL RIG FAILING 750	BORING DIA. 4 7/8"	DATE DRILLED 1-19-90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
FILL	LINER FILL	0.0				RD	Advance hole with 4 7/8" tri-cone bit for rotary drilling (RD). Circulate hole with bentonite mud drill fluid. Drill out to 40' to sample saturated sand encountered in DH-4 at depths of 42', 48' and 65'. See DH 4 log for material description to 42'.
SM	0-7' - GRAVELLY SILTY SAND; moderate yellow brown.	2.0					
		4.0					
		6.0					smooth to slight drill chatter. Fine to coarse sands in return fluid.
	7'-10' - SILTY SAND; dark grey						
SM		8.0					
	PICO FM (FOUNDATION)	10.0					
SP-SM	10'-43' - CONGLOMERATE; SILTY GRAVELLY SAND; see DH-4 log for description.	12.0					
		14.0					
		16.0					
		18.0					17'-17.5' - moderate drill chatter.
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-4A
		PROJECT NO. MWD266A / SHEET NO. 1 OF 4	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(10'-43'-CONGLOMERATE)	20.0		0		RD	slight to moderate drill chatter.
		22.0					-22'-slight fluid loss.
		24.0					-fine to coarse sand fine to medium gravels; occasional siltstone in return fluid.
		26.0					
		28.0					
		30.0					30'-30.5'-moderate chatter.
							30.5'-35'-smooth drill, fine to medium sand in return fluid.
		32.0					
		34.0					
		36.0					
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 2 OF 4	DH-4A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(10'-43' CONGLOMERATE)	40.0				RD	-40.5'- Slight fluid loss.
	42'- CONGLOMERATE (SILTY GRAVELLY SAND); orange brown; moist to very moist; very dense; fine to coarse; 15%-30% fine gravels; <10% fines; weakly cemented.	42.0	B-1	50/0.33'	0.2'/0.33'	DR	42.0'-42.33'- Drive sample: Standard Penetrometer (SPT) using 140# hammer with 30" fall.
						RD	
SP-SM			B-2	54/50/3"	0.8'/0.8'	DR	-42'-43'- Fluid loss.
		44.0				RD	43'-43.8'- SPT. Drill out to 48'. Slight to moderate drill chatter.
	~43'-50' SANDSTONE (SAND); light orange brown; very moist, fine to medium; <10% gravels.	46.0					
	-48'- SANDSTONE; as above	48.0					-moderate chatter.
			B-3	50/0.42	.42/.42	DR	48'-48.42'- SPT.
						RD	Drill out to 65'.
	50'-64'- CONGLOMERATE	50.0					Slight drill chatter
SP-SM		52.0					
		54.0					
		56.0					
		58.0					
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-4A
		PROJECT NO. MWD266A / SHEET NO. 3 OF 4	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM		60.0				RD	
		62.0					
SP	~64'-65.8'-SANDSTONE (SAND): yellow brown with orange mottling, very moist, very dense, fine with some medium & coarse; trace fine gravel.	64.0	B-4	53 / 50/.3'	.9/.9	DR	65'-65.8'-SPT
	Total Depth 65.8'	66.0					Boring terminated. borehole backfilled with cement/bentonite grout placed via tremie pipe from bottom of hole to surface. Completed 1.19.90.
		68.0					
		70.0					
		72.0					
		74.0					
		76.0					
		78.0					
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 4 OF 4	DH-4A

BORING LOCATION WEST CRACK AREA UPSLOPE OF		GROUND EL. 532.0
DEPTH/ELEV. WATER _	DRILL CONTRACTOR PITCHER DRILLING	TOTAL DEPTH 92.9
DRILL RIG FAILING 250 HOLE MASTER / BORING DIA. 5 7/8"	DATE DRILLED 1/19 - 1/	LOGGED BY A.L.

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	LINER FILL	0.0					Start 3:15 pm. 1/19/90
ASPHALT	0.0-0.25' - ASPHALT LINER					FA/RD	Augered to 6' with. 6" Flight Auger. Set 4' of casing. Cleaned out hole with 5 7/8" tricone bit.
SM	0.25-8.5' - GRAVELLY SILTY SAND; yellow brown with dark brown mottling; moist to wet; appears medium dense to dense; fine to coarse; 10-20% fine gravel; 10-20% low plasticity fines.	2.0					
	- occasional lifts of silty sand.	4.0					
		6.0	S-1	350 psi / 450 psi	2.5 / 2.5	PB 4"	6.0-8.5; 4" Pitcher. Barrel (PB) sampling; 2 min; smooth drilling
	PICO FM (FOUNDATION).	8.0					
SP	8.5-38' CONGLOMERATE (GRAVELLY SAND); yellow brown with orange mottling; very moist; very dense; fine to coarse; 10-20% fine-medium gravels; <5% fines.		B-1	43 / 50/0.3	0.8 / 0.8	DR	8.5-9.3 Standard Penetration Test (SPT) 140# hammer 30" free fall.
		10.0				RD	End of Day.
	- occasional silty sand (SM) lenses.	12.0					
		14.0	—	300 / 400	0 / 2.5	PB 4"	Starts at 7 a.m. 1/20/90. 14.0-16.5; 23 min; slight chatter; sample lost when drill rose [illegible]
		16.0					
	- SILTSTONE fragments within conglomerate.	18.0	S-2	300 / 400	2.0 / 2.5	PB 4"	16.5-19.0; 5 min
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-5
		PROJECT NO. MWD266A / SHEET NO. 1 OF 5	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SP	(8.5'-43'-CONGLOMERATE)	20.0				RD	
		22.0					
	-24' increase fines to ~10-15%	24.0					
SP-SM			S-3	300 / 500	1.2 / 1.8	PB 4"	24.0 - 25.3; 5 min; Slight to mod chatter; Tip crumpled.
		26.0	B-2	50/0.3	0.2/0.3	DR	25.8 - 26.1 SPT
						RD	
		28.0					
		30.0					
		32.0					
	-gravels subangular to subround.	34.0	S-4	450 / 550	1.4 / 1.5	PB 4"	34.0-35.5; 10 min; Slight chatter; Tip very slightly crumpled.
			B-3	50/0.3	0.1/0.3	DR	35.5-35.8 SPT
		36.0				RD	
GP	-38'-43' CONGLOMERATE GRADES TO SANDY GRAVEL; yellow brown with orange fe-oxide staining; very moist; very dense; fine to coarse; subround; 20-30% fine to coarse sand; <5% fines.	38.0					
			S-5	400	2.5 / 2.5	PB 4"	39.0-41.5; 13 min; mod. chatter; tip slightly crumpled.
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-5
		PROJECT NO. MWD266A / SHEET NO. 2 OF 5	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(38'-43'-CONGLOMERATE)	40.0	S-5	400 / 600 / 450	2.5/2.5	PB 4"	
	-43'-CONGLOMERATE grades to gravel sand.	42.0	S-6	400	1.7/2.0	PB 4"	41.5-43.5; 7min; Smooth drilling.
SP	-43'- CONGLOMERATE grades to gravelly sand.	44.0	S-7	400 / 450	2.1/2.5	PB 4"	43.5 - 46.0; 5min; Slight chatter
ML/SM	-44'-45.6'-thin interbedded siltstone (ML) and silty sandstone (SM) lenses.						
SW-SM	45.6'-~52'-SANDSTONE (SAND-SILTY SAND) yellow brown with red fe-oxide stains; very moist; very dense; Fine to coarse; <5% gravels; 5-10% fines; occasional siltstone fragments.	46.0	S-8	400 / 650	1.2/1.5	PB 4"	46.0-47.5; 5 min; Slight chatter
SP	-47.6'-SANDSTONE poorly graded; Fine to medium grained.	48.0	S-9	400 / 450	1.8/2.5	PB 4"	47.5-50.0; 6min
		50.0	B-4	50/0.2	0.2/0.2	DR	50.0-50.2 SPT.
						RD	
SP-SM	52'-86.5' CONGLOMERATE (SILTY GRAVELLY SAND); mottled yellowbrown-orange brown; moist; very dense; Fine to coarse; 20-40% fine to coarse subround gravel; 5-10% fines.	52.0					
		54.0					
		56.0	S-10	400 / 500	1.1/1.3	PB 4"	55.0-56.3; 8 min; Slight chatter; Tip slightly crumpled,
			B-5	50/0.3	0.3/0.3	DR	56.3-56.6 SPT
		58.0				RD	
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-5
		PROJECT NO. MWD266A / SHEET NO. 3 OF 5	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(52'-86.5' CONGLOMERATE)	60.0					
ML	60'-61'- SILTSTONE; yellow-orange brown; damp; hard; low plasticity; thin (1") interbedded fine sandstones.		S-11	400 / 600	2.0 / 2.5	PB 4"	60.0-62.5; 8 min Slight chatter; tip slightly crumpled
SP-SM	-61'- CONGLOMERATE; As above; moist.	62.0	B-6	50/0.4	0.4/0.4	DR	62.5-62.9 SPT
						RD	
		64.0					
			S-12	400 / 600	0.8 / 1.3	PB 4"	65.0-66.3: 10 min; mod chatter.
	- occasional well graded layers and interbedded sand lenses.	66.0	B-7	50/0.2	0.1/0.2	DR	
						RD	
		68.0					
		70.0	S-13	400 / 600	1.2 / 1.5	PB 4"	70.0-71.5; 16 min; mod chatter
			B-8	50/0.2	0.2/0.2	DR	71.5-71.7 SPT
		72.0				RD	End of the day.
		74.0					
							Starts at 7:30am 1/21/90
SP-SM	~75'-76.5'- SILTY SAND lense.		S-14	400 / 150	2.4 / 2.5	PB 4"	75.0-77.5; 3 min; Slight chatter
SP-SM		76.0	B-9	50/0.2	0.2/0.2	DR	77.5-77.8 SPT
		78.0				RD	
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 4 OF 5	DH-5

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(52'-92.9' CONGLOMERATE)	80.0					
SP-SM	- Decrease in gravel content to 10-20%, fine to medium.		S-15	400	2.3/2.5	PB 4"	80.0-82.5; 1 min; Slight chatter.
		82.0	B-10	50/0.3	0.3/0.3	DR	82.5-82.8 SPT
		84.0				RO	
		86.0	S-16	400 / 500	2.1/2.5	PB 4"	85.0-87.5; 4 min; tip slightly crumpled
SP	-86.5'-91'- SANDSTONE (SAND); yellow brown with faint orange mottling; very moist; very dense; Fine to coarse; trace gravels; <5% fines	88.0	B-11	50/0.3	0.3/0.3	DR	87.5-87.8 SPT
		90.0	S-17	400	2.3/2.5	PB 4"	90.0-92.5; 2 min; tip slightly crumpled
SP-SM	-91'-92.9' CONGLOMERATE AS above.	92.0	B-12	50/0.4	0.4/0.4	DR.	92.5-92.9 SPT
	TOTAL DEPTH = 92.9'	94.0					BORING TERMINATED 10:00am 1/21/90 Hole flushed with water to clean out drill mud. Hole grouted to surface with cement/bentonite mix via tremie pipe.
		96.0					
		98.0					
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. DH-5
		PROJECT NO. MWD266A	SHEET NO. 5 OF 5	

BORING LOCATION DOWNSLOPE TOE OF SOUTHWEST EMBANKMENT			GROUND EL. 550.0'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING CO.		TOTAL DEPTH 141.0'
DRILL RIG FAILING 750 MUD ROTARY	BORING DIA. 5 7/8"	DATE DRILLED 1/20-23/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	FILL / TOPSOIL	0.0					Advance hole with 6" Flight auger to 4'. Set 6" casing. Convert to 5 7/8" tricone, circulate hole with bentonite mud drill fluid.
CL	0.0'-1.0' - SANDY CLAY; dark brown; damp; low plasticity fines; fine to med sand; fine gravels; organics.			0		RD	
SP	1.0'-2.0' - SAND-GRAVELLY SAND; light reddish brown; damp; occasional roots, organics.	2.0					2'- hard augering (probable Pico Fm?)
	PICO FM						
SP	2-5.5' - CONGLOMERATE (GRAVELLY SAND); light red brown; damp; fine to medium; fine to medium subround gravel.	4.0					
ML	5.5'-8.5' - SILTSTONE; mottled red-yellow brown	6.0		180			5.5'- light red clay in mud; increase pr. down to 180 psi; smooth drilling.
SP	8.5'-17.5' - SANDSTONE (SAND); light yellow brown with faint orange mottling; damp to slight moist; very dense; fine to medium; occasional fine gravel; <5% fines; weakly cemented; friable; - occasional gravelly lenses to 17.5'.	8.0		0			3.5'- sand & gravels in return fluid.
		10.0	S-1	200 ↓ 250	1.3 / 2.5	Pb 3"	10'-12.5' 3" Pitcher Barrel (Pb) sampling; 3 min; smooth drilling to 11.5'. slight drill chatter to 12.5'.
		12.0	B-1	32 50/0.4'	0.9 / 0.9	DR	12.5'-13.4' - Drive 2" o.d. Standard Penetrometer (SPT) with 140# hammer / 30" fall.
		14.0		0		RD	
		16.0					-15.5'- harder drilling
ML	17.5'-23.4' - SILTSTONE; light orange brown; damp; appears stiff; low plasticity; 10-20% very fine sand; trace red fe-oxide stains; laminated with sandy partings.	18.0					
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. DH-6 (PEE W-4)
		PROJECT NO. MWD266A	SHEET NO. 1 OF 8	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML		20.0	S-2	250 / 500	1.9 / 2.5	Pb 3"	20.0'-22.5' 19 min; smooth drilling.
	-22.5'-23.4' - SILTSTONE, As above; color change to light gray with dark red contorted laminations; hard.	22.0	B-2	28 50/0.4	0.9 / 0.9	DR	22.5'-23.4' - SPT
SW	23.4'-40': CONGLOMERATE (SELT; GRAVELLY SAND); light red-orange brown; occasional layers of heavy red fe-oxide staining; damp; very dense; fine to coarse, well graded; 10-30% fine to coarse subround gravels; <10% low plastizity fines; weakly to moderately cemented; friable.	24.0		0		RD	fine sand in tip of shoe. 23.0' - slight to moderate drill chatter.
		26.0					
		28.0					
		30.0	S-3	250 / 500	1.2 / 1.4	Pb 3"	30'-31.4' - 6 min; smooth to slight drill chatter.
	-31.4' - increase moisture to moist.		B-3	50/0.3'	/0.3	DR	31.4'-31.7' - SPT
		32.0		0		RD	Slight drill chatter. Fine-coarse sands w/ some gravel in return fluid.
		34.0					
		36.0					
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 2 OF 8	DH-6 (REZ W-4)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(23.4-40' CONGLOMERATE)	40.0					
SP-SM	~40'-41.5' SANDSTONE (SAND); Yellowbrown with thin orange laminations; damp to moist; very dense; fine to coarse grained; <5% fine subround gravels; 10-12% fines; micaceous; weakly cemented.		S-4	250 ↓ 500	1.2'/1.4'	Pb 3"	40.0'-41.4'; 9 min; smooth to slight drill chatter. 41.4'- refusal.
			B-4	50/.25	.25/.25	DR	41.4'-41.65'- SPT
SW		42.0		0		RD	
	-41.5-69' CONGLOMERATE; as at 23.5'; color grades to yellowbrown with orange mottling; moderately cemented; moderately well graded.	44.0					
		46.0					
		48.0					
		50.0	S-5	250	2.3/2.5	Pb 3"	50'-52.5'- 5 min; slight drill chatter.
	-52'- moisture increase to very moist-wet; free water on grains.	52.0					
			B-5	50/.25	.25/.25	DR	52.5'-52.7'- SPT
				0		RD	
		54.0					Fine-coarse sands, fine gravels in return fluid. -54.5'- slight to moderate fluid loss.
		56.0					-55.5'- moderate to rough drill chatter.
				150 200 250			-57'- increase pulldown to 150 psi.
		58.0					
ML	-59'-59.5'- SILTSTONE (?)						-59'- easier drilling; silt cuttings in return fluid.
SW		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 3 OF 8	DH-6 (AEZ W-4)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(41.5'-69' CONGLOMERATE)						
SW		60.0	S-6	250 ↓ 500	1.6/1.9	Pb 3"	60'-61.9'; 4 min; smooth drill
		62.0	B-6	50/.4'	.4	DR	61.9'-62.3'-SPT
				125		RD	62.3'-end of day; fluid level at 4'. 1/22/90-Fluid level at 26' Drill out to 70'. slight drill chatter with occassional moderate. Fine-coarse sand -/some gravels in return fluid.
		64.0					
		66.0					
		68.0		200			
	69'-74'-SANDSTONE (SILTY SAND); yellow brown; damp; very dense; fine to coarse; <10% fine gravels; 5-12% fines; weakly cemented. occasional thin siltstone seams.	70.0	S-7	200 ↓ 450	0.5/1.7	Pb 3"	70'-71.7'; 9 min; slight drill chatter.
SP-SM		72.0	B-7	50/.3'	.3'/.3'	DR	71.7'-72.3'-SPT
				0		RD	some siltstone fragments in return fluid to about 74'.
	74'-80' CONGLOMERATE (?)	74.0					74'-slight to moderate drill chatter; fine to coarse sands some gravels in return fluid.
SW				150			
		76.0	B-8 (cutting)				
		78.0					
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 4 OF 8	DH-6 (REF. W-4)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP	30'-82'- SANDSTONE (SAND); yellow brown with orange mottling; very moist; dense; fine with some coarse; <10% nonplastic fines; <5% gravel; weakly cemented.	80.0	S-8	250 ↓ 500	1.0/1.2	Pb 3"	80'-81.2'; 12 min; slight drill chatter.
			—	50/.3'	0/.3	DR	81.2'-81.5; SPT-no recovery.
		82.0		150		RD	
SW	82'-91' CONGLOMERATE (?)			0			
	-83.5-84.5'- SILTSTONE SEAM (?)	84.0					83.5'-84.5'- siltstone fragments in return fluid.
			B-9 (cutting)				85'- moderate drill chatter.
		86.0					
		88.0		200			
		90.0		400			
SM-SP	91'-93'- SANDSTONE (SILTY SAND); orange brown with red fe-oxide stains; saturated; very dense; very fine to fine with some coarse; trace gravel; ~10% fines; weakly cemented.		S-9	250 ↓ 350	1.8/2.0	Pb 3"	90'-92'; 10 min; smooth to slight chatter. ▽ 91'- first water encountered.
		92.0	B-10	50/.2'	.2/.2	DR	92'-92.2'; SPT
SW	93'-141' CONGLOMERATE (see description at 100').			0		RD	92.5'- slight to moderate chatter; fine to coarse sands in return fluid.
		94.0					
			B-11 (cutting)				
		96.0					
		98.0					
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 5 OF 8	DH-6 (PIEZW-4)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SW-SM	(93'-141' CONGLOMERATE) '- CONGLOMERATE; (SILTY GRAVELLY SAND); yellow-brown with orange fe-oxide staining; fine to coarse; 10-30% fine to coarse gravel; <10% fines; moist; very dense; moderatly cemented.	100.0	S-10	350 ↓ 400	1.9/2.5	Pb 3"	100'-102.5'; 30 min; slight to moderate drill chatter. 101.9'-sample tube blocked off.
		102.0	B-12	50/.2	.2/.2	DR	102.5'-102.7'-SPT
		104.0		125		RD	Slight-moderate drill chatter; fine-coarse sands, some gravel's in return fluid.
		106.0					107'-moderate fluid loss
		108.0					
		110.0	S-11	300 ↓ 500	1.7'/2.5'	Pb 3"	110'-112.5'; 8 min; slight drill chatter.
		112.0	B-14	50/.2'	.2'/.2'	DR	112.5'-112.7'-SPT
		114.0		0		RD	Slight to moderate drill chatter; fine to coarse sands in return fluid
		116.0	B-15 (cutting)				
		118.0					
		120.0					120'-end of day fluid level at 0.0'.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 6 OF 8	DH-6 (PIEZ W-4)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(93'-141' - CONGLOMERATE)						1/23/90 Fluid at 30'
SW		120.0					
	CONGLOMERATE as above.		S-12	200 / 300	1.5 / 1.7	Pb 3"	120'-121.7' - 10 min. Slight to moderate chatter.
SM	120.6'-121.1' - SANDSTONE lense; Fine grained; silty.						120.6'-121.6' - quick smooth drill - clay?
SW-GW	- Occasional gravel lenses.	122.0	B-16	50/.1'	1'/1'	DR	121.7'-121.8'; SPT
	- interbedded sandy gravel (varying gravel percentage)			200		RD	Slight-moderate drill chatter; Fine to coarse sand; fine to med gravels.
		124.0					- occasional loud rough chatter.
		126.0					
		128.0					
	(conglomerate as above)	130.0	S-13	250 / 450	1.3 / 1.3	Pb 3"	130'-131.3' - 20 min; slight drill chatter.
			—	50/.1	0/.1'	DR	131.3'-131.4' - SPT; no recovery.
		132.0		0 / 200		RD	
	- interbedded sandy gravels (varying gravel percentage)						Slight to moderate drill chatter.
		134.0					
			B-17				
		136.0					
		138.0		250			
GW		140.0	S-14	225 / 650		Pb 3"	139'-141'; 18 min. slight to moderate chatter. 139.5' - very hard drilling.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 7 OF 8	DH-6 (PIEZ W-4)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
GW	(93'-141' CONGLOMERATE) CONGLOMERATE: grades to SANDY GRAVEL; yellow brown; moist; fine to coarse; 40% medium sand; 40% fines.	140.0	S-14	650 ↓ 300	0.8' / 2.0'	Pb 3"	
	Total Depth = 141.0'	142.0					BORING TERMINATED 1/23/90. CONSTRUCT WELL W-4
		144.0					WELL CONSTRUCTION 0'-79'-2" blank sch 40 PVC 79'-129'-Well screen; 0.02" slotted.
		146.0					76'-141'-Filter Pack; #3 sand 73.4'-76'-Bentonite seal; 3/8" pellets.
		148.0					0'-73.4'-Grout seal; cement bentonite mix. Well completed 1/23/90
		150.0					
		152.0					
		154.0					
		156.0					
		158.0					
		160.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 8 OF 8	DH-6 (PIEZ W-4)

BORING LOCATION SOUTH OF RESERVOIR			GROUND EL. 530.3'
DEPTH/ELEV. WATER _	DRILL CONTRACTOR PITCHER DRILLING CO.		TOTAL DEPTH 140.9'
DRILL RIG FAILING 750 MUD ROTARY	BORING DIA. 5 7/8"	DATE DRILLED 1/30-2/9/90	LOGGED BY JM/AL

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	FILL (POST 1980 TOPO)	0.0					11:40 AM.
SC/CL	0.0'-34'- GRAVELLY CLAYSAND TO SANDY CLAY; yellow brown-red brown with black clay mottling; varying amounts of fine to coarse sand + gravel, and low to moderate plasticity fines; typically intermixed in subhorizontal lifts.	2.0		0		RD	Advance hole with mud rotary drilling (RD) using 5 7/8" tricone bit. Circulate cuttings with bentonite drill mud. smooth to slight drill chatter. Return fluid color: yellow brown.
		4.0					
		6.0					
		8.0					
		10.0	S-1	300 / 450	1.9 / 2.3	Pb 4"	10.0'-12.3'-4" Pitcher Barrel (Pb) sampling; 12 min; smooth to slight drill chatter.
	-CLAYSAND-SANDY CLAY; slightly moist to moist; dense-hard; appears tight.	12.0	B-1	13 / 24 / 22	1.2 / 2.5	DR	12.3'-13.8'- Drive 2" o.d. standard Penetrometer (SPT) sampler w/140# hammer at 30" fall.
		14.0		0		RD	Drill out to 20'; slight drill chatter, occasional moderate
		16.0					
		18.0					
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. 14W0726/-A / SHEET NO. 1 OF 8	DH-7 PIEZ

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SC/CL	(0-34'- FILL) - SANDY CLAY; dark grey; some organics (roots and dead grass).	20.0	S-2	400 ↓ 450	1.7/2.2	Pb 4"	20'-22.2'; 12 min; smooth drilling.
		22.0					Drill out to 30'. smooth to slight drill chatter.
		24.0					
		26.0					
		28.0					
		30.0	S-3	300 ↓ 450	1.9/2.5	Pb 4"	30'-32.5'; 16 min; slight drill chatter.
		32.0					
	- SANDY CLAY; dark grey as above. FILL (PRE-1980 TOPO)		B-2	12/21/27	1.2/1.5	DR	32.5'-34'; SPT.
SC/CL	34-55'- CLAYEY SAND - SANDY CLAY; predominately grey brown to dark grey with occasional red brown; slightly moist; dense-hard; fine to medium sand; 40-60% low-moderate plasticity fines; <10% gravels; Typically appears intermixed in horizontal lifts	34.0		150			Drill out to 40'. slight drill chatter. fine-coarse sands and occasional black/red clay in return fluid. -34'- stiffer drilling; increase pulldown to 150 psi. probable old/new fill contact(?) note: return fluid color change to grey-yellowbrn at ~30'.
		36.0					
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. / SHEET NO.	DH-7

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER _	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(34'-55' FILL)	40.0					
SC/ CL	- SANDY CLAY; dark grey; slightly moist, appears tight.	42.0	S-4	200 ↓ 450	2.1/2.5	Pb 4"	40'-42.5'; 14 min; slight drill chatter. End of day; fluid level: 1'-2'.
		44.0		0 150		RD	1/31/90 fluid level: 11'. Drill out to 50'. - occasional organics in return fluid to 49'.
		46.0					
		48.0					
		50.0	S-5	400 ↓ 500	2.2/2.5	Pb 4"	
	- SANDY CLAY TO CLAYEY SAND; slightly moist to moist near contact.	52.0	B-3	20 50/5"	0.9/0.9	DR	
		54.0				RD	
	PICO FM (FOUNDATION)						
SP-SM	55'-72' - CONGLOMERATE (SILTY GRAVELLY SAND); light reddish brown; moist; fine to coarse sand; 10-15% subangular - subround gravel; 10% fines; weakly cemented; friable.	56.0	S-6	400 ↓ 500	2.2/2.5	Pb 4"	55.0'-57.5'; 20 min
	- occasional interbedded sandstone.	58.0				RD	Drill out to 60'
SW-SM	~ - 59'-61.2' - SANDSTONE (SILTY SAND) fine to medium; 10% gravels; moist.	60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD 26-A / SHEET NO. 3 OF 8	DH-7 W-5 5A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SW-SM	(55'-72'-CONGLOMERATE)	60.0	S-7	400 / 500	1.5/2.2	PD 4"	60'-62.2'-37min; Slight drill chatter.
SP-SM	-61.2'- CONGLOMERATE; as above; moist.	62.0	B-4	50/.25	0.1/0.25	DR	62.2'-62.45'; SPT
						RD	Drill out to 70'.
		64.0		150			
		66.0					
		68.0					
GW	~69'- CONGLOMERATE grades to sandy gravel; well graded; very moist; moderately cemented; friable.	70.0	S-8	450	0.5/0.7	PD 4"	70'-70.7'. 26min; Slight drill chatter.
						RD	
ML	72'-78.5'- SILTSTONE (SILT); olive grey with orange mottling; damp; low plasticity; 10-15% very fine sand; occasional red fe-oxide stained sandy partings.	72.0	S-9	300	2.4/2.5	PD 3"	72'-74.5'; 10min; smooth drill; siltstone in return fluid.
		74.0	B-5	34/50/5"	.9/.9	DR	74.5'-75.4'; SPT
		76.0		0		RD	Drill out to 80', smooth drill.
SP-SM	78.5'-80.5'- CONGLOMERATE (SILTY GRAVELLY SAND); yellow brown w/orange mottling; moist; fine to coarse, mostly medium; 30% subround gravel to 1/2"; weakly cemented; friable.	78.0					-78.5'- moderate drill chatter (siltstone/sandstone contact)
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD766A / SHEET NO. 4 OF 8	DH-7 PIC2

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(78.5'-120.5'- CONGLOMERATE)	80.0	S-10	300	0.8/0.9	Pb 3"	80'-80.9'; 20 min; slight drill chatter.
						RD	Drill out to 90'
		82.0		150			
		84.0					
		86.0					
		88.0					
	-90'- conglomerate moist to wet; weakly cemented; friable.	90.0	S-11	200 / 600	0.8/0.9	Pb 3"	90'-90.9'; 8 min; smooth drill.
	- occasional sandstone lenses.		B-6	50/0.3'	0.3/0.3	OR	End of Day fluid level: 0'. 2/1/90 fluid level: 31.5' Drill out to 100'.
		92.0		0		RD	
		94.0					
		96.0					
		98.0					
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD7666A / SHEET NO. 5 of 8	DH-7 W-5 & 5A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(78.5'-120.5' CONGLOMERATE)	100.0					
SP-SM	-100'; CONGLOMERATE; As above; moist; very dense; weakly cemented.		S-12	350 ↓	1.9/2.5	Pb 3"	100'-102.5'; 6 min; Moderate drill chatter.
		102.0	B-7	50/0.15'	.15/5	DR	102.5'-102.65'; SPT.
		104.0		150		RD	Drill out to 110'. Moderate drill chatter with occasional load, rough chatter.
		106.0					
		108.0					
	-110'; CONGLOMERATE; as above; moist; gravels to 1½".	110.0	S-13	250 ↓ 400	1.9/2.5	Pb 3"	110'-112.5'; 10 min; moderate chatter.
		112.0					
		114.0				RD	DRILL out to 120'. moderate drill chatter
		116.0					116'- fine-coarse sand in return fluid.
		118.0					117'-117.5'- smooth drill. 119'- increased siltstone fragments in return fluid.
		120.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 6 OF 8	DH-7 W-515A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP	(78.5'-120.5'-CONGLOMERATE) -SANDSTONE (SAND): fine; moist; thin dark red fe-oxide laminations above siltstone contact.	120.0					120'-122.5'; 27 min; slight chatter to 120.5'; smooth drill from 120.5'. -Sample blocked off at -120.3'
ML	120.5'-126'; SILTSTONE (SILT); mottled dirt grey-orange; damp; low plasticity; 20-30% very fine micaceous sand; hard; laminated.	122.0	S-14	350 / 500	0.3 / 2.5	Pb 3"	
			B-9	50/0.4'	.4'/.4'	DR	122.5'-122.9'; SPT
		124.0	S-15	300 / 400	1.9 / 2.5	Pb 3"	122.9'-125.4'; 22 min; smooth drill.
							Drill out to 130'.
SP-SM	126'-140.9'; CONGLOMERATE (SILTY GRAVELLY SAND); mottled orange-yellow-brown; very moist-wet; very dense; fine to coarse, mostly medium; 30-40% gravels to 1½"; 10% fines; weakly cemented.	126.0		0 / 150		RD	126' slight to moderate drill chatter. 127' driller notes harder drilling.
		128.0					
		130.0	S-16	350	.6/.8	Pb 3"	130'-130.8'; 15 min; slight drill chatter.
			—	50/.2'	—	DR	130.8'-131.0'; SPT; no recovery
		132.0		250		RD	Drill out to 140'. moderate drill chatter.
		134.0					-135': End of day, fluid level: 6'. 2/2/90: fluid level: ~45'.
		136.0					
		138.0		130			
		140.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 7 OF 8	DH-7 (W-5:5A)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(126'-140.9'-CONGLOMERATE) - CONGLOMERATE; as above; wet.	140.0'	S-17	300 700	0.6 / 0.9	Pb 3"	140'-140.9'; 16 min; slight drill chatter.
	Total Depth=140.9'.						Boring Terminated. 2/2/90 Hole flushed with water to clean out drill mud. Construct well pair: W-5, W-5A.

WELL CONSTRUCTION

W-5

0-80': 2" blank sch. 40 pvc.

80'-115': Wellscreen: 0.02" slotted.

76.5'-115.5': Filter Pack; #3 sand.

71.0'-76.5': Bentonite seal; 3/8" pellets.

0-71'; Grout seal; cement/bentonite mix placed via tremie pipe.

W-5A

0'-138': 3/4" pvc riser.

138'-140'; 1.5" ceramic piezometer

125'-140.9': Filter pack; #3 sand.

115.5'-125': Bentonite seal; 3/8" pellets.

Wells completed 2/2/90.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 8 OF 8	DH-7 (W-5 & 5A)

BORING LOCATION			GROUND EL. ~528.8'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PIRHER DRILLING CO.		TOTAL DEPTH 37.3'
DRILL RIG FAILING 750	BORING DIA. 5 7/8"	DATE DRILLED 1.24.90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	FILL	0.0					
SC/ CL	0.0'-33' - GRAVELLY CLAYEY SAND - SANDY CLAY; yellow brown to reddish brown with dark grey, mottled; slightly moist to moist; dense or hard; varying percentage of fine to coarse sand and gravel; 30-60% low plasticity fines; contains siltstone fragments and localized layers of intermixed dark grey clay.	2.0		0		RD	Advanehole with rotary drilling (RD) using 5 7/8" trizone bit. Circulate hole with bentonite drill mud. -slight drill chatter. fine-coarse sands, fine gravels in return fluid. return fluid color: light yellow brown.
		4.0					
		6.0					
		8.0					
		10.0					10'-12.5' - 4" Pitcher Barrel (Pb) sampling; 10min run; smooth to slight drill chatter.
	-10'-14' - GRAVELLY CLAYEY SAND; as above; moist; dense.		S-1	250 ↓ 500	2.3 / 2.5	Pb 4"	-11.5' increase pulldown to 500psi.
		12.0					
			B-1	10 / 20 / 12	1.4 / 1.5	DR	12.5'-14': Drive 2" o.d. sampler for Standard Penetration Testing (SPT) with 140# hammer at 30" fall.
		14.0		0		RD	Drill out to 20'. Smooth to slight drill chatter, occasional moderate.
		16.0					
		18.0					
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-7A
		PROJECT NO. MWD266A	SHEET NO. 1 OF 2

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
CL	(0-33' - FILL)	20.0	S-2	300 / 550	2.0 / 2.5	Pb 4"	20'-22.5'; 10 min; slight drill chatter. - stiffer drilling.
SP-SM	~22'-26' SAND; light red brown; moist; dense; very fine to fine sand; 10-12% fines; <10% gravel.	22.0	S-3	500 / 550	2.5 / 2.5	Pb 4"	-25' end of day (2:30pm; 1/24). 1/30/90 - hole sloughed to 13', drill out to 25'.
SC	26'-33' - CLAYEY SAND; reddish brown; slight moist to moist; dense; fine; 10-20% low plasticity fines; intermixed dark grey sandy clay.	24.0	B-2	10 / 21 / 29	1.2 / 1.5	DR	25'-26.5'; SPT
		26.0	S-4	250 / 350	2.0 / 2.5	Pb 4"	26.5'-29.0'; 14 min; slight drill chatter.
		29.0	S-5	350 / 550	1.9 / 2.2	Pb 4"	note trace black clay on tip of S-4. 29'-31.2'; 18 min; slight drill chatter. Pb refusal at 31.2' (tight).
		30.0		0		RD	
		32.0	B-3				-33' - roots and wood fragments in return fluid.
SP-SM	~32'-33' - organic topsoil(?); (wood and organics in return fluid). PICO FM. 33'-37.3' - SANDSTONE (SILTY SAND); light reddish brown; slightly moist; very dense; fine to medium; 10-20% fines; occasional gravels; moderately cemented.	34.0	S-6	250	1.4 / 1.4	Pb 4"	35'-36.4'; slight drill chatter
		36.0	B-4	29 / 50/4"	0.9 / 0.9	DR	36.4'-37.3'; SPT. refusal at 37.3'.
	Total Depth 37.3'.						Boring terminated on 1/30/90. Fill/Pico Fm contact at ~33'. No saturated conditions observed. move 25' west to drill DH-7. Hole backfilled

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. DH-7A
		PROJECT NO. MWD266A	SHEET NO. 2 OF 2	

BORING LOCATION South of Reservoir near R-8			GROUND EL. 441.1
DEPTH/ELEV. WATER	DRILL CONTRACTOR Pitcher Drilling Co.		TOTAL DEPTH 110.3
DRILL RIG Failing 250 Hole Master	BORING DIA. 5 7/8"	DATE DRILLED 1/21-22/90	LOGGED BY AL

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	FILL	0.0					Starts 1:15pm 1/21/90
ML	0.0'-10' - SANDY SILT; dark brown; damp; soft-firm; low plasticity; 10-20% fine sand; occasional fine gravel.	2.0	B-1 cuttings			AD	Auger to 4'. Set casing to this depth. Cleaned out hole to 10' with 5 7/8" tricone bit.
		4.0					
		6.0				RD	
		8.0					
	Pico Fm	10.0					
ML	10'-36' - SILTSTONE (SANDY SILT); light grey with red Fe-oxide laminations; moist; hard; ~35% very fine to fine sand.	12.0	S-1	250 psi / 450 psi	1.8 / 2.5	PB / 3"	10.0 - 12.5; 3" Pitcher Barrel (PB) sampling; 3 min; smooth drilling
		14.0	B-2	19 / 30 / 50	1.5 / 1.5	DR	12.5 - 14.0 Standard Penetration Test (SPT) 140# hammer 30" free fall.
		16.0				RD	End of the day. 1/22/90 Drill out to 20' Smooth drilling
		18.0					
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-8 (PIEZ W-6)
		PROJECT NO. MW0266A / SHEET NO. 1 OF 6	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10'-36'-SILTSTONE)						Starts at 7:00am. 1/22/90
ML/MH	-20'-locally moderate to highly expansive. occasional fine sand lenses.	20.0	S-2	300 / 450	2.2/2.5	PB 3"	20.0-22.5; 5 min; Smooth drilling
		22.0	B-3	30 / 50/0.4	0.9/0.9	DR	22.5-23.4 SPT
		24.0					
SP(?)	-25'-SANDSTONE lense (?)					RD	-25'-slight drill chatter
ML/MH		26.0					
		28.0					
		30.0	S-3	450	2.0/2.5	PB 3"	30.0-32.5; 6 min
		32.0	B-4	22 / 50/0.4	0.9/0.9	DR	32.5-33.4 SPT
		34.0				RD	
SP-SM	36'-72.0'-CONGLOMERATE (SILTY GRAVELLY SAND); yellow brown with orange fe-oxide mottling; saturated; dense; fine to coarse; 35% gravel to 1"; 5-12% low plasticity fines; weakly cemented; poorly graded.	36.0					Driller notes material change @ 36'
		38.0					39'-loud rough chatter
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 2 OF 6	DH-8 (PSEE W-6)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	(36'-72.0'-CONGLOMERATE)	40.0					
SP-SM			S-4	350	2.1 / 2.5	PB	40.0-42.5; 2 min; moderate chatter; tip slightly crumpled.
		42.0					
				50/0.3	0/0.3	DR	42.5-42.8 SPT
		44.0				RD	
		46.0					
ML	-47'-47.5'- SILTSTONE SEAM (?)						
SP-SM	47.5'-72.0'-CONGLOMERATE	48.0					Driller notes soft drilling from 47.0' to 47.5'; siltstone fragments in return fluid.
		50.0					
			S-5	350	0.9 / 1.1	PB 3"	50.0-51.1; 4 min; mod chatter; tip slightly crumpled
			B-5	50/0.2	0.2/0.2	DR	51.1-51.3 SPT
		52.0				RD	Drill out to 60'; moderate drill chatter.
		54.0					
		56.0					
		58.0					
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 3 OF 6	DH-8 (PREF W-6)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(36'-72.0'- CONGLOMERATE)	60.0	S-6	45.0	0.7/0.7	PB/3"	60.0-60.2 ; 4min ; slight chatter. very slow cutting
		62.0					
		64.0					
				300 / 400	0 / 2.5	PB 3"	65.0-67.5 ; 6min ; Slight to mod chatter
		66.0	B-6	50/0.4	0.3/0.4	DR	67.5-67.9 SPT
		68.0				RD	
		70.0					
ML	72.0'-92.0'- SILTSTONE (SANDY SILT); grey with orange mottling; moist; hard; low plasticity; ~35% very fine to fine sand.	72.0					Drilling quiets down, driller notes material change from 72.0'
		74.0					
	75'- occasional thin interbedded lenses of silty sand.		S-7	250 / 400	1.9 / 2.0	PB 3"	75.0-77.0 ; 12 min.
		76.0	B-7	50/0.4	0.4/0.4	DR	77.0-77.4 SPT
		78.0				RD	
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 4 OF 6	DH-8 (SEE W-6)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML	(72.0'-92.0'-SILTSTONE)	80.0					Driller notes material slightly changes @ 82.0
		82.0	S-8	300 / 500	1.8/2.0	PB 3"	82.0-84.0; 8 min; Slight chatter from 83.0'
		84.0	B-8	30 / 50/0.3	0.8/0.8	DR	84.0'-84.8'-SPT.
		86.0				RD	
		88.0					
		90.0	S-9	300 / 400	1.5/2.5	PB 3"	90.0-92.5; 5 min; mod chatter @ 92.0'; driller notes material change below 92.0'
SM	92'-92.5'-SANDSTONE (SILTY SAND) redbrown; wet; dense-very dense; very fine; <12% fines.	92.0	B-9	50/0.2	0.2/0.2	DR	92.5-92.7 SPT
SP-SM	92.5'-110.3'-CONGLOMERATE (SILTY GRAVELLY SAND); yellow brown with orange mottling; saturated; dense to very dense; fine to coarse, mostly medium grained; ~35% gravel to 1"; 5-12% low plasticity fines; weakly cemented.	94.0					DRILL OUT TO 100'. moderate drill chatter; fine to coarse sand, gravel in return fluid.
		96.0				RD	
		98.0					
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 5 OF 6	DH-8 (PIEZ W-6)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SP-SM	(92'-110.3' - CONGLOMERATE)	100.0	S-10	300 / 500	1.5/2.5	PB 3"	100.0-102.5; 7min mod to slight chatter
		102.0	B-10	50/0.3	0.3/0.3	DR	102.5-102.8 SPT
		104.0				RD	Drillout to 109'; moderate to heavy chatter. sand-gravel in return fluid.
		106.0					
		108.0					
	(CONGLOMERATE, as above)	110.0	S-11	350 / 600	0.7/1.3	PB 3"	109.0-110.3; 7min mod chatter; tip crumpled.
	Total Depth = 110.3'	112.0					BORING TERMINATED 3:00pm. 1/22/90 CONSTRUCT WELL W-6
		114.0					WELL CONSTRUCTION 0'-39': 2" blank sch40 pvc. 39'-109': Well screen; 0.02" slotted. 84'-109': Filter Pack; #3 sand
		116.0					81'-84': Bentonite seal; 3/8" pellets. 0'-81': grout seal: cement, bentonite mix.
		118.0					
		120.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MW0266A	SHEET NO. 6 of 6	DH-8 (PIEZ W-6)

BORING LOCATION			GROUND EL. 513.0'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING Co.		TOTAL DEPTH 124.2'
DRILL RIG FAILING 750 MVO ROT.	BORING DIA. 5 7/8"	DATE DRILLED 2/2-2/5/90	LOGGED BY AL

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	TOPSOIL/RESIDUAL SOIL	0.0					3pm 2/2/90
SM	0.0'-13' - SILTY SAND; brown; dry to damp; fine to medium; 20-30% low plasticity fines; <10% fine gravels; trace rootlets.	2.0				RD	Advance hole with mud rotary drilling (RD) using 5 7/8" tricone bit. Circulate cuttings with bentonite drill mud.
	-3'; increased silty fines.	4.0					
	-5'; SILTY SAND as above; color change to light orange brown; slightly moist.	6.0					
		8.0	S-1	300 ↓ 600	2.4 / 2.5	Pb 4"	7.0'-9.5'; 4" Pitcher Barrel (Pb) sampling; slight drill chatter.
		10.0	B-1	24 / 35 / 35	1.0 / 1.5	DR	9.5'-11.0' - Standard Penetration Test (SPT)
		12.0				RD	
	PICO FM						
SP-SM	13'-105' CONGLOMERATE (SILTY GRAVELLY SAND); mottled orange-yellow brown; moist; fine to coarse; 35% fine to coarse gravels, 5-12% low plasticity fines.	14.0	S-2	150 ↓ 600	0.9 / 1.5	Pb 4"	14.0'-15.5'; 10 min; slight-moderate drill chatter.
		16.0				RD	Drill out to 21'; slight to moderate chatter.
		18.0					
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 1 OF 7	DH-9 W-7, W-7A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(13'-105' CONGLOMERATE)	20.0					
						RD	
SP-SM				400 ↓ 450	1.5/1.9	Pb 4"	21.0'-22.9'; 12 min; slight drill chatter.
		22.0	S-13				
			B-2	50/0.4	0.3/0.4	DR	22.9'-23.3' - SPT
						RD	
		24.0					
		26.0					
		28.0					28.5'-30.5'; 13 min. slight drill chatter.
			S-4	300 400	1.3/2.5	Pb 4"	
		30.0					
SM	30'-31' - SANDSTONE (SILTY SAND); brown; moist; fine to coarse; >12% fines.		B-3	50/0.3'	0.3/0.3	DR	30.5'-30.8' - SPT
						RD	- smooth drilling to 35'.
SP-SM	31' - CONGLOMERATE; as above; moist; very dense; occasional siltstone fragments; weakly cemented.	32.0					
		34.0					
			S-5	300 600	1.3/2.2	Pb 4"	35.0'-37.2'; 11 min. slight to moderate chatter.
		36.0					
			S-6	400	2.4/2.5	Pb 4"	37.2'-39.7; 17 min. slight drill chatter.
		38.0					
		40.0				RD	

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD766A / SHEET NO. 2 OF 7	DH-9 W-7 W-7A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(13'-105' CONGLOMERATE)	40.0				RD	
GP	~41'-47' - CONGLOMERATE grades to SANDY GRAVEL; Very moist, medium to coarse; 20-40% coarse sand; <5% fines; weakly cemented.	42.0					~41' - slower drilling; increased gravels in return fluid.
		44.0	S-7	400 ↓ 500	0.9 / 0.9	PD 4"	44.0'-44.9'; 17 min; slight to moderate drill chatter.
			B-4	50/0.2	0.7/0.2	DR	44.9'-45.1' - SPT
SP-SM	-47' - CONGLOMERATE grades to GRAVELLY SAND; orange brown; moist to very moist; medium to coarse; 15-20% gravels; <5% fines; weakly cemented.	46.0				RD	47'-51' - smooth drilling Fine-coarse sand; no gravels in return fluid.
		48.0					
		50.0					
		52.0	S-8	300 ↓ 600	2.2 / 2.3	PD 4"	51.0'-53.3'; 17 min; smooth to slight chatter.
		54.0				RD	Drill out to 58'.
		56.0					
		58.0	S-9	300 ↓ 600	1.7 / 2.0	PD 4"	58.0'-60.0' - 19 min; slight to moderate chatter.
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD 266-A / SHEET NO. 2 OF 7	DH-9 11-7 11-74

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER _	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(13'-105'-CONGLOMERATE)	60.0					
			B-5	50/0.2'	0.2'/0.2'	DR	60.0'-60.2' - SPT
SP-SM						RD	DRILL OUT TO 60'.
		62.0					
		64.0					
	-65'- CONGLOMERATE (GRAVELLY SAND); as above; occasional thin sandstone lenses.						65.0'-67.0'; 14 min; moderate to bad chatter.
		66.0	S-10	400 ↓ 500	1.9 / 2.0	Pb 4"	
							END OF DAY. 2/4/90 7AM. Drill out to 72'.
		68.0				RD	
				100			
		70.0					
		72.0					72.0'-73.1'; 30 min; slight to moderate drill chatter.
			S-11	200 ↓ 600	0.9 / 1.1	Pb 4"	
						RD	
		74.0					
		76.0					-76'-76.5'- driller notes softer (easier) drilling (siltstone?)
		78.0					
			S-12	250 ↓ 600	1.6 / 2.5	Pb 3"	79.0'-81.5'- 9 min. smooth fast coring.
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 4 OF 7	DH-9 W-7, W-7A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER _	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(13'-105' CONGLOMERATE)	80.0	S-12	↓ 600	1.6/2.5	Pb 3"	
	~81'-88'-SANDSTONE (SILTY SAND); mottled orange brown; moist; very dense; medium to coarse; >12% fines; <10% gravel; traces of grey siltstone fragments.		B-6	50/0.2'	0.2'/0.2'	DR	81.5-81.7: SPT
		82.0				RD	
SM		84.0					
		86.0	S-13	200 ↓ 300	1.9/2.5	Pb 3"	86.0'-88.5'; 15 min; smooth to slight drill chatter.
	~88'-grades to CONGLOMERATE (GRAVELLY SAND); yellowbrown; moist.	88.0					Pb tip slightly crumpled.
SP		90.0				RD	
		92.0					
		94.0	S-14	200 ↓ 600	0.7/1.1	Pb 3"	93.0'-94.1'; 13 min; slight chatter.
			B-7	50/0.2'	0.2'/0.2	DR	note: sample tube blocked off by 3" gravel clast. 94.1'-94.3'-SPT
		96.0					Drill out to 100'; moderate drill chatter.
		98.0					98.5'-99'-softer drilling (siltstone seam?)
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD76606A / SHEET NO. 5 of 7	DH-9 W7 W7A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(13'-105' CONGLOMERATE) -100'; CONGLOMERATE; (SILTY GRAVELLY SAND); as above; slightly moist; increased fines to 5-12%.	100.0'	S-15	200 ↓ 600	0.7 / 1.0	Pb 3"	100.0'-101.0'; 13min; smooth to slight drill chatter.
						RD	Drill out to 107'; moderate to rough chatter.
		102.0					
		104.0					-105' material change; smooth drilling; siltstone in return fluid.
ML	105'-111.5'- SILTSTONE (SILT); grey with dark red mottling; damp; appears stiff; low plasticity.						105.0'-107.5'; 3min; smooth drilling.
		106.0	S-16	300 ↓ 500 ↓	1.5 / 2.5	Pb 3"	
			B-9	50/0.4'	0.4/0.4	DR	107.5'-107.9' SPT
		108.0				RD	End of Day. -2/5/90; drill fluid level at 33'. -smooth drilling
		110.0					
SM	111.5'-113.5'- SANDSTONE (SILTY SAND); light grey with orange mottling; moist to saturated; fine with occasional coarse sand; >12% fines, low plasticity.						-111.5'- slight to moderate drill chatter.
		112.0	S-17	200 600	0.9 / 1.0	Pb 3"	112.0'-113.0'- 16min; smooth to slight drill chatter. drill out to 119'.
SP	~113.5'-124.2'; CONGLOMERATE (GRAVELLY SAND); light grey with orange mottling; very moist; fine to coarse; 15-20% fine subangular gravels; <5% fines; weakly cemented.	114.0					-113.5'- moderate to rough drill chatter (gravels).
		116.0					-116.5'- increase pull down to 150psi.
		118.0					
		120.0	S-18	200 ↓ 500	1.6 / 1.9	Pb 3"	119.0'-120.9'-17min; smooth to slight chatter.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 6 OF 7	DH-9 W-7, W-7A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP	(113.5'-124.2' - CONGLOMERATE)	120.0	S-18			Pb 3"	
						RD	Drill out to 124' slight to moderate drill chatter.
		122.0					
		124.0	B-10	50/0.2	0.2/0.2	DR	124.0'-124.2'-SPT
	Total Depth = 124.2'	126.0					Boring Terminated 2/5/90 Borehole flushed with water to break down drill mud. construct wells W-7 and W-7A.

WELL CONSTRUCTION

W-7

0'-54' - 2" blank sch. 40 pvc.

54'-104' - Well screen; 0.02" slotted.

51.5'-105' - Filterpack; #3 sand.

41.0'-51.5' - Bentonite seal; 3/8" pellets.

0 - 41.0' - Grout seal; cement bentonite mix.

W-7A

0 - 114.0' - 3/4" blank PVC riser.

114.0'-124.0' - Well screen; 2"ϕ, 0.02" slotted.

111.5'-124.0' - Filterpack; #3 sand.

105.0'-111.5' - Bentonite seal; 3/8" pellets.

Wells completed 2/5/90.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD7616A / SHEET NO. 7 OF 7	DH-9 W-7 W-7A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING CO.		TOTAL DEPTH 121.5
DRILL RIG FAILING 750 MUD ROTARY	BORING DIA. 5 7/8"	DATE DRILLED 2/6-8/90	LOGGED BY AL/JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
							Start 7:00 am 2/6/90
SM	TOPSOIL 0.0'-2.0'- SILTY SAND; dark brown; dry; loose; fine with occasional coarse; >12% low plasticity fines; 10-20% fine gravel, trace roots.	0	B-1 cutting			RD	Advance hole with 6" flight auger to 3' convert to 5 7/8" tricone bit, circulate hole with bentonite mud drill fluid.
SW-SM	PICO FM 2.0'-11.0'- SANDSTONE (SILTY SAND); dark orange brown; damp to moist; dense to very dense; very fine to fine with occasional medium + coarse; >12% low plasticity fines; 5-10% gravels.	2.0 4.0 6.0					Conglomerate sand and gravel, occasional silt from cutting below 2' 5.0'- Smooth drilling. Sand in return fluid.
		8.0	S-1	300 / 450	1.9 / 2.1	PB 4"	7.0'-9.1'- 4" Pitcher Barrel (PB) Sampling; 18 min: Smooth drilling to 8.0' Slow and slight chatter from 8.5', tip slightly crumpled
		10.0	B-2	42 / 50/0.3	0.8 / 0.8	DR	9.1-9.9 Standard Penetration Test (SPT) 140# hammer 30" free fall.
SP-SM	11'-91'- CONGLOMERATE (SILTY GRAVELLY SAND); yellow brown with orange (Fe-ox) mottling; moist; very dense; fine to medium with some coarse; 15-20% fine to medium gravels; 5-12% fines.	12.0				RD	Smooth to slight chatter
		14.0 16.0	S-2	400 / 500	1.7 / 2.0	PB 4"	14.0'-16.0'; 9 min: Smooth drilling from 14.0' to 16.0'.
		18.0 20.0				RD	Smooth drilling Driller notes sand from 19'

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 1 OF 7	DH-10 (W-8)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(11'-91' - CONGLOMERATE)	20.0					
SP-SM	-21' - CONGLOMERATE; As above, increased gravel to 40%, moist to saturated.	22.0	S-3	300 / 500	2.2 / 2.2	PB 4"	21.0' - 23.2'; 8 min; smooth drilling to slight chatter; sand & gravel in return fluid. Tip slightly crumpled.
			B-3	50/0.4	0.3 / 0.4	DR	22.2' - 22.6' SPT
		24.0				RD	
							25.0' - rough chatter.
		26.0					
	-28' - CONGLOMERATE; As above; decreased gravel, subangular up to 1½"; appears crudely horizontally bedded.	28.0	S-4	300 / 600	1.7 / 1.8	PB 4"	28.0' - 29.8'; 26 min; slight to mod chatter from 28.0' to 28.5'; rough chatter at 28.5' and harder drilling.
		30.0				RD	
		32.0					Vigorous chatter from 32.0' to 32.5'. Easy drilling from 33.5' to 35'
		34.0					
	-35' - CONGLOMERATE; As above, 10-20% gravels; saturated (?) with free water on grains; weakly cemented.	36.0	S-5	350 / 650	0.8 / 1.3	PB 4"	35.0' - 36.3'; 18 min; smooth to mod chatter.
			B-4	50/0.4	0.4 / 0.4	DR	36.3' - 36.7 SPT
		38.0				RD	
		40.0					Vigorous chatter from 39.5' to 40.0'

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 2 OF 7	DH-10 (W-8)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(11'-91'-CONGLOMERATE)	40.0					
	-42'- CONGLOMERATE; As above; moist	42.0	S-6	400 / 600	2.0 / 2.0	PB 4"	42.0'-44.0'; 9min Smooth drilling to slight chatter, tip very slightly crumpled.
		44.0				RD	Moderate chatter
		46.0					
		48.0					
		50.0	S-7	300 / 700	1.6 / 1.8	PB 4"	49.0'-50.5'; 9min; Smooth to moderate chatter
			B-5	5%.3	0.3 / 0.3	DR	50.8'-51.1' SPT
		52.0				RD	53.0'-54.0' - rough chatter and hard drilling. Sand and gravel in return fluid.
		54.0					
	-56'-CONGLOMERATE; As above; color grades to light yellow brown with faint orange mottling; increase gravels 20-30%, fine to coarse.	56.0	S-8	300 / 500	2.3 / 2.4	PB 4"	56.0'-58.4'; 18 min; Slight to moderate chatter; harder drilling from 58.0'
		58.0				RD	
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 3 OF 7	DH-10 (W-8)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(11'-91'-CONGLOMERATE)	60.0				RD	
		62.0					Starts 7:00 am. 2/7/90 Fluid level at 32.0'
SP(?)	~63-65.3'-SANDSTONE (SAND); very few gravels	64.0	S-9	250 / 250	1.7 / 2.3	PB 3"	63.0'-65.5'; 4 min Slight to moderate chatter smooth and easy drilling from 63.0' to 65.0'.
SP-SM	-65.3'-91'-CONGLOMERATE; As above; color grades to orange brown; very moist to wet (Free water on grains); weakly cemented.			5%/0.15	0/0.15	DR	65.3'-65.45'; SPT; no recovery
		66.0				RD	Drill out to 70' 65.0'-70.0' slight to moderate chatter. -65.5' increase pulldown to 150 psi. Sand and fine gravel in return fluid.
		68.0					
		70.0					
	-CONGLOMERATE; As above; trace grey brown mottling.	72.0	S-10	150 / 200	1.3 / 2.5	PB 3"	70.0'-72.5'; 7 min Smooth to slight chatter
		74.0				RD	Drill out to 77.0' 72.5'-77.0' slight to moderate chatter. Fairly coarse sand and fine gravels in return fluid.
		76.0					
	-77'-CONGLOMERATE; As above; wet to saturated.	78.0	S-11	200 / 400	2.5 / 2.5	PB 3"	77.0'-79.5'; 8 min Slight to moderate chatter tube slightly flared.
		80.0	B-6	5%/0.1	0.1/0.1	DR RD	79.5'-79.6' SPT

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 4 OF 7	DH-10 (W-5)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(11'-91'- CONGLOMERATE)	80.0				RD	Drill out to 84.0' Slight to moderate chatter from 79.0'
		82.0					Fairly coarse sand and fine gravels in return fluid.
		84.0					
	-84'-CONGLOMERATE; As above; moist to very moist.		S-12	200 / 400	1.1 / 1.9	PB 3"	84.0'-85.9'; 18 min Slight chatter, occasional moderate to rough chatter Slow drilling, tube moderate crumpled.
		86.0				RD	Drill out to 91.0' 86.0'-87.5' moderate chatter Smooth to slight chatter from 87.5'
		88.0					
		90.0					Fairly coarse sand and fine gravels in return fluid.
SP	91'-93'- SANDSTONE (SAND); yellowbrown with trace orange mottling; wet; very dense; fine to medium; <10% non plastic fines; <5% gravel; weakly cemented.	92.0	S-13	300 / 300	1.6 / 2.5	PB 3"	91.0'-93.5'; 10 min: Slight to moderate chatter; smooth drilling from 91.0' to 92.5'
SP-SM	93'-119'- CONGLOMERATE (SILTY GRAVELLY SAND); mottled orangebrown-yellowbrown; wet; fine to coarse; 15-20% fine to medium gravel, subrounded; <10% non plastic fines; weakly cemented		B-7	5/6.3	0.3/2.3	DR	92.5'-92.8' SPT
		94.0				RD	Drill out to 100.0'. Slight to occasional moderate chatter.
		96.0					96.0'-98.0' slight chatter
		98.0					98.0'-100.0' smooth drilling to slight chatter; quick drilling and slight fluid loss.
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 5 OF 7	DH-10 (W-8)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(93'-119' - CONGLOMERATE)						
SP-SM	-100.8' - 3"+ quartzite cobble.	100.0	S-14	250 / 500	0.8 / 0.8	PB 3"	100.0'-100.8'; 11 min. Slight chatter; Slow drilling 3" clast in tip of tube
						RD	Drill out to 110.0' Slight to moderate chatter. Rough chatter from 101.5' to 102.0' 102.0-104.0' slight to moderate chatter.
		102.0					
		104.0					
		106.0					107.0'-109.0' rough chatter: fairly coarse sands in return fluid.
		108.0					
		110.0					
SW-SM	-110' - CONGLOMERATE; (SILTY GRAVELLY SAND); yellow brown with heavy red Fe-ox staining; moist; very dense; fine to coarse; fine to coarse gravel to 30%; 5-12% fines; moderately cemented; well graded.		S-15	300 / 550	1.3 / 1.6	PB 3"	110.0'-111.6' 9 min; Smooth drilling to slight chatter.
		112.0	B-8	50%.25	0.1%.25	DR.	111.6'-111.85' SPT Clast in tip of shoe. Drill out to 119.0' Slight to moderate chatter.
		114.0				RD	
		116.0					
		118.0					
SP	119'-121.5' - SANDSTONE (SAND); mottled yellow brown - orange brown; wet; fine with medium; occasional fine gravel; <5% fines; weakly cemented.	120.0	S-16	250		PB 3"	End of Day at 119.0' 2/8/90 fluid level at 45' 119.0'-121.5': 3 min smooth and quick drilling

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 6 OF 7	DH-10 (W-8)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP	(119'-121.5'-SANDSTONE)	120.0	S-16	250	2.3 / 2.5	PB 3"	
	Total Depth = 121.5'	122.0					BORING TERMINATED 2/8/90. Flush hole with clean water. CONSTRUCT WELL W-8 WELL CONSTRUCTION 0'-68'-2" blank Sch 40 pvc 68'-118'-Well screen: 0.02" slotted. 63'-121.5'-Filter Pack. #3 sand 55'-63'. Bentonite seal: 3/8" pellets. 0'-55'-Grout seal. cement bentonite mix. Well completed 2/8/90.
		124.0					
		126.0					
		128.0					
		130.0					
		132.0					
		134.0					
		136.0					
		138.0					
		140.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 7 OF 7	DH-10 (W-8)

BORING LOCATION SOUTH SIDE N4,129,515.5 ; E 4,251,701.2			GROUND EL. ~419'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING RON HALVINGSTAD		TOTAL DEPTH 125.5'
DRILL RIG FAILING 750 MUD ROTARY	BORING DIA. 5 7/8"	DATE DRILLED 2/14/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	FILL	0					Start 11:00am 2/14/90
SP/ SC/ ML	0.0'-6.5' - SILTY GRAVELLY SAND; moderate yellowbrown with dark brown mottling; damp; very fine to fine with some medium; 10-15% fine subangular gravel; 10% fines. -occasional silt and clay lifts, and varying percentages of fine to coarse material.	2.0 4.0				FA	Advance hole with 6" flight auger to 6'. Set 6" casing. convert to 5 7/8" tricone bit. circulate hole with bentonite mud drill fluid
	PICO FM	6.0				RD	
SP-SM	6.5'-15' - CONGLOMERATE (SILTY GRAVELLY SAND); yellowbrown with red-orange (Fe-ox) mottling; moist; very dense; fine to coarse, mostly medium; 30-40% subangular gravel to 2"; <12% fines; weakly cemented.	8.0	S-1	350 / 550	2.4 / 2.7	PB 4"	7.0'-9.7' - 4" Pitcher Barrel (PB) sampling 6.5 min Smooth to moderate chatter; hard drilling; tip crumpled
		10.0	B-1	50/0.1	0.3/0.3	DR	9.7'-10.0' Standard Penetration Test (SPT) 140# hammer 30" free fall
		12.0				RD	Drill out to 14.0' 10.0'-12.0' moderate rough and loud chatter 12.0'-14.0' slight to moderate chatter Fairly coarse sand and gravel in return fluid
SM	-15'-15.5'; SANDSTONE (SILTY SAND); orange brown; damp; fine; 30-40% low plasticity fines; weakly cemented.	14.0	S-2	400 / 500	1.5 / 2.3	PB 4"	14.0'-16.5'; 13.5 min; Smooth to slight chatter; occasional moderate chatter from 15.0' to 16.0'
SP-SM	15.5'-17' CONGLOMERATE; As above.	16.0				RD	Fairly coarse sand, fine gravel and occasional clay streaks in cutting Sample blocked off at 15.5' Drill out to 21.0'
ML	17'-19.5' - SILTSTONE (SILT); light grey with orange mottling; 10-20% very fine sand. (Logged from cuttings).	18.0					17.0' - Driller notes siltstone fragments in return fluid
SW-SM	19.5-33.7 - CONGLOMERATE; As described below.	20.0					19.5'-21.0' slight to moderate chatter

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. DH-11 (W9 & W9A)
		PROJECT NO. MWD266A	SHEET NO. 1 OF 7	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SW - SM	(19.5'-33.7'-CONGLOMERATE)	20.0				RD	
	21'-33.7'-CONGLOMERATE (SILTY GRAVELLY SAND); yellowbrown with orange mottling; very moist to wet; very dense; fine to coarse; 30% fine to coarse subangular gravel; 5-12% fines.	22.0	S-3	200 / 300	1.5 / 2.5	PB 3"	21.0'-23.5'; 3 min; Smooth to slight chatter; Sample blocked off at 22.5'
		24.0		50/0.2	0 / 0.2	DR	22.5'-22.7' SPT; no recovery Drill out to 28'
						RD	Slight to moderate chatter
		26.0					27.0' - harder drilling
	-28'-CONGLOMERATE; As above; Wet with free water on grains; trace caliche stains; weakly cemented.	28.0	S-4	250 / 300	1.2 / 2.5	PB 3"	28.0'-30.5'; 3 min; Slight chatter; Quick drilling.
		30.0					Drill out to 35.0'
		32.0				RD	32.0'-33.0': slight to moderate chatter. 33.7'-35.0' Smooth drilling siltstone fragments in return fluid.
ML	33.7'-107.5'-SILTSTONE (SANDY SILT); light grey with orange mottling; hard; low plasticity; 20% very fine micaceous sand; occasional rust stains; sandy partings; no apparent fractures; occasional thin interbedded fine sand lenses.	34.0					
		36.0	S-5	250 / 300	2.3 / 2.5	PB 3"	35.0'-37.5'; 15.5 min Smooth drilling; silt cutting
		38.0	B-2	35/50/0.0	0.9 / 0.9	DR	37.5'-38.4 SPT
						RD	Drill out to 42.0' Smooth drilling.
		40.0					Driller notes sand at 40.0'

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 2 OF 7	DH-11 (W-1-W9A)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML	(33.7'-107.5'- SILTSTONE)	40.0					
	-42'- SILTSTONE; As above; damp.	42.0	S-6	300 / 400	1.8/2.5	PB 3"	42.0'-44.5'; 13 min; Smooth drilling; Siltstone cutting
		44.0					
		46.0				RD	Drill out to 52.0' Smooth drilling; clay and silt in return fluid
		48.0					
		50.0					End of the Day Starts 7:00am 2/15/90 fluid level 8' 44.0'-52.0' uniform drilling.
	-52'- SILTSTONE As Above; damp.	52.0	S-7	300 / 400	2.0/2.5	PB 3"	52.0'-54.5'; 9 min; Smooth drilling; Silt cutting
		54.0	S-8	29 / 50/0.3	0.3/0.3	DR.	54.5'-55.3' SPT
	-56'- INCREASE MICACEOUS SAND in return fluid.	56.0				RD	Drill out to 62.0' Smooth drilling
		58.0					
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 3 OF 7	DH-11

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML	(33.7'-107.5'-SILTSTONE)	60.0					
SP, SP, SP, ML	-62'-SILTSTONE; As a core; damp; occasional thin interbedded fine sand lenses dipping 10°-14° off horizontal.	62.0	S-8	200 / 300	2.1 / 2.5	PB 3"	62.0'-64.5'; 12 min. Smooth drilling; siltstone with some fine sands cutting
		64.0				RD	Drill out to 72.0' Smooth drilling; siltstone cuttings
		66.0					
		68.0					68.0' harder drilling
		70.0					
	-72'-SILTSTONE; As above; damp.	72.0	S-9	250 / 300	2.0 / 2.5	PB 3"	72.0'-74.5'; 13.5 min; Smooth drilling
		74.0	S-10	25/5 0.3	0.8 / 0.8	DR	74.5'-75.3' SPT
		76.0				RD	Drill out to 82.0' Smooth drilling. 75.0'-77.0' increase in fine sand in return fluid
		75.0					
		80.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 4 OF 7	DH-11 IW9 SW7A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(33.7'–107.5' - SILTSTONE)	80.0					
ML						RD	Smooth drilling; silt in return fluid.
	-82' - SILTSTONE; As above; damp to slightly moist; increase very fine micaceous sand to 30-40%.	82.0	S-10	300 / 400	1.9 / 2.5	PB 3"	82.0'-84.5': 13 min; Smooth drilling; silt cuttings.
		84.0					
						RD	Drill out to 92.0' Smooth drilling
		86.0					
		88.0					Silt in return fluid
	~90' - SILTSTONE; color grades to bluegrey (as logged from cuttings)	90.0					
		92.0					
	~90'-100' - SILTSTONE (SILT), bluegray; damp; hard; low plasticity, 20% very fine micaceous sand; friable.	94.0					
			S-11	250 / 250	1.7 / 2.5	PB 3"	94.0'-96.5': 9.5 min Smooth drilling; siltstone fragments in cutting typically dark bluish grey.
		96.0					
			S-5	25 / 50/4	0.9 / 0.9	DR	96.5'-97.4' SPT
		98.0				RD	Drill out to 104.0' Smooth drilling Silt fragments in return fluid grade to olive gray color
		100.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 5 OF 7	DH-11 (N9+W94)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML	(33.7'-107.5'-SILTSTONE) -100'- SILTSTONE color grades to light grey with orange mottling.	100.0				RD	Smooth drilling Olive gray with orange mottling silt cuttings 102.0' driller notes easier drilling.
	-104'- SILTSTONE; As above; light grey with orange mottling; sandy; [illegible] 20-30% [illegible] sand; orange stained sandy partings.	102.0 104.0 106.0	S-12	220 / 320	1.2 / 2.5	PB 3"	104.0'-106.5' 12.5 min quick drilling from 104.0' to 105.0' 105.0' slow drilling; silt in cutting; sample blocked off at 105.0'
						RD	Drill out to 114.0' Smooth to moderate chatter
SP-SM(?)	107.5'-109'- CONGLOMERATE (As logged from cuttings); gravelly sand.	108.0					
ML	109'-111.5'- SILTSTONE; light grey (As logged from cuttings).	110.0					109.0' siltstone in return fluid
SP-SM	111.5'-125.5'- CONGLOMERATE (SILTY GRAVELLY SAND); mottled orange brown - yellow brown; very moist to wet; fine to coarse; 20-30% fine to coarse gravel; <12% fines; [illegible] moderately cemented.	112.0					111.5' fairly coarse sand in return fluid.
		114.0	S-13	250 / 700	0.8 / 0.9	PB 3"	114.0'-114.5' 12.5 min Smooth to slight chatter Very slow drilling.
		116.0				RD	Drill out to 124.0' Slight to moderate chatter fairly coarse sand in return fluid.
		118.0					
		120.0					Slight fluid loss in sands.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 6 OF 7	DH-11 W-9, W-9A

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(111.5'-125.5' - CONGLOMERATE)	120.0				RD	Slight to moderate chatter
		122.0					
	124'-CONGLOMERATE: As above; wet; appears less dense; weakly cemented.	124.0	S-14	200 / 300	0.6 / 1.5	PB 2"	End of the Day 2/16/90 fluid level 8.0'. 122.0'-125.5': ±5 min; Slight to moderate chatter
	Total depth = 125.5'	126.0					BORING TERMINATED 2/16/90. FLUSH HOLE WITH CLEAN WATER. CONSTRUCT WELLS W-9 & W-9A. WELL CONSTRUCTION W-9A: 0'-107' - 3/4" blank pvc. 107'-122' - well screen: 0.02" slotted 2" pvc. 101'-122' - Filter Pack #3 sand. 90.5'-101' - Bentonite seal 3/8" pellet. 47.5'-90.5' - Filter Pack #3 sand. 36.5'-47.5' - Bentonite seal 3/8" pellet. W-9: 18'-33' - 0.02" slotted 2" Sch 40 pvc. 0'-18' - 2" blank Sch 40 pvc. 13'-36.5' - Filter Pack #3 sand. 9'-13' - Bentonite seal 3/8" pellet. 0'-9' - Grout seal: cement bentonite mix. Well completed 2/16/90
		128.0					
		130.0					
		132.0					
		134.0					
		136.0					
		138.0					
		140.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 7 OF 7	DH-11 (W-9 & W-9A)

BORING LOCATION WEST CRACK AREA NEAR T-6			GROUND EL. ~522'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING Co. RON HALLINGSTAD		TOTAL DEPTH 34.5'
DRILL RIG FAILING 750 MUD ROTARY	BORING DIA. 5 7/8"	DATE DRILLED 2/8/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
A/C	LINER FILL 0.0-0.25'- ASPHALT LINER	0				RD	Advance hole with mud-rotary drilling (RD) using 5 7/8" tricone bit Circulate water to wash hole cuttings. Water used rather than mud so as not to contaminate foundation material prior to water test.
SM	0.25'-6.5'- GRAVELLY SILTY SAND: mod yellow brown; damp to moist. med dense to dense; fairly coarse sand; 20-30% fine to coarse gravels; 15-40% low-non plastic fines; varying percentage of fines; some sandy clay layers intermixed; locally saturated near base	2.0 4.0 6.0					Smooth drilling: fairly coarse sand and fine gravels in return fluid.
SM-SC	6.5'-10.6'- SILTY SAND: dark grey; moist dense; fairly medium coarse with occasional coarse sand; 30-40% low plasticity fines; occasional fine gravels.	8.0	S-1	200 400	2.4/2.6	PB 4"	7.0'-9.6'- 4" Pitcher Barrell (PB) sampling; 8 min; smooth drilling; fairly coarse sand cuttings
	PICO FM (FOUNDATION)	10.0	B-1	12/40/50	1.0/1.5	DR	9.6'-11.1' Standard Penetration Test (SPT) with 140# hammer 30" free fall
SP-SM	10.6'-23.5'- CONGLOMERATES: (SILTY GRAVELLY SAND): light reddish brown; damp; Very dense; predominantly very fine to medium coarse sand; 10-12% non plastic fines; occasional fine gravels; weakly cemented.	12.0				RD	Extend 5" casing to 10' depth; change drill bit to 4 7/8" tricone bit Drill out to 20.0' Smooth drilling to slight chatter.
SP	14.0'-23.5' GRAVELLY SAND: YELLOW BROWN with faint orange mottling; very moist to wet; fairly coarse sand; 15-30% fine to medium gravels; <10% non plastic fines	14.0 16.0 18.0 20.0					14.0'-16.0' fairly coarse sands and gravels in return fluid.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG PROJECT NO. MWD266A SHEET NO. 1 OF 2	BORING NO. DH-12

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10.6' - 23.5' - CONGLOMERATE)	20.0	B-2	47 / E9/0.2	0.7 / 0.7	DR	20.0' - 20.7 SPT
		22.0					23.5' - driller notes stiff drilling. increased clay steaks in return fluid
ML	23.5' - 26.0' - SILTSTONE : light gray with orange Fe-Ox mottling : low plasticity fines ; 20-30% very fine grained sand ; occasional sandy partings : damp - 24.9' - color change to orange with gray mottling : increase to 40-45% very fine grained sand	24.0	B-3	15 / 27 / E%0.4	1.4 / 1.4	DR	24.0' - 25.4' SPT
SP	26.0' - 30.5' CONGLOMERATE GRAVELLY SAND	26.0				RD	Driller notes siltstone / sand contact at 26.0' Drill out to 30.0' Smooth drilling to slight chatter ; fairly coarse sand in return fluid
		28.0					
		30.0	B-4	19 / 28 / 5%0.3	1.0 / 1.3	DR.	30.0' - 31.3' SPT Boring terminated at 31.3'. Perform constant and falling head tests. Upon completion, backfill hole with cement/bentonite grout via tremie pipe. Resumed drilling on 2/16/90. Readdr over hole, core out grout seal with Nx core barrel. Bottom of grout at 29.5'. Install Nx casing to 21'. 29.5'-34.5' Nx coring, recovered 8-inch core of silty sandstone core.
ML	30.5' - 31.0' - SILTSTONE : very stiff to hard						
SP	31.0' - 34.5' CONGLOMERATE GRAVELLY SAND : mod yellow brown to gray brown ; very moist to wet ; very dense ; dark red Fe-Ox staining : ~10% non plastic fines ; weakly cemented ; friable : interbedded with silty sandstone	32.0					
		34.0					
	Total depth = 34.5'	36.0					BORING TERMINATED Perform Water Pressure tests on 2/17/90. Back filled with cement bentonite grout after test.
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266A	SHEET NO. 2 OF 2	DH-12

BORING LOCATION EAST CRACK AREA			GROUND EL. ~520'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING CO KOA HALINGSTAD		TOTAL DEPTH 35.0'
DRILL RIG FAILING 250 MUD ROTARY	BORING DIA. 4 7/8"	DATE DRILLED 2/13/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	LINER FILL	0					
A/C	0.0'-0.25' ASPHALT LINER					FA	0'-10.0' Advance hole with 6" flight auger (FA) set 5" hole casing to 10'
SM	0.25'-0.6' SILTY SAND: gray black; damp to moist; very fine grained sand; 30-40% non plastic fines.						
SP-SM	0.6'-11.0' GRAVELLY SILTY SAND; mod yellow brown; moist to wet; fairly coarse sand; 12-20% non plastic fines; fine to coarse gravels; occasional intermixed clayey lifts	2.0					Smooth and easy auguring
		4.0					
		6.0					
		8.0					
	10.0' - Locally saturated.	10.0					
	PICO FM (FOUNDATION)		B-1	12/17/20	1.5/1.5	DR	10.0'-11.5' Standard Penetration Test (SPT) 140# hammer 30" free fall
SP	11.0'-15.0' CONGLOMERATE (GRAVELLY SAND) light reddish brown; damp to moist; fine to medium coarse with occasional coarse sand; 10-20% fine gravels; very weakly cemented.	12.0					10' Advance hole with mud rotary drilling (RD) using 4 7/8" tricone bit circulate with water to wash hole
		14.0					Drill out to 15.0' Fairly coarse sand, fine gravels and occasional clay strata in return fluid
ML	15.0'-16.0' SILTSTONE: light orange with light gray mottling; damp; hard; non plastic to low plastic fines; 20-30% very fine grained sand; occasional sandy Fe-Ox stained partings.		B-2	18/50/0.25	0.75/0.75	DR	15.0'-15.75' SPT
?	15.5'- fine sand; dark red; mod cemented; with Fe-Mn Ox; brittle	16.0				RD	15.0'- Smooth drilling; driller notes stiffer drilling; increase in siltstone in return fluid
SP	16.0'-35.0' CONGLOMERATE GRAVELLY SAND: mod yellow brown with faint orange mottling; moist; fine to coarse fine to medium coarse gravels; 10% non plastic fines; weakly cemented.	18.0					
		20.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-13
		PROJECT NO. MWD266A / SHEET NO. 1 OF 2	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP	16.0'-35.0' CONGLOMERATE GRAVELLY SAND.	20.0	B-3	5%/.45	0.45/0.45	DR	20.0'-20.45' SPT
						RD	Drill out to 30.0'
		22.0					Slight to moderate chatter.; fairly coarse sand in return fluid.
		24.0					
		26.0					27.0' hard drilling: slight to moderate chatter.
		28.0					
	30.0' - moist to very moist dense; predominantly fine to medium coarse with occasional coarse;	30.0	B-4	5%/.45	0.45/0.45	DR	30.0'-30.45' SPT Boring terminated at 30.45'. Perform constant and falling head tests on 2/17/90. 2/14/90: grout hole with cement/bentonite mix via tremie pipe. 2/18/90: Resume drilling. Core out grout seal with NX core barrel. Bottom of grout at 29.7'. Set NX casing to 20'. 30'-35' NX coring; sampler backed off at 30'; no rec. Small amounts of cuttings of fine to medium sand (sandstone)
SP	32' -- grades to fine to coarse Sandstone (SP).	32.0					
		34.0					
	Total Depth = 35.0'	36.0					Boring Terminated. Perform Water Pressure tests on 2/18/90. 2/19/90 - Seal hole with cement bentonite grout placed via tremie pipe.
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 2 OF 2	DH-13

BORING LOCATION WEST CRACK AREA			GROUND EL. ~522'
DEPTH/ELEV. WATER	DRILL CONTRACTOR PITCHER DRILLING Co. RON HALLINGSTAD		TOTAL DEPTH 20.35'
DRILL RIG FAILING 750	BORING DIA. 4 7/8"	DATE DRILLED 2/14/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
AC	LINER FILL 0.0'-0.25' ASPHALT LINER.	0				FA	Advance hole with 6" flight auger (FA) 5" casing set to 10'
SP-SM	0.25'-7.0' GRAVELLY SILTY SAND: mod yellow brown with dark brown mottling: moist to locally saturated; fine to coarse; 20-30% fine to coarse gravel: 15-40% low plastic fines: varying percentage of fines; some sandy clay layers intermixed	7.0 4.0 6.0					
SM	7.0'-10.0' SILTY SAND: dark grey; damp to moist; very fine to fine with occasional medium coarse sand; 30-40% low plastic fines; occasional gravels.	8.0					
SP	PICO FM (FOUNDATION) 10.0'-20.0' CONGLOMERATE (GRAVELLY SAND): mod yellow to light red brown; damp to slightly moist; fine to coarse sand: <10% non plastic fines; < 5% gravels 12.0'-14.0' increase fine to coarse well graded sands.	10.0 12.0 14.0 16.0 18.0 20.0	B-1	27/45 50/0.4	1.4/1.4	DR	10.0'-11.4' Standard Penetration Test (SPT) 140# hammer 30" free fall
						RD	Advance hole with mud rotary drilling (RD) using 4 7/8" Tricone bit, circulate water to wash hole Drill out to 20.0' Slight to moderate cuttings fairly coarse sands and fairly medium gravels in return fluid. 13'-20': 0 psi; 3 min.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG PROJECT NO. MWD266A SHEET NO. 1 OF 2	BORING NO. DH-14

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(10'-20' - CONGLOMERATE) 20.0': yellow brown with orange Fe Ox stain; moist; dense to very dense; fine to coarse sand; fine to medium coarse gravels; <5% non plastic fines; very weakly cemented	20.0	B-2	5%/0.35	0.35/0.35	DR	20.0' - 20.35' SPT
	Total Depth = 20.35'	22.0					BORING TERMINATED AT 20.35' on. 2/14/90. Perform Constant and Falling head tests. Backfilled with cement/bentonite grout.
		24.0					
		26.0					
		28.0					
		30.0					
		32.0					
		34.0					
		36.0					
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 2 OF 2	DH-14

BORING LOCATION WEST PARKING AREA			GROUND EL. 580'
DEPTH/ELEV. WATER	DRILL CONTRACTOR Pitcher Drilling Co. Ron Halingstad		TOTAL DEPTH 79.4'
DRILL RIG Failing 750 Mud Rotary	BORING DIA. 4 7/8"	DATE DRILLED 7/19/96	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
AC	0.0-0.25' - ASPHALT AND BASEROCK.	0					
	PICO FM.					FA	Advance hole with 6" flight auger (FA) to 5.5' Set 5" casing; convert to mud rotary drill (RD) using 4 7/8" tricone bit
	0.25'-10'; CONGLOMERATE; SEE LOG DH-16 FOR DESCRIPTION.	2.0					
SP		4.0					
		6.0				RD	5.5' Drill out to 10.0' Slight chatter, fairly coarse sand in return fluid
		8.0					
	10.0'-13.4' CONGLOMERATE (GRAVELLY SAND): dusky yellow brown occasional thin red Fe-ox lamination; damp to moist; dense; predominantly fine with medium coarse to coarse sand; 10-20% fine subangular subrounded gravels; 10% non plastic fines; weakly cemented;	10.0	B-1	200 / 300	1.7 / 1.7	PB 3"	10.0'-11.7'. 3" Pitcher Barrel (PB) sampling; 3 min; slight chatter
	13.2'-slight increase in fines	12.0	B-2	300	1.0 / 1.7	PB 3"	11.7'-13.4'; 3 min; slight chatter.
	13.4'-16.0' - moist to very moist; 20-25% fine to medium coarse gravels; increase in orange mottling.	14.0	B-3	300	0.9 / 1.3	PB 3"	13.4'-14.7'; 1.5 min; Slight to moderate chatter
			B-4	250	0.85 / 1.2	PB 3"	14.7'-15.9'; 1.4 min; Slight chatter
	16.0'-17.9'; grades to sand; predominantly fine grained; moist; 10-15% non plastic fines; occasional well graded gravelly sand lenses.	16.0	B-5	250	1.35 / 1.5	PB 3"	15.9'-17.4'; 1.5 min; Slight chatter; smooth drilling at 17.0'
15° dip of contact	17.9' - contact with siltstone; thin black Mn laminated band at 15° off horizontal.	18.0	B-6	250	0.8 / 0.8	PB 3"	17.4'-18.2'; 2.7 min; Slight chatter
ML	17.9'-21.8' SILTSTONE: light orange brown with gray mottling; damp hard; low plastic fines; very fine grained sand; black Mn-ox stains; very thin sandy parting	20.0	B-7	350	1.5 / 2.0	PB 3"	18.2'-20.2'; 12.4 min.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-15
		PROJECT NO. MWD266A / SHEET NO. 1 OF 2	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML	-19.6' siltstone color change to light gray with orange mottling; damp; massive, occasional thin random fractures.	20.0	B-8	400	1.5/1.5	PB 3"	20.2'-21.7'; 11 min Smooth drilling
SP	21.8'-29.4' CONGLOMERATE (GRAVELLY SAND); mottling orange brown; wet; fine to coarse subangular subrounded; 20% fine to coarse sands; <10% fines	22.0	B-9	400	1.4/1.4	PB 3"	21.7'-23.1'; 4.5 min moderate chatter
	23.1'-25.2'; whitish gray; damp to slightly moist; very fine grained with occasional coarse; 5-10% occasional round fine gravels; <5% fines; thin to 0x laminations; very weakly cemented.	24.0	B-10	400	1.5/2.0	PB 3"	23.1'-25.1'; 5.5 min Smooth drilling
			B-11	400	0.8/1.0	PB 3"	25.1'-26.1'; 3.5 min Smooth drilling
	26.5' - 2 to 3 inch gravel lenses.	26.0	B-12	300	0.85/1.1	PB 3"	26.1'-27.2'; 4 min Smooth drilling
	27.2' - interbedded Sandy gravel and gravelly sand lenses; 2 to 4 inch thick	28.0	B-13	300	0.9/1.5	PB 3"	27.2'-28.7'; 2 min. Slight chatter
	28.7' - light yellow; wet; fine to coarse sand; fine to coarse gravels; <10% fines		B-14	300	0.7/0.7	PB 3"	28.7'-29.4'; 4.5 min
	Total Depth = 29.4'	30.0					BORING TERMINATED AT 29.4', BACKFILLED WITH CEMENT/BENTONITE GROUT ON 2/21/90.
	NOTE: ALL samples extruded on-site to visually examine for fractures. No evidence of open cracks or pre-existing joints.	32.0					
		34.0					
		36.0					
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-15
		PROJECT NO. MWD266A / SHEET NO. 2 OF 2	

BORING LOCATION WEST PARKING AREA			GROUND EL. 580'
DEPTH/ELEV. WATER	DRILL CONTRACTOR Pitcher Drilling Co. Ron Halingstad		TOTAL DEPTH 16.4'
DRILL RIG Failing 750 Mud Rotary	BORING DIA. 4 7/8"	DATE DRILLED 2/19/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
AC	0'-0.25' - ASPHALT	0				FA	Advance hole with 6" flight auger (FA) to 5.5'. Set 5" casing to 5.5'. Continuous sampling using 3" Pitcher Barrel (PB), circulate with water to wash hole
	Pico FM						
SP	0.25'-15.7' CONGLOMERATE (GRAVELLY SAND): mod yellow brown with red orange Fe-Ox mottling; moist to wet; fine to coarse; 20-30% fine to medium sub rounded gravels; 10-15% fines; weakly cemented.	2.0					
		4.0					
	5.5'-9.0' - occasional thin Fe Ox laminations; 10-15° off horizontal.	6.0	B-1	80 / 200	2.3 / 2.5	PB 3"	5.5'-8.0'; 1 min; Smooth and quick drilling
SP	8.5'-10.5' SANDSTONE; yellow white; damp to moist; dense	8.0					
SP FRACTURE	8.8'-9.4': interceptfracture within sand mod dark brown sandy clay filling; hard; 0.2" to 0.4" thick; typically very moist to free water along crack; crack dips ~70° off horizontal, occasional voids.	10.0	B-2	200 / 300	1.6 / 2.0	PB 3"	8.0'-10.0'; 1 min; Smooth drilling
	10.5'-15.7' CONGLOMERATE; orange brown with yellow brown mottling; damp to moist; fine to med sand with coarse; 15% fine gravels; 10-12% non plastic fines	12.0	B-4	50	0.8 / 2.0	PB 3"	10.0'-12.0' Smooth drilling
		14.0	B-5	250	0.8 / 2.0	PB 3"	12.0'-14.0'; 1 min; smooth drilling
	15.7'-16.4' SILTSTONE: light orange brown with gray mottling; damp; hard; low plastic fines 10-20% very fine grained sand; black MnOx stain on occasional fractures	16.0	B-6 / B-7	300	7.4 / 7.4	PB 3"	14.0'-16.4; 45 min; Very smooth drilling;
ML							
	Total Depth = 16.4'	18.0					BORING TERMINATED AT 16.4'
	WELL CONSTRUCTION 0'-8' - 2" blank sch 40 pvc 8'-13' - .002" slot 2" sch 40 pvc 8.5'-15' - pea gravel filter pack 7.5'-8.5' - #3 sand 6.5'-7.5' - bentonite 0'-6.5' - cement grout	20.0					CONSTRUCT WELL TO SCREEN JOINT (FRACTURE) ENCOUNTERED FROM 8.8'-9.4'.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. DH-16
		PROJECT NO. MWD266A	SHEET NO. 1 OF 1	

BORING LOCATION ABANDONED OIL WELL.			GROUND EL. 520'
DEPTH/ELEV. WATER	DRILL CONTRACTOR FITCHER DRILLING Co. RON HALVINGSTAD		TOTAL DEPTH 42.0'
DRILL RIG FAILING 750 MUD ROTARY	BORING DIA. 5½"/4 7/8"	DATE DRILLED 2/20/90.	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
AC	0'-0.25' ASPHALT LINEAR. FILL/LINEAR. 0.25'-9.6' SILTY CLAYEY SAND. See Trench log for detail	0 2.0 4.0 6.0 8.0				FA	Advance hole with 6" flight auger (FA) to 9.6' Ream out with garbage can barrel to ensure straight hole; set 6" casing to 9.6' Advance hole with 5½" outside diameter diamond tip core barrel through concrete plug
SC-SM							
	9.6'-19.6' concrete aggregate: very dense, occasional voids RQD = 100%	10.0 12.0 14.0 16.0 18.0 20.0		250 300		C	9.6' 5½" core barrel; uniform drill. 19.6 encountered soil backfill.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG PROJECT NO. MWD266A SHEET NO. 1 OF 3	BORING NO. DH-17

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP	Sand Backfill: mod yellow brown to gray; wet; fine to medium coarse; occasional gravels up to 1 inch.	20.0	B-1	5/4/2	0.5/1.5	DR	20.0'-21.5 Standard Penetration Test (SPT) 140# hammer. 30" free fall
		22.0				RD	Drill out using 4 7/8" tricone bit. Slight chatter; quick drilling; fairly medium sand in return fluid
		24.0					
		26.0					
		28.0					
		30.0					31'-driller notes hole caving to 30'. Also notes tighter drilling at 30'.
		32.0					
		34.0					Slight to moderate chatter
		36.0					
		38.0					
		40.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 2 OF 3	DH-7

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SP		40.0					Slight to moderate chatter.
	Total Depth = 42.0'	42.0					BORING TERMINATED AT 42.0' ON 2/20/90 Drill rods pulled and hole caved to 39'. Most likely caved with larger clasts that weren't washed out with return fluid.
		44.0					
		46.0					
		48.0					
		50.0					
		52.0					
		54.0					
		56.0					
		58.0					
		60.0					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266A / SHEET NO. 3 OF 3	DH-17

BORING LOCATION WEST CRACK AREA			GROUND EL. 531.5
DEPTH/ELEV. WATER ~~0~~	DRILL CONTRACTOR MALCOLM DRILLING		TOTAL DEPTH 30.25'
DRILL RIG TEXOMA 700	BORING DIA. 12"	DATE DRILLED 3/15/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	LINER FILL	0					0'-4'- Drill pad excavated 4' below reservoir surface.
AR///	0-0.25'- ASPHALT LINER.		EXCAVATED WITH BACKHOE.				
SM	0.25-8'- SILTY GRAVELLY SAND; mottled yellowbrown with dark brown; damp to locally moist; fine to coarse; 15-30% fine to coarse gravels; 20-30% low plasticity fines. - occasional clayey layers.	4	8:30AM			FA	-4'- Advance 12" ϕ Flight Auger (FA) for tiltmeter installation. Log auger cuttings easy drilling.
	PICO FM (FOUNDATION)	8					
SP-SM	8'-30'- CONGLOMERATE (SILTY GRAVELLY SAND); yellow brown with red fe-oxide mottling; damp; fine to medium with occasional coarse; 25% gravels up to 1"; <10% fines.	12					11'-19'- occasional siltstone seams.
		16					
		20					
	-24'- increase reddish color.	24					
		28	9:15AM				
	Total Depth = 30.25'						Boring terminated. remove auger and tamp hole bottom with kelly Rod. Place tiltmeter (TM-1) at bottom of hole. Backfill hole: 16'-30'- clean dry fine sand; 4'-16'- Bentonite/sand seal. completed installation 3/17/90

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-18
		PROJECT NO. / SHEET NO.	

BORING LOCATION			GROUND EL. 522'
DEPTH/ELEV. WATER. —	DRILL CONTRACTOR MALCOLM DRILLING		TOTAL DEPTH 30'
DRILL RIG TEXOMA 700	BORING DIA. 12"	DATE DRILLED 3/15/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	LINER FILL 0-0.25' - ASPHALT LINER 0.25'-10' - SILTY GRAVELLY SAND; mottled yellowbrown - dark brown; moist to very moist; fine to coarse; 20-30% gravels; 10-20% fines.	0 4	EXCAVATED WITH BACKHOE				0'-7.5': DRILL PAD excavated 7.5' below reservoir surface.
	PICO FM (FOUNDATION)	8				FA	Advance 12" ø Flight Auger (FA) for tiltmeter installation.
SP-SM	10'-30' - CONGLOMERATE (SILTY GRAVELLY SAND); yellowbrown with heavy red fe-oxide stains; damp; fine to coarse; 20% fine to medium gravel; <10% fines. -16' - color grades to light yellow brown; faint orange mottling. -19' - color grades to light red brown. -20' - increase moisture to moist - very moist.	12 16 20 24 29					Log auger cuttings.
	Total Depth = 30.0'						BORING TERMINATED. Remove auger and tamp hole bottom with kelley Rod. Place tiltmeter (TM-3) at bottom of hole. Backfill hole: 17'-30' - dry fine sand. 0'-17' - bentonite/sand mix. Installation completed 3/17/90

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-20
		PROJECT NO. 1AW0276-A	SHEET NO. 1 of 1

BORING LOCATION WEST CRACK AREA			GROUND EL. 536.5'
DEPTH/ELEV. WATER. —	DRILL CONTRACTOR MALCOLM DRILLING		TOTAL DEPTH 30.25'
DRILL RIG TEXOMA 700	BORING DIA. 12"	DATE DRILLED 3/15/90	LOGGED BY VM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	LINER FILL	0					Advance 12" ϕ Flight Auger (FA) for tiltmeter installation.
SP-SM	0.0'-0.25'- ASPHALT LINER		7:04			FA	
	0.25'-6.5'- GRAVELLY SILTY SAND; mottled yellow brown - dark brown; moist to very moist; fine to coarse sand; 20-30% gravels; 10% fines.	4					Log Auger cuttings.
							6.5'-9.0'- Bag sample of liner.
SM	6.5'-9.5'- SILTY SAND; dark grey; slightly moist; fine to medium sand; 10% fine gravels; 30-40% Low plasticity fines.	8					
SP-SM	PICO FM (FOUNDATION)	12					
	9.5'-30.3'- CONGLOMERATE (SILTY GRAVELLY SAND); yellow brown with heavy red fe-oxide stains; damp; fine to coarse; 20-30% fine to medium gravel; <10% fines.						
SP		16					
SP-SM	-15'-18'- SANDSTONE; fine to medium.	20					
		24					
MH	-28'- increase moisture to very moist.						
	-29.5'- SILTSTONE lense.	28					
SP-SM			8:00				
	Total Depth = 30.3'						BORING TERMINATED Remove auger and tamp hole bottom with kelley Rod. Place tiltmeter (TM-2) at bottom of hole. Backfill hole: 16'-30'- dry fine sand. 0'-16'- Bentonite sand mix. Installation completed 3/17/90

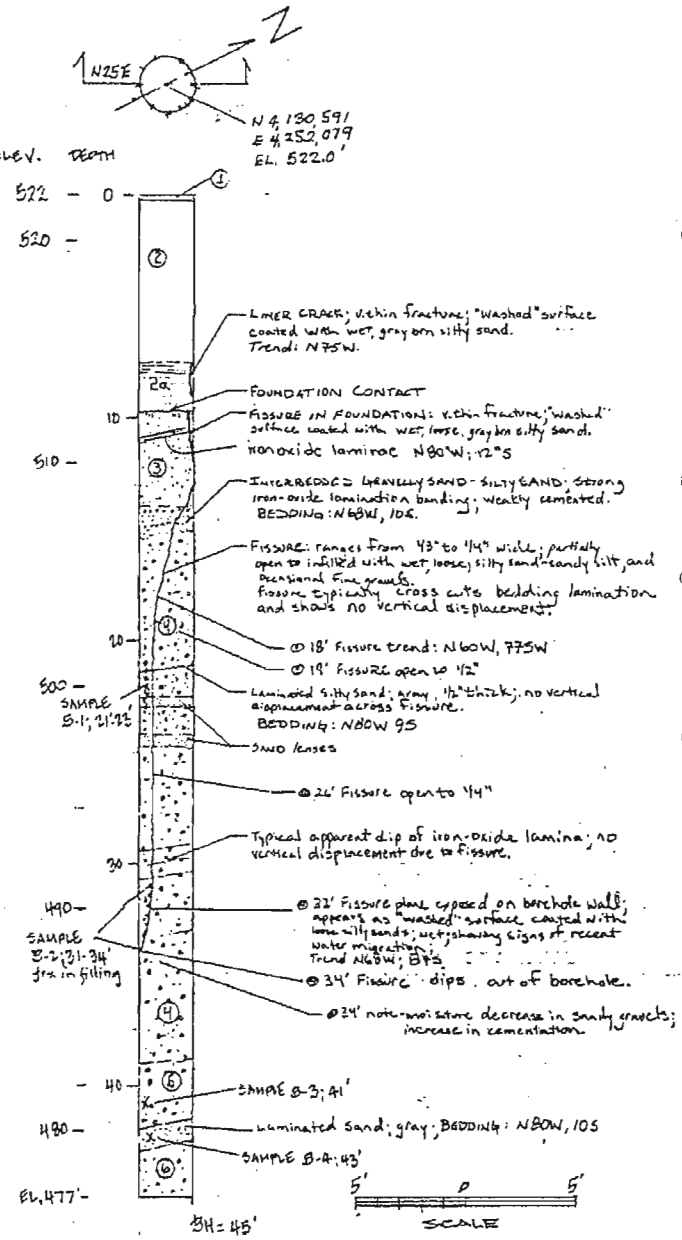
WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-19
		PROJECT NO. / SHEET NO.	

BORING LOCATION WEST CRACK AREA.			GROUND EL. 530.0'
DEPTH/ELEV. WATER -	DRILL CONTRACTOR MALCOLM DRILLING		TOTAL DEPTH 30.3'
DRILL RIG TEXOMA 700	BORING DIA. 12"	DATE DRILLED 3/15/90	LOGGED BY VM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	LINER FILL	0					Advance 12"ϕ Flight Auger (FA) for tiltmeter installation. Log cuttings. -3'- large rock
AC/V	0-0.25'. ASPHALT LINER						
SM	0.25-9'- GRAVELLY SILTY SAND; moderate yellow brown, damp to very moist, fine to coarse; 20% fine to coarse gravel; 20-40% low plasticity fines; occasional clayey layers.	4					
	-0-3'- very moist.						
	3'-8.5'- moist.	8					
	8.5'-10'- very moist to wet.						
	PICO FM (FOUNDATION)						
SP	9'-30'- CONGLOMERATE (SILTY GRAVELLY SAND); Red brown; moist; fine to coarse; 30-40% fine to medium gravels; <10% fines.	12					
		16					
		20					
	-22'-24'- occasional fine sandstone lenses.						
		24					
	-26'-30'- very moist.						
		28					
	Total Depth = 30.3'						BORING TERMINATED. Remove auger and tamp hole bottom with kelley Rod. Place tiltmeter (TM-4) at bottom of hole. Backfill hole: 16'-30'- dry fine sand. 0'-16'- Bentonite/sand mix. Installation completed 3/17/90

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-21
		PROJECT NO. MWD 261-A	SHEET NO. 1 of 1

LARGE DIAMETER AUGER
HOLE LOGS



VIEW LOOKING NORTHWEST

FILL MATERIALS

(1) ASPHALT LINER; ~3" thick

(2) LINER: CLAYEY SAND (SC); mod yll. brn - lite reddish brn; moist to locally saturated; fine to coarse sand; 10-30% non plastic fines; scattered subrounded gravels; easily excavated.

(2a) LINER: SANDY CLAY (CL); gray black; low to mod. plasticity fines; 20-30% fine-med. sands; occasional gravels; s. moist; appears stiff.

FOUNDATION MATERIALS

(3) SILTY SAND (SM); lite reddish brn; moist; fine to medium; ~10% non plastic fines; occasional gravels; mod. cemented; iron-oxide laminated bedding.

(4) SANDY GRAVEL (GW); lite reddish brn; gravels up to 2"; fine to coarse sand; ~10% non plastic fines; loose to weakly cemented.

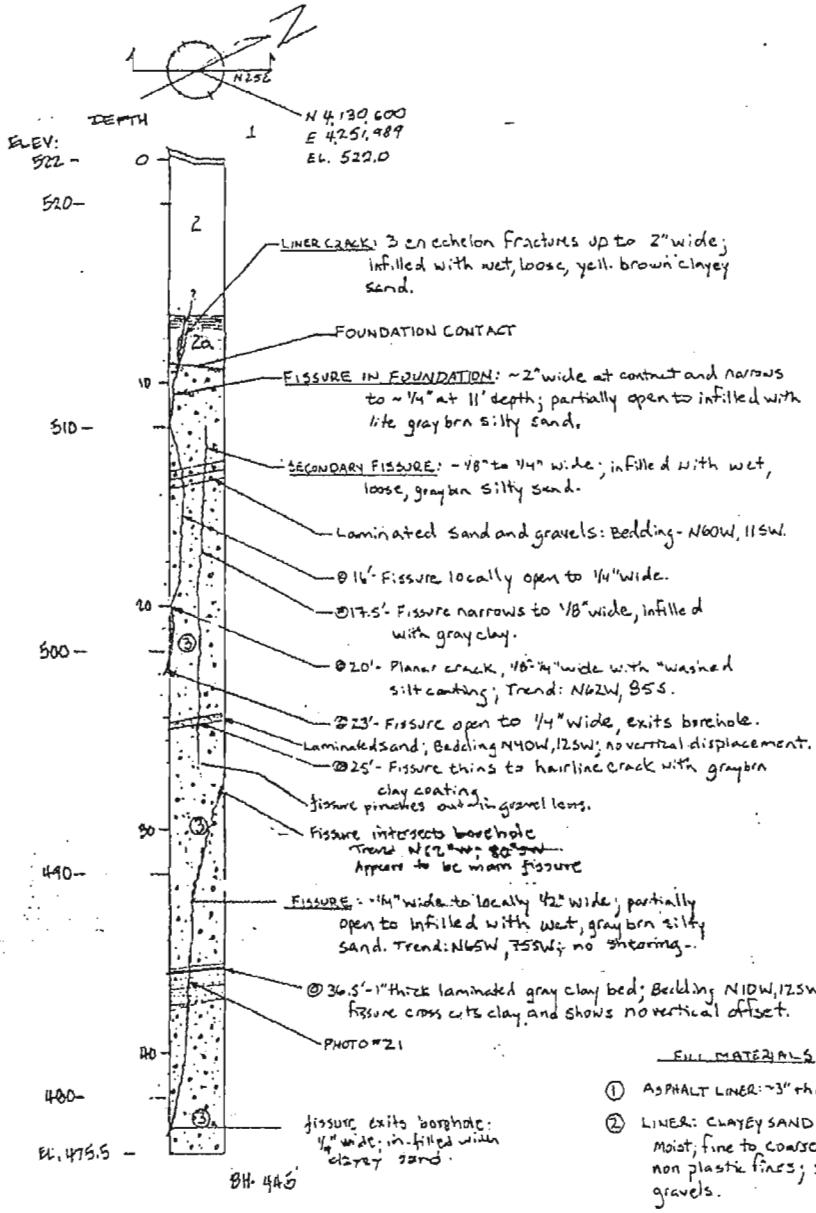
(5) SANDY GRAVEL (GW); drk reddish brn with heavy iron-oxide staining; subangular to subrounded gravels to 3"; fine to coarse sand; <10% non plastic fines.

(6) GRAVELLY SAND (SW); with interbedded silty sand; weakly cemented; appears dense.

NOTE: DRILLED WITH CRANE MOUNTED AUGER (30") RIG (FMC LINK-BELT) PROVIDED BY MALCOLM DRILLING. DEC. 18-19, 1989. LOGGED BY A.S. BUANGAN AND J. MUZZIO (WAHLER ASSOC.)

1/7/90
3/2/90

EXPLORATION HOLE LOG
BA-1



VIEW LOOKING NORTHWEST

5 0 5

FILL MATERIALS

① ASPHALT LINER: ~3" thick.

② LINER: CLAYEY SAND (SC); mod. yell. brn; moist, fine to coarse sand; 10-30% non plastic fines; scattered subrounded gravels.

②A LINER: SANDY CLAY (CL); gray black; low to mod. plasticity; fine to med sand; occasional gravels; slightly moist.

FOUNDATION MATERIALS

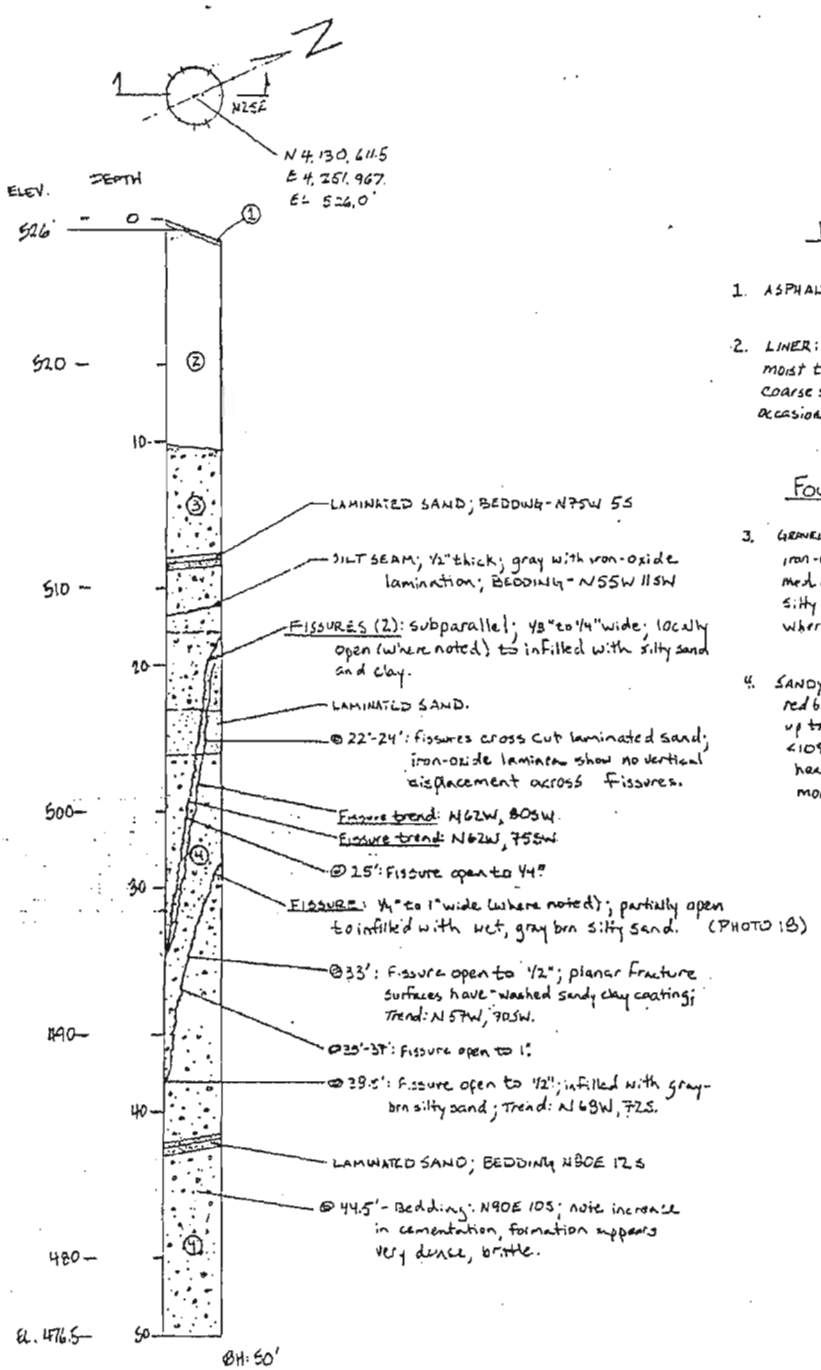
③ GRAVELLY SAND (SW); lite reddish brn; slightly moist; fine to coarse sand; 20-40% fine to coarse gravels; iron oxide staining throughout; mod cemented; interbedded laminated sands and clays as noted.

NOTE: DRILLED WITH CRANE MOUNTED AUGER (30")
RIG (FMC LINK BELT) PROVIDED BY MALCOLM
DRILLING, DEC. 19, 1989.
LOGGED BY A.S. BUANGAN AND J. MUZZIO (WAHLER ASSOC.).

1/7/90

EXPLORATION HOLE LOG

BA-2



FILL

1. ASPHALT LINER, ~3" thick.
2. LINER: CLAYEY SAND (SC); mod. yll. brn; moist to locally saturated; fine to coarse sand; 10-30% non plastic fines; occasional subrounded gravels.

FOUNDATION MATERIALS

3. GRAVELLY SAND (SW); yell. brn with iron-oxide laminae; damp; appears med. dense-dense; interbedded silty sands and silt as shown where noted.
4. SANDY GRAVEL (GW); lite red brn to red brn; damp; fine to coarse gravels up to 4"; fine to coarse sands; <10% non plastic fines; mod.-heavy iron-oxide staining, weak-mod. cemented.

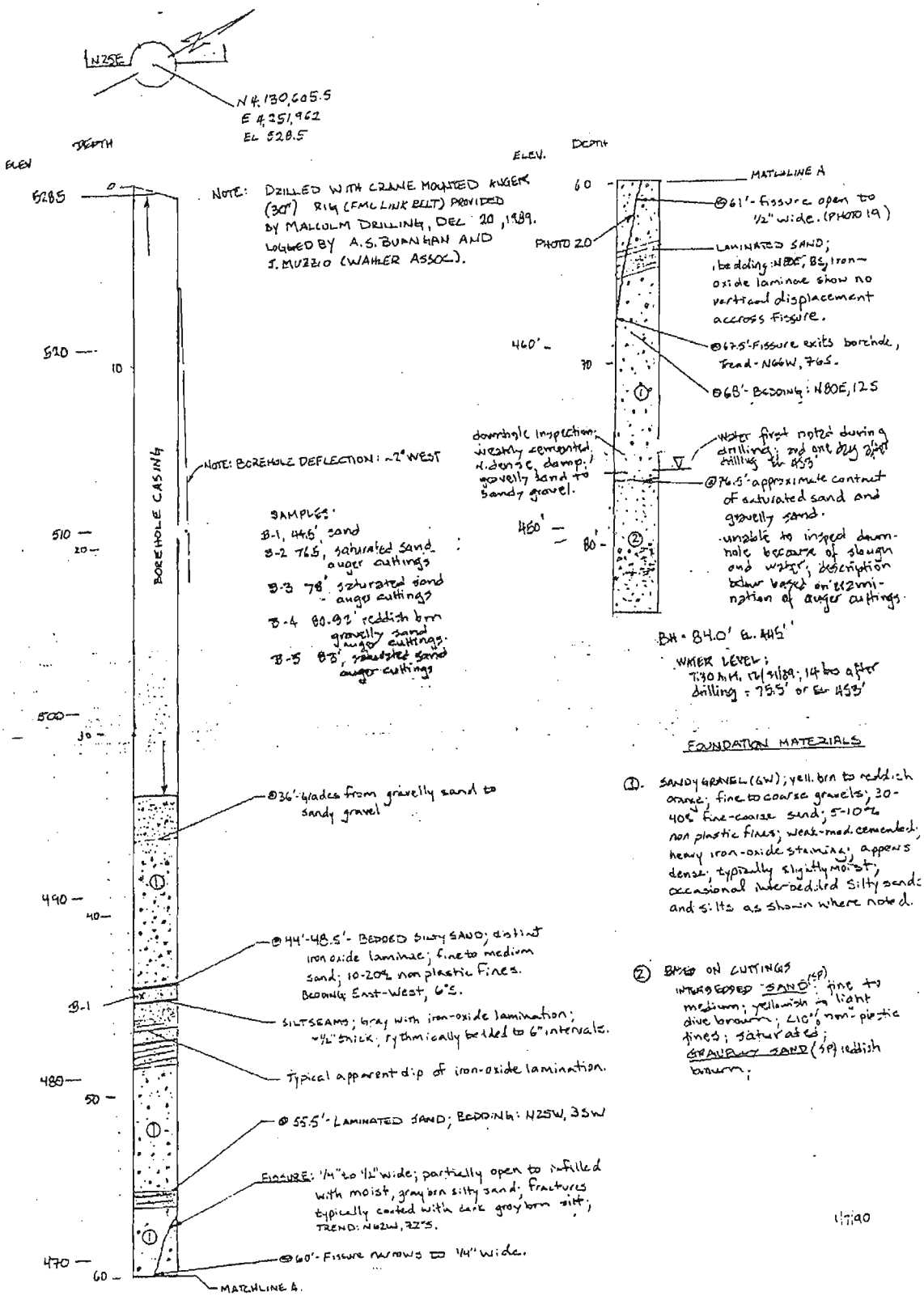
VIEW LOOKING NORTHWEST

NOTE: DRILLED WITH CRANE MOUNTED AUGER (30") RIG (FMC LINKBELT) PROVIDED BY MALCOLM DRILLING, DEC. 19-20, 1989. LOGGED BY A.S. BUANGAN AND J. MUZZIO (WAHLER ASSOC.).

1/7/90

EXPLORATION HOLE LOG.

BA-3



EXPLORATION HOLE LOG

BA-4

BA-5

ELEV. DEPTH → Z

565
560
550
540
530
520
510
500

0 — EL. 562.5'

① FILL

contact

PICO FM

Moisture gradually increasing at depth from damp to wet

10

② increasing cobbles

18.5-22' Pico is very moist to wet.

Vertical fracture N. 20° W., abundant roots on fracture surface; pinches out 1' above Pico/Repetto contact.

Fracture 5mm hairline to 1" filled with gray clay, = due E., 57° S.W., pinches out above Pico/Repetto contact.

20

Seeps above contact primarily from northern wall, wetting lower walls.

PICO FM / REPETTO contact conformable, 1-3" band of heavy iron-oxide staining, contact surface dips 4° N.

Laminated bedding, N. 25° E., 3° N

Seeps along fractures primarily along northern and western wall. Southern and eastern walls relatively dry.

Fracture dipping 6° S.

③

20

Clay filled fracture dipping 60° E., seeps

Fracture zone, brecciated, loose, N10° W., 75° W, seeps

Claystone; moderate brown; medium plasticity

Locally open fracture in siltstone dipping 80° S.W., 14", pinches out at 36', crosses bedding of siltstone, appears dry.

Fractures, due N., dips 75-80° E; appears dry

Fracture on N. side of well at 39', muddy water along fracture surface (probably drilled from A-4 drilling).

40

Fracture, N.S., 80° E. iron oxide stained, seeps

Fracture N. 20° E., 10° W., seeps on fracture surfaces.

CLAY SEAM; dk gray, highly plastic; N. 10° E., 10° S., varies in thickness from ½" to 1"; conformable to bedding, pervasive slickensides; Repetto siltstone above clay seam appears fractured, brecciated, and wet; Repetto siltstone below clay seam appears tight and relatively dry.

④

50

Bedding N. 80° E., 15° S, laminated

Bedding N. 85° E., 12° S, iron-oxide stained, tight, laminated, reddish orange laminations.

60

Fracture zone N. 50° E., 60° S., ½"-1½" thick, iron-oxide stained, minor seeps.

Bedding E.W., 10° S., iron-oxide stained, minor fractures, tight, no free water.

VIEW LOOKING WEST

FILL

1. GRAVELLY SILTY SAND (SM); moderate brown, mottled yellowish brown, dry.

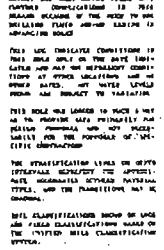
PICO FORMATION

2. CONGLOMERATE; gravelly sand to sandy gravel (SW-GP) moderate yellowish brown; damp to wet; 15-20% non-plastic fines; gravel and cobbles to 4", rounded, well graded.

REPETTO FORMATION

3. SILTSTONE; clayey silt (ML) light gray, mottled olive gray to dusky gray, soft to stiff; low plasticity; laminated bedding iron-oxide stained N 85° E., 3° N, hairline fractures, fracture zones with free water.

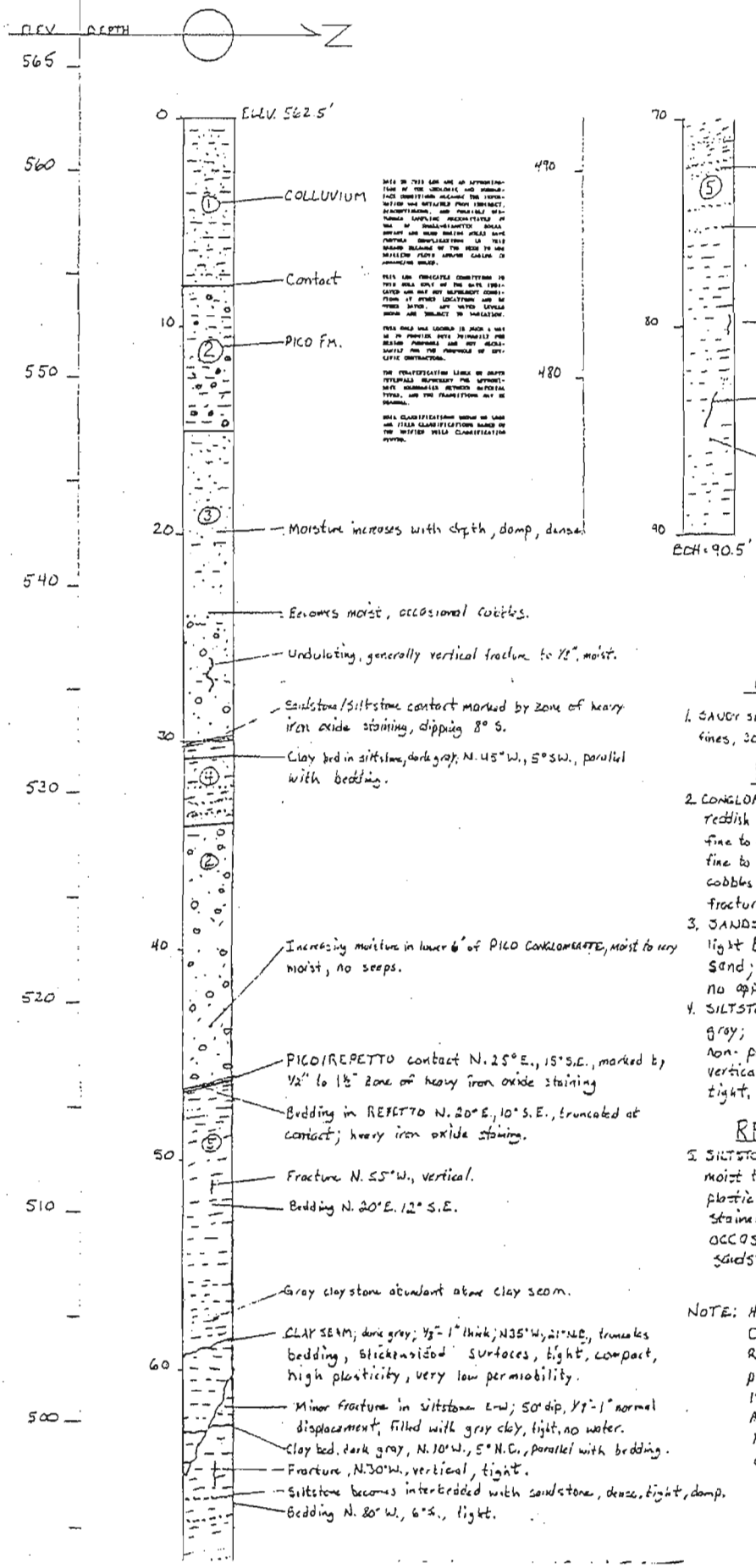
4. SILTSTONE; clayey silt (ML) light gray; dry; hard; laminated bedding iron-oxide stained, rare fractures, tight, compact, occasional fractures with free water.



NOTE: Hole located about 14' north of A-4, immediately southeast of north Monterey Park concrete water tank. Drilled with Caldweld Bucket Auger Rig with 30" diameter auger provided by A&W Drilling, Sept. 6, 1990; logged by R. Heidrich and A. Buangan (Wahler Associates). Hole backfilled with sand and cement slurry (1½ sack cement per yard of sand).

EXPLORATION HOLE
BA-5

BA-6



Initial to 80' end of day 9/7/90
Resumed 7 am 9/10/90. No water in hole.

COLLUVIUM

1. SANDY SILT (ML); dark brown; dry; non-plastic fines, 30-50% fine sand.

PICO FORMATION

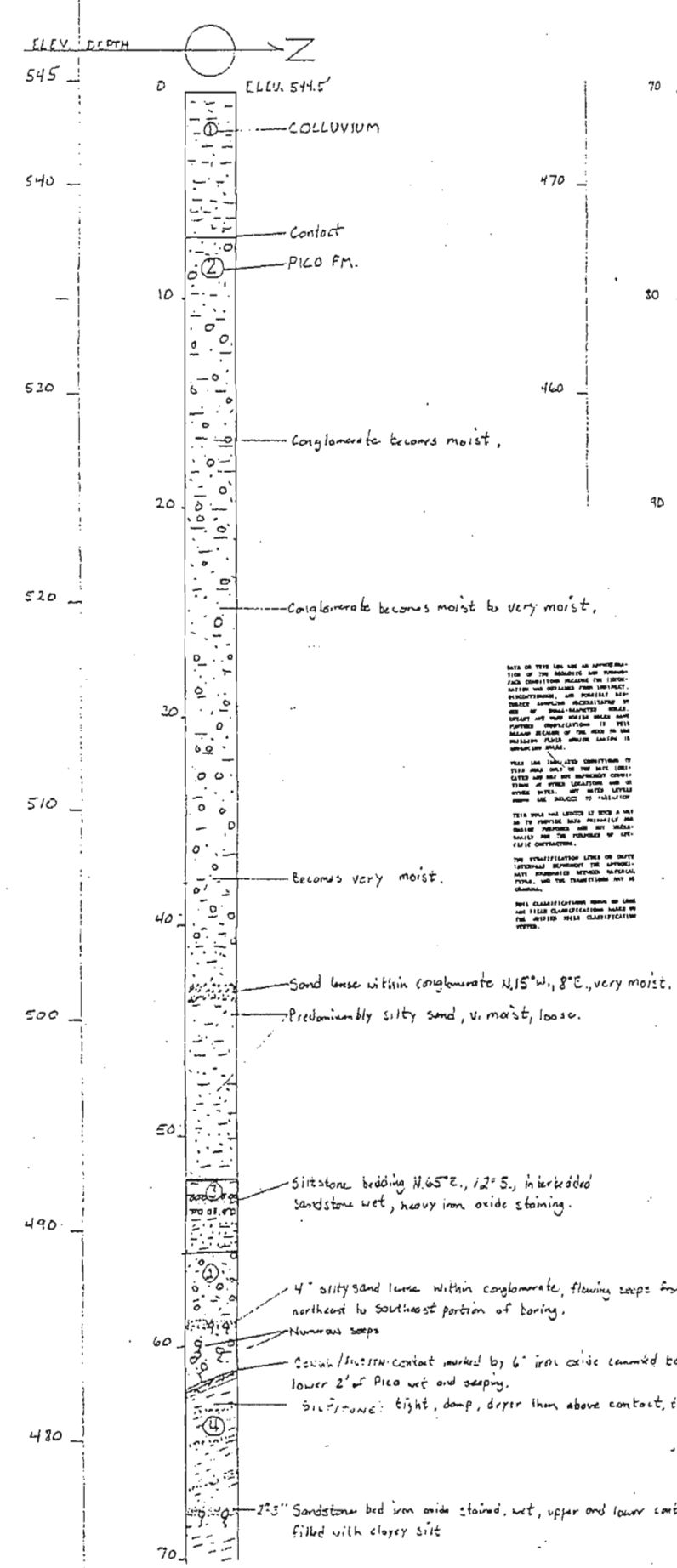
2. CONGLOMERATE; gravelly silty sand (GW); reddish brown; slightly damp; appears dense; fine to coarse sand; 10-20% fines; 20-30% fine to coarse gravel; rounded to sub-angular; cobbles to 5"; well graded; no apparent fractures.
3. SANDSTONE; silty sand (SM/SW); light brown; dry; loose; fine and medium sand; 15-30% fines; 10-20% gravel; no apparent fractures.
4. SILTSTONE; sandy silt (ML); very light gray; iron oxide stained; damp, firm; non-plastic fines; laminated; occasional vertical fractures, iron oxide stained; tight.

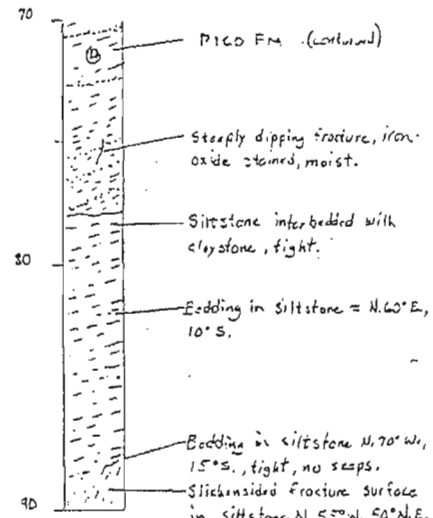
REPETTO FORMATION

5. SILTSTONE; silt (ML) very light gray; moist to very moist; soft to firm; non-plastic fines; laminated bedding iron oxide stained; hair line fractures, tight, occasional beds of claystone and sandstone.

NOTE: Hole located about 2' north of A-2. Drilled with Caldwell Bucket Auger Rig with 30" diameter auger provided by A-W Drilling Sept 7 and 10, 1990; logged by R. Heidrick and A. Buangan (Wahler Associates). Hole backfilled with sand and cement slurry (1½ sack cement per yard of sand).

BA-7





COLLUVIUM

1. SANDY SILT / SILTY SAND (ML/SM) dusky brown, moist; stiff to med. dense; fine sand; 40-50% slightly plastic fines.

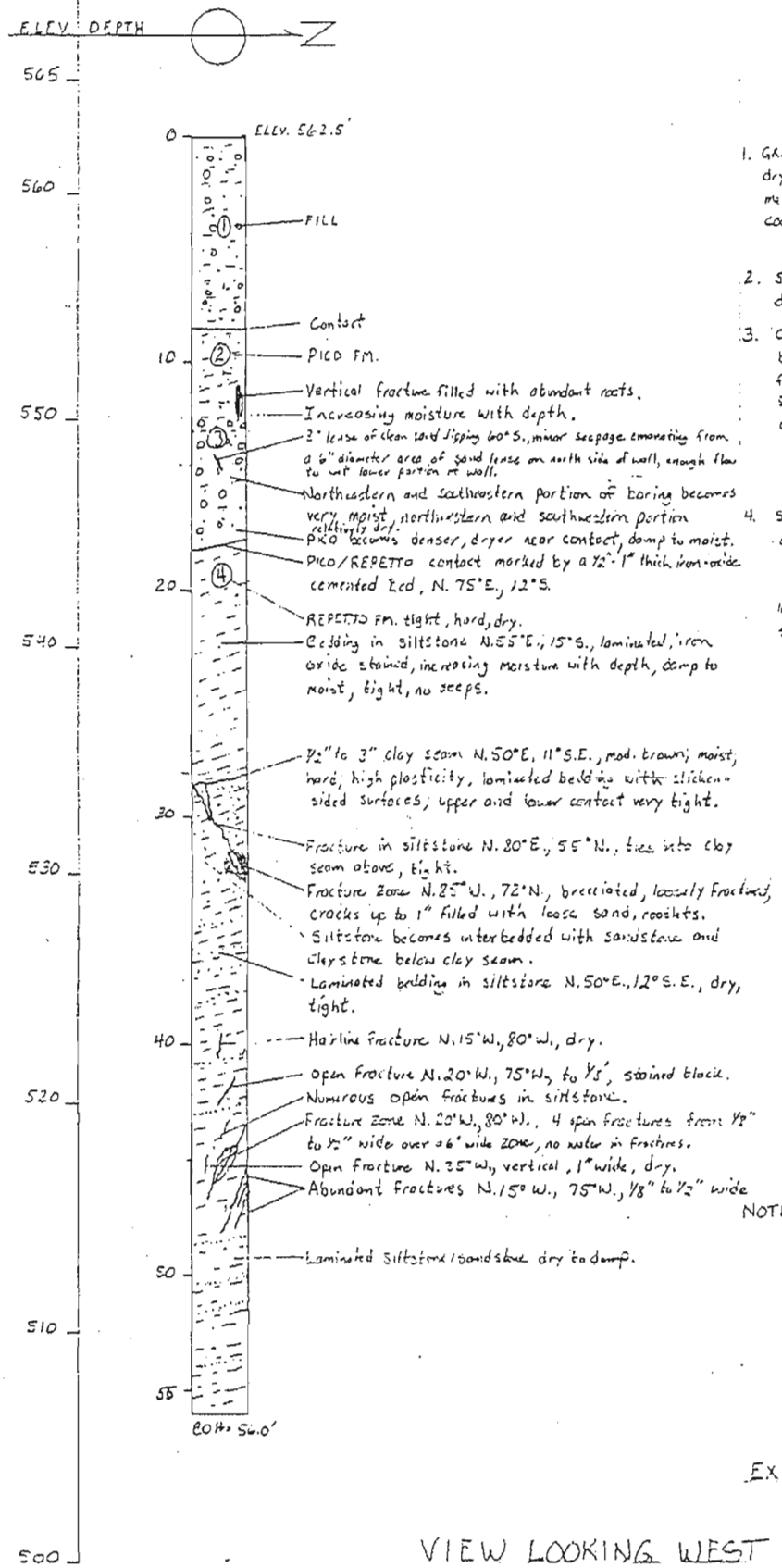
PICO FORMATION

2. CONGLOMERATE interbedded with SANDSTONE. gravelly silty sand (SM); light reddish brown; damp; appears dense; fine to coarse sand, 10-15% slightly plastic fines; 15-25% fine to coarse gravel to 2½"; cobbles to 6"; well graded, poorly cemented; moisture increases with depth; iron oxide staining
3. SILTSTONE; sandy silt (ML). light gray, wet; laminated; interbedded with sandstone, iron oxide stained; occasional gravel lenses.
4. SILTSTONE, sandy clayey silt (ML); light gray; damp; appears stiff; occasional fractures tight; laminated bedding iron oxide stained.

NOTE: Hole located 7' SE of A-7, about 200' south of South Monterey Park steel water tank. Drilled with Caldwell Euclid Auger Rig with 30" diameter auger provided by A+W Drilling Sept. 10, 1990; logged by R. Heidrick and A. Swanson (Kuehler Associates). Hole backfilled with sand and cement slurry (1½ sack cement per yard of sand).

EXPLORATION HOLE BA-7

BA-8



FILL

1. GRAVELLY SILTY SAND(SM); light yellowish brown; dry; appears dense; predominantly fine sand, some medium; 20-30% Fines; 10-20% fine to coarse gravel to 2".

PICO FORMATION

2. SANDSTONE, silty sand(SM); yellowish brown; damp; loose; coarser with depth.

3. CONGLOMERATE, Gravelly Silty Sand(SM); yellowish brown; moist, occasoinal seepage zones; fine to coarse sand, predominantly medium; 5-15% low plastic fines; 10-20% fine to coarse gravel to 2", round; occasional clay seams and roots.

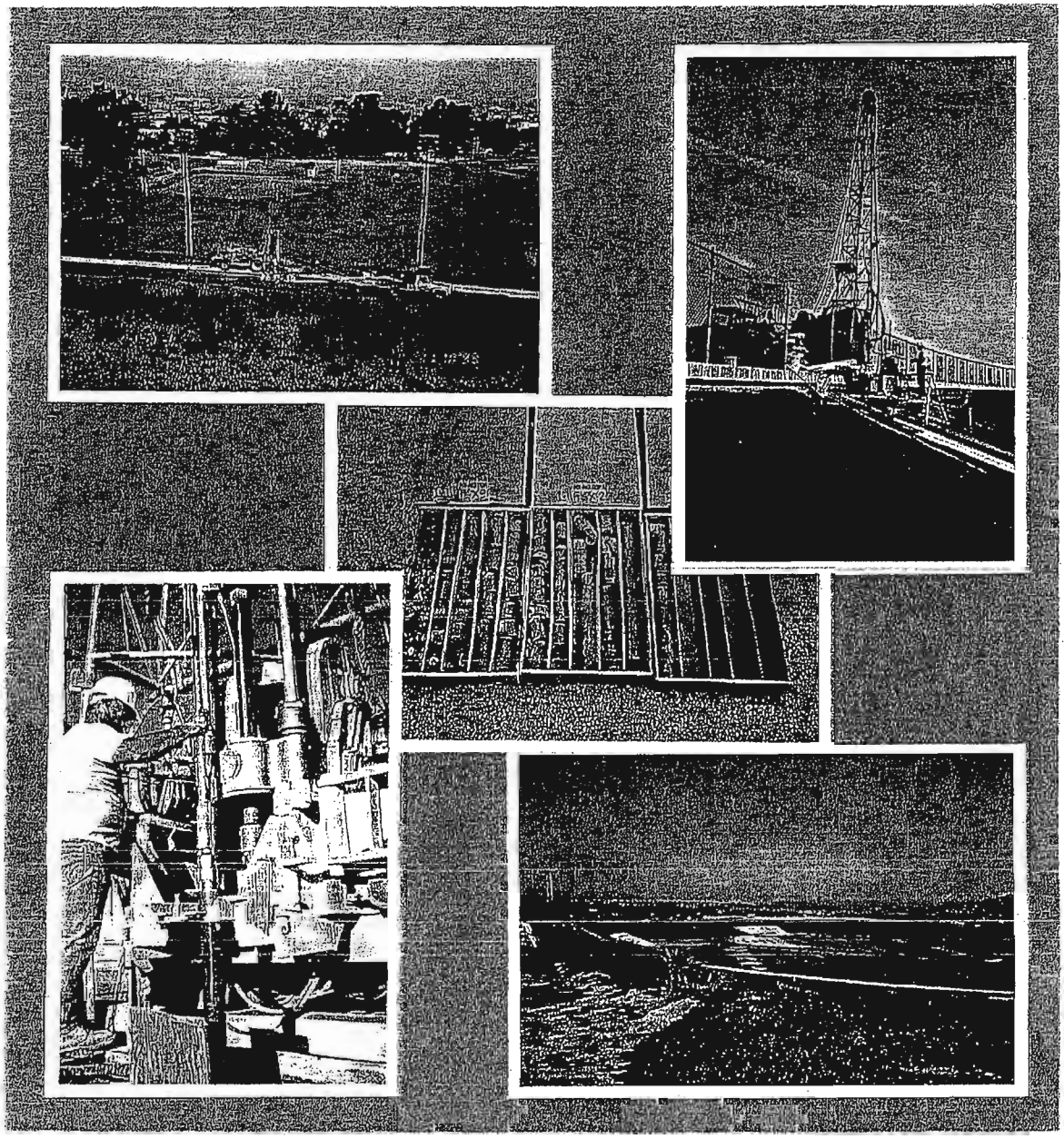
REPETTO FORMATION

4. SILTSTONE with occasional interbedded CLAYSTONE and SANDSTONE, sandy clayey silt(ML); light yellowish brown; dry to moist; very stiff; laminated bedding iron oxide stained; hairline fractures generally tight; occasional fracture zones with open fractures.

NOTE: Hole located immediately west (about 10') of North Monterey Park concrete water tank. Drilled with Caldwell Bucket Auger Rig with 30" diameter auger provided by A-W Drilling, Sept. 11, 1990, logged by R. Heidrick and A. Buangan (Wahler Associates). Hole backfilled with sand and cement slurry (½-sack cement per yard of sand).

EXPLORATION HOLE BA-8

VIEW LOOKING WEST



Supplemental Geotechnical Investigation and Piezometer Installation

for

Garvey Reservoir

Monterey Park, California

Presented to:

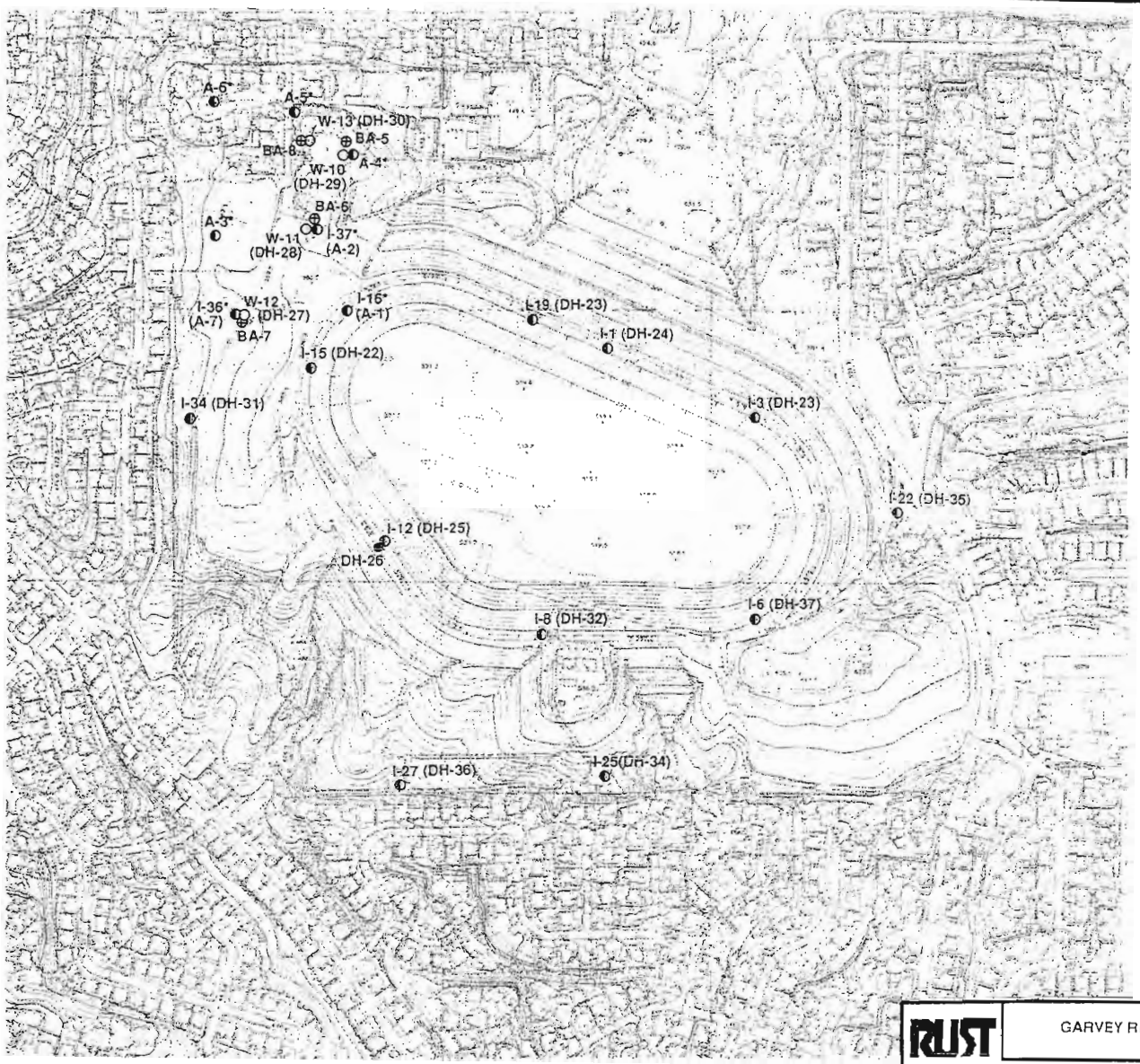
Metropolitan Water District of Southern California

Presented by:

RUST ENVIRONMENT & INFRASTRUCTURE

Project No. 88264.340

July, 1997



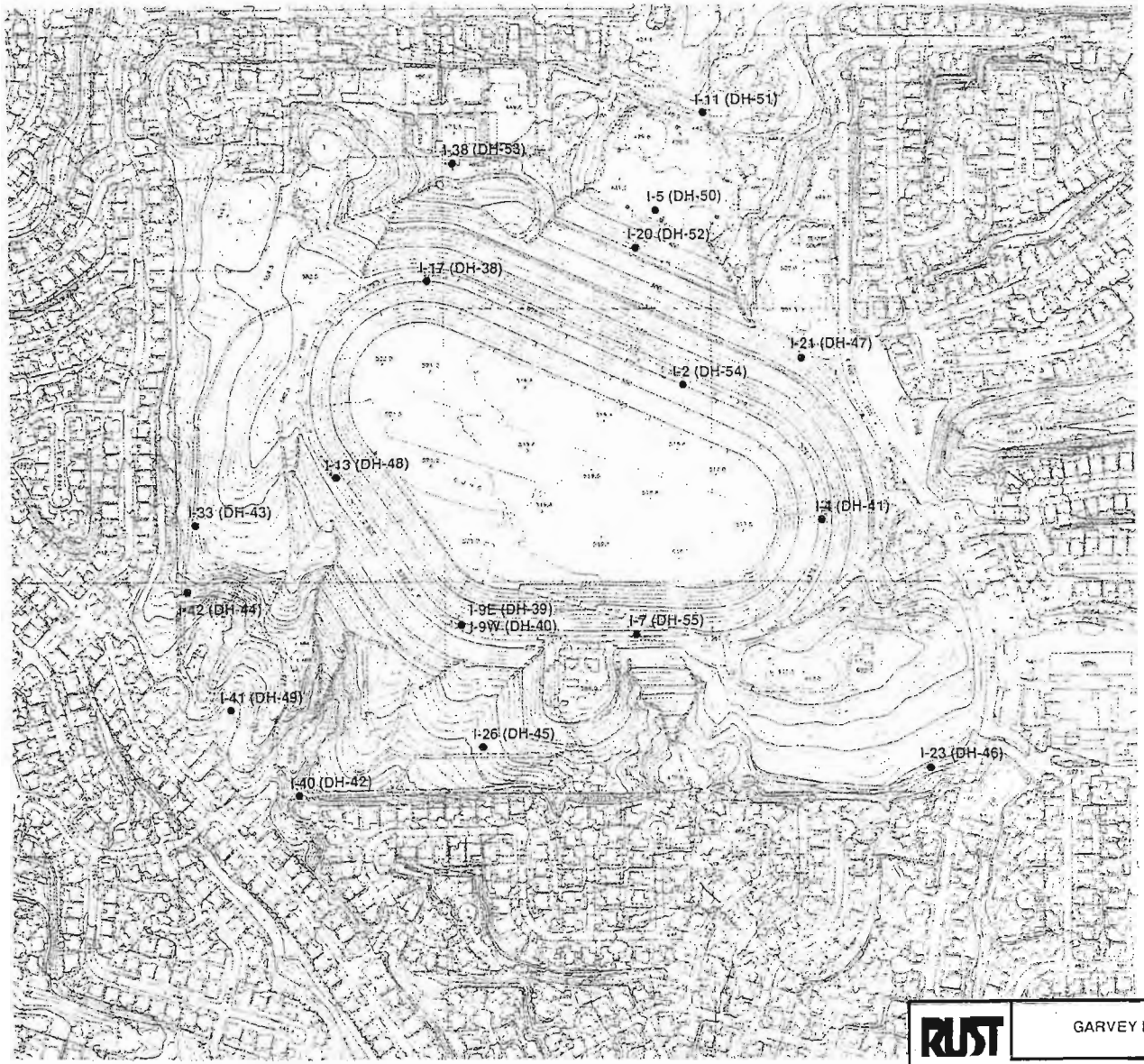
EXPLANATION

I-19 (DH-23) ◐ I-16* (A-1)	EXISTING DUAL PIEZOMETER TO BE INSTRUMENTED (* INSTALLED BY L. CRANDALL & ASSOCIATES); (DH-23) EXPLORATION HOLE NO. DESIGNATION
W-10 (DH-29) ○	EXISTING OPENWELL PIEZOMETER
BA-6 ⊕	BUCKET AUGER HOLE LOCATION
DH-26 ●	EXPLORATION BORING LOCATION (DAMES & MOORE SEISMIC STABILITY STUDY)

SCALE

400 0 400 FEET

RUST	GARVEY RESERVOIR	1990 EXPLORATION MAP		
		PROJECT NO.	DATE	FIGURE NO.
		88264.340	JULY 1996	1



EXPLANATION

I-5 (DH-50) PIEZOMETER LOCATION

I-5 PIEZOMETER NUMBER DESIGNATION

(DH-50) EXPLORATION HOLE NUMBER DESIGNATION

SCALE

400 0 400 FEET

RUST	GARVEY RESERVOIR	1993 EXPLORATION MAP ADDITIONAL PIEZOMETER LOCATIONS		
		PROJECT NO.	DATE	FIGURE NO.
		88264.340	JULY 1995	4

APPENDIX A

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIALS IS LARGER THAN #200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
			GP	POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
		GRAVEL WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON PLASTIC FINES.
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES.
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
			SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES.
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES.
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE	SILTS & CLAYS LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY.
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.
	SILTS & CLAYS LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS.
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.
	HIGHLY ORGANIC SOILS		PT	PEAT AND OTHER HIGHLY ORGANIC SOIL

DEFINITIONS OF TERMS

GRAIN SIZES

U.S. STANDARD SERIES SIEVE

200 | 40 | 10 | 4 | 3/4" | 3" | 12"

SILTS & CLAYS DISTINGUISHED ON BASIS OF PLASTICITY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

MOISTURE CONDITION (INCREASING MOISTURE →)

DRY | SLIGHTLY DAMP | DAMP | MOIST (PL) | VERY MOIST | WET (SATURATED) (LL)

KEY

SAMPLE NUMBER

SAMPLE CONTAINER:

- BAG ..... B
- JAR ..... J
- SHELBY TUBE ..... S
- BOX X

DRIVE SAMPLER

- RINGS ..... R
- LINERS L

DRIVE SAMPLERS

- 2" O.D. STANDARD PENETROMETER ... SPT
- 2.5" O.D. CALIF. SAMPLER ..... CS
- 3" O.D. MODIFIED CALIF. SAMPLER ... MCS

MODE

METHOD OF ADVANCING HOLE:

DRILL

- FLIGHT AUGER ..... AD
- BUCKET AUGER ..... BA
- SPIN AUGER ..... SD
- HOLLOW STEM AUGER .. HA
- ROTARY DRILL ..... RD
- CABLE TOOL ..... CT

SAMPLER

- DRIVE ..... DR
- PITCHER BARREL ..... PB
- CORE C
- PUSH ..... P

RECOVERY

RECOVERY RATIO INDICATED BY A FRACTION:

$$\frac{1.2}{1.5} = \frac{\text{FOOTAGE RECOVERED}}{\text{FOOTAGE SAMPLED}}$$

REMARKS

INCLUDES DRILLING INFORMATION, E.G. WATER LEVEL, DATES.

REFUSAL: STOPPED BY MATERIAL TO HARD FOR EQUIPMENT.

TERMINATED: SUFFICIENT INFORMATION OBTAINED.

ABANDONED: STOPPED BECAUSE OF DIFFICULTIES EXPLAINED ON LOGS.

PENETRATION RESISTANCE (PR)

(RECORDED AS BLOWS/0.5 FOOT)

SANDS & GRAVELS

RELATIVE DENSITY	BLOWS/FOOT*
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CLAYS & SILTS

CONSISTENCY	BLOWS/FOOT*	STRENGTH**
VERY SOFT	0-2	0-1/4
SOFT	2-4	1/4-1/2
FRIM	4-8	1/2-1
STIFF	8-15	1-2
VERY STIFF	15-30	2-4
HARD	OVER 30	OVER 4

* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) Split-Barrel sampler (ASTM-1586 standard penetration test).

** Unconfined compressive strength in tons/sq ft. Read from a pocket penetrometer (PP).

NOTE: COLOR BASED ON ROCK COLOR USING CORRESPONDING MUNSELL NUMERICAL DESIGNATION.

RUST	GARVEY RESERVOIR	KEY FOR SOIL EXPLORATION LOGS
		PROJECT NO. 88264.340 / FIGURE NO. A-1

BORING LOCATION RESERVOIR CREST - NORTHWEST SECTION			GROUND EL. ~578'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING		TOTAL DEPTH 200'
DRILL RIG Failing 1500	BORING DIA. 5 5/8" → 10"	DATE DRILLED 9/5-7/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	0-0.25: ASPHALT LINER	0		12:25			Start 12:00pm core asphalt, auger to 4'. Set up mud tub, commence drilling to 15' with 5 5/8" drag bit. Then convert to 94mm coring system for spot sampling with 2" split spoon core barrel (c)
	FILL						
SM	0.25 - 3' - SAND (SM); light red brn; moist; f-crse sand; 1-% silt.			0 psi		RD	
	PICO FM	4					
GP	3' - 15' CONGLOMERATE: SANDY GRAVEL (GP); mod. yell brn; appears v. dense; f-med, w/occ. coarse gravel; f-crse sand; 10-15% nonpl silt; some Fe ox laminations & staining	8		100			
		12					
		14					
SP-SM	15' - 17' SANDSTONE; yellbrn; damp; f-med grained; 10-12% nonpl fines; weakly cemented; laminated w/ red Fe-ox; < 5% f-gravels.	16	X-1	300	1.0/2.0	C	15'-17' 94mm core barrel (c); 5:30 min; slight chatter.
				100	0.9/1.0	C	17'-18'; c; ~2 min; slight
	-17' - increase f-gravels to 10-15%.					1:20	18'-30' - Rotary drill
GP/SP	-18'-30' - predominately conglomerate with interbedded sandstone, occasional thin siltstone.	20		0		RD	Slight to moderate chatter; full fluid return.
		24					
		28					
	30'-60' CONGLOMERATE: SANDY GRAVEL					1:29	30'-31'; c, 1 min; s-mod. chatter; full return.
ML	GRAVELLY SAND (GP-SP): mod. yell. brn; appears damp; dense; f-crse gravel poorly graded; 30-40% f-crse sand; 10-15% silts; wkly cemented; occ. sandstone + siltstone lenses; sand/silt matrix support.	32		250	1.0/1.0	c	
				200-220	0.6/1.0	C	31'-32'; c; 1 min; s. chatter, full return
						1:43	
GP-SP						RD	32'-45' - RD; s-mod. chatter.
	-31.3-31.6' - SANDY SILTSTONE (ML) light grey w/ rust laminations on upper and lower contacts.	36		40			
		40					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 6 of 15	DH-22

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	(30'– 60' CONGLOMERATE/SANDSTONE)	40					
			X-1	40		RD	-43' stop to clean out mud tub.
GP-SP		44					
	45-47' CONGLOMERATE/SANDSTONE; as above; damp; interbedded sandstone (gradational); decrease gravels to predom. fine some med.; 10-15% silt binder.					2:25	
				350-400	0.6/1.0	C	45'-46'; C; 1:15 min; s-mod chatter; full return; sample blocked at 1'.
				200-400	0.9/1.0	C	
		48				2:39	46'-47'; C; 2:37 min; 1st 6" easy coring harder at 46.5'. Full return.
						RD	RD to 60' slight to moderate chatter, full return
					0 psi		
		52					
	-47'-60'-conglomerate/sandstone						
		56					
		60				2:53	
SP-SM	-60-61' SANDSTONE, mod. yell brn; dmp, dense; f-med; 10-15% silt; wkly cmnted; red Fe-ox laminations occ. f-gravel.			250-400	0.9/1.0	C	60'-61'; C; 2:17 min; s. chatter; full return.
				300-400	1.0/1.0	C	61'-62'; C; 2:30 min; s. chatter full return.
						3:15	62'-75' RD;
		64					
	61'-89.5' CONGLOMERATE: (SANDY GRAVEL – GRAVELLY SAND); mod yell brn w/heavy red fe-ox staining; appears moist; dense; f-med subrnd gravels; 30-40% f-crse sand; 10-15% silt; sand matrix support. Weakly cemented; tight silty binder.			0		RD	
GP-GM w/occ. SP-SM		68					
		72					
	-75'-conglomerate; as above; with interbedded fine-med grained sandstone; weakly cemented; appears moist.					3:40	
		76		250	1.0/1.0	C	75'-76'; C; 1:52 min; s-mod chatter; full return
SM				400	1.0	C	76'-77'; C; 2:20 min; s-mod chatter; full return.
ML	-76'-77'-decrease gravels grades to SANDSTONE					3:50	
GP-GM	-77'-78'-SILTSTONE; light grey-orange; damp; micaceous with thin sand lenses.	80					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-22
		MWD266	2 OF 6	T-15

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
GP-GM	(61'-89.5' CONGLOMERATE)	80, 84, 88				RD	
ML	89.5'-99.5' SILTSTONE; mottled light gray-light red.brn; damp; appears hard; low pl; micaceous w/alternating thin fine sand lenses; apparent dip -5°; sand lenses typically rust colored.	92, 96	X-2	250-400 / 250-400	1.0/1.0 / 1.0/1.0	4:07 C / C	90'-91'; C; 0:50 min; smooth; full return 91'-92'; C; 1 min; smooth
				90		7:19 RD	End of shift @ 4:15pm 9/5/90 rod pulled 20' off bottom. Water level @ 11.3' Top of rod. 9/6/90 6:55AM water level at 27.4'. Drill out to 100'. Smooth drill, siltstone cuttings, full return.
GP-SP	99.5'-119' SANDSTONE (SILTY SAND) mod. yellow brown; appears moist; punky; fine sand w/some med; est 10-15% silts; v. wkly cemented; red fe-ox laminations; occ. thin silt lenses; coarsens w/depth.	100		300-400	3.0/3.0	7:31 C	99' note: gravel lense about 6" 100'-102'; C; 4:25 min; hard drilling w/some softer layers full return.
SP-SM		104, 108		0		7:47 RD	Drill out to 110', slight chatter; sands full return.
	-110' SANDSTONE; as above with alternating coarse layers; occ fine gravels; very little silt binder; appears v. moist; coarsens w/depth. -111.'-111.25': SILTSTONE SEAM	112, 116, 120		300-350	2.2'/2.5'	7:51 C 8:05 RD 8:10	110'-112.5'; C; 3:48 min; sample blocked @ 102'; full return; s. chatter. Drill out to 120'; slight chatter, sands; full return. increase gravels with depth & med grained.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-22
		PROJECT NO. MWD266 / SHEET NO. 3 of 6	Fig 15

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(99.5 - 118: SANDSTONE)	120	X-2	500	.15/0.5	C	120'-120.5': c; 1:10 min; s. chatter; sampler blackout full return
GP-SP	~118'-139' CONGLOMERATE (SANDY GRAVEL-GRAVELLY SAND); mod yell brn w/heavy red fe-ox stains; appears moist-v. moist; dense; f-med gravels; f-crse sand; poorly graded; wkly cemented; some siltstone rip-up clasts; silt binder.	124		0		3:34 RD	Drill out to 130'; slight mod chatter. Driller notes continuous slight water loss since beginning of day, not unusual for sands.
		128					
	-130' CONGLOMERATE AS ABOVE; free H_2O on grains.			400	1.0.5	3:40 C	130'-130.5'; c; 6:12 min. mod. chatter; Full return; gravels.
		132		0		9:00 RD	Drill out to 140' mod. chatter to 135';
	-135'-136'; SANDSTONE lense;						135'-136'; s. chatter easier drilling.
SP		136					
GP-							
	139'-145': SANDSTONE; (SILTY SAND-SAND); yell grey w/some red staining; appears v. moist; (free H_2O on grains); dense; predom. fine-med sand, with some coarse; occ. alternating f-med sand lenses; 10-15% silt binder; wkly cmnted.	140				9:12	140'-143.5; c; 5:35 min; smooth to slight chatter; full return. 140-141' - easier drilling 141-142' - harder drilling
SP-SM			X-3	290 320 400	3.5 / 3.5	C	
		144		0		9:37 RD	Drill out to 150' moderate chatter; Full return.
	-145 - increase f-med gravels grades to conglomerate.						
GP-SP		148					
	145'-159': CONGLOMERATE (SANDY GRAVEL-GRAVELLY SAND); mod yell brn w/heavy red Fe-ox stains; v. moist; dense; f-crse subrnd-subang gravels; f-crse sand; poorly graded; sand matrix support <10% silt binder; mod. cmnted.			400	.15/.15'	9:41 C 10:05	150'-150.15; 3:50 min; mod. chatter; full return.
		152					Drill out to 160 mod chatter to 159; slight continuous fluid loss ~80% return
		156					
		160					159; smooth to slight chatter full fluid return.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 4 OF 6	DH-22 T-15

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SM	59'-~175' SANDSTONE (SILTY SAND); mod. yell gray w/some fe-ox stains; appears moist; dense; f-sand w/ some med + crse; 15-20% silt binder; v. wkly cmnted; occ. thin silt seams + crse sand lenses.	160	X-3	300-400	2.0/2.0	C	160'-162'; C: 9:41 min; slight chatter; full return
	- some interbedded gravels	164		0		RD	Drill out to 170'; slight chatter. 165 - mod rough chatter
		168					
	170' - SANDSTONE AS ABOVE; f-med grained some crse and f-gravel; damp-moist; appears tight.			400-4	1.0/1.0	C	170'-171'; C; 5:52 min; slight chatter to 170.8'; mod chatter slow drill to 171'; Full return.
		172				11:10 RD	
	- increase gravels to ~40-45% f-med.	176		0			Drill out to 180' Slight to mod. chatter.
SP-SM	175'-200' CONGLOM/SANDSTONE; (GRAVELLY SAND); grey-yell brn; v. mst; dense; f-crse sand; 40% f-med gravels; wkly cmnted tight;	180		400	2/2'	11:15 C	180'-180.2'; C; 4:44 min; s-mod. chatter; full return
	- interbedded sand + gravel	184		0		11:36 RD	Drill out to 190' mod. chatter
		188					
	-190 predom SANDSTONE; as above w/30-40% f gravels; v. mst; dense; 10-15% silt binder			400	1.5/1.5	11:45 C	190'-191.5'; C: 6:38 min; slight chatter.
		192		0		12:05	Drill out to 200' slight-mod chatter.
	197' - grades to conglomerate	196		100psi			197' hard increase pull down. 198' softer drilling
		200					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266	SHEET NO. 5 OF 6	DH-22 T-15

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL-CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-GP	(175'-200': SANDSTONE/CONGLOMERATE)	200					200'-200.25'; ~ 3:00 min. slight chatter; full return.
	199'-200' CONGLOMERATE (SANDY GRAVEL-GRAVELLY SAND); mod. yell. brn w/ heavy red fe ox staining; v. moist; appears dense; f-crse sand; f-med sub rnd gravels to 40-50%; 10-15% silt binder; wkly cemented		X-3	450	25/0.25	C	PILOT HOLE COMPLETED 12 pm 9/6/90.
		204					
	TOTAL DEPTH 200.25'						

WELL CONSTRUCTION

0 - 119.0' - 2" blank pvc casing

119.0 - 199.0' - 0.02" slotted pvc

199.0' - 112.5' - #3 lonestar sand

112.5' - 108.5' - 3/8" bentonite pellets

0 - 108.5' - cement/bentonite grout.

note: Two piezometers installed.

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

notes: Drill pilot hole with 5 5/8" bit to 200'. use ~5 gallons of clear mud. No significant water loss during drilling. Minor formational water loss in sandstone/conglom. units...

Ream hole with 10" tricone bit for well construction.

Ream to 110' end of shift 5pm 9/6 water level at 1.7' from T.O.C.

9/7/90 7:00AM water level at 18' from T.O.C.

Finish reaming hole to 10" at 12:15pm

Flush hole w/200-400 gal clean water

Borehole sounded to 199.5' from ground surface.

Install well casing; add 3 gallons chlorox to break ez mud, circulate. flush with ~300 gal. clear water, mud looks very thin.

Construct well.

Well completed 9/8/90 8:30AM

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 6 of 6	DH-22

BORING LOCATION RESERVOIR CREST - NORTH EMBANKMENT (CENTRAL SECTION)		GROUND EL. ~578'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING	TOTAL DEPTH 200.0'
DRILL RIG FAILING 1500 / BORING DIA. 5 7/8" - 10"	DATE DRILLED 9/8 - 9/10/90	LOGGED BY JM/RH/SK

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	0'-0.25': ASPHALT LINER	0					Auger out to 4'. Set mud tub. Advance hole with rotary wash drilling (RD) using 5 7/8" bit. Circulate EZ mud polymer drill fluid.
	EMBANKMENT FILL						
SM	0.25'-98.0': SILTY SAND (SM); dark yellowish brown; damp-moist; fine to medium with some coarse; est. 10-20% slightly plastic fines; est ~10% gravels up to 2".	4		0psi		RD	
		8					Samples obtained using 2" SPT w/ 140# safety hammer w/30" drop (D); 3" Pitcher Barrel (Pb); and 94mm Core barrel (c).
			X-1	18/26/27	1.4/1.5	D	10'-11.5'; SPT drive sample
		12		80		RD	
		16					
				100			
	-20': SILTY SAND as above; increased gravels to ~10-20% up to 1 1/2"; moist	20	S-1	40 psi	2.0/2.0	Pb	20-22'; 3" Pb sample; 3 min.
							22'-24'; c; 1.3 min.
		24				RD	Drill out to 40'. Full drill fluid return.
		28					
		32					
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD-266 / SHEET NO. 1 OF 6	DH-23 I-19

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SM	(0.25'-98.0'; SILTY SAND: FILL)	40	S-2	40 psi	2.4/2.5	PD	40'-42.5'; 3" PD; 4 min.
			X-1	100-120	1.5/1.5	C	42.5'-44'; C; 1:00 min.
		44		100		RD	Drill out to 60'. Full fluid return.
		48					
		52					
		56					
	- 60': SILTY SAND as above; slightly moist; - appears tighter than above material.	60	S-3	60-100	1.9/2.0	PD	60'-62'; 3" PD; 1.5 min.
			X-1	250 350	0.8/2.0	C	62'-64'; C; 4.2 min. ~63' - increase rig pulldown to 350 psi.
		64		100		RD	Drill out to 80'; 9 min. Full return
		68					
		72					
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD-266 / SHEET NO. 2 OF 6	DH-23 I-19

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(0.25'-98.0'; SILTY SAND, FILL)	80					
	-80'-95': SILTY SAND as above; slightly moist; decreased fines; decreased gravels to 5-10%.		S-4	100 / 120	1.6 / 2.0	Pb	80'-82'; 3" Pb; 2.5 min
			X-1	250	1.3 / 2.0	C	82'-84'; c; 1.4 min.
		84					END OF SHIFT 5pm, drill Fluid level at 7.7' TOC. 9/9/90 7AM - drill Fluid at 18.7' TOC.
		88		0		RD	Drill out to 100'. Full return.
		92					
		96		100			95' - harder drilling increase pulldown pressure to 100 psi
	FOUNDATION / REPETTO FM (?)			—			
ML	98.0'-110.4': SILTSTONE; SANDY SILT (ML); light olive grey; damp; appears hard; slightly plastic; fe-ox laminations.	100					
			S-5	180 psi	1.9 / 2.0	Pb	100'-102'; 3" Pb; 4:00 min
			X-1	250 psi	1.8 / 2.0	C	102'-104'; c; 2:00 min
		104					Drill out to 110'; 5.5 min.
		108					
	110.4'-200': SILTSTONE w/ Interbedded SANDSTONE and occ. CLAYSTONE: reddish brown and medium grey; damp; appears very stiff; interbedded SANDSTONE (SILTY SAND).						110'-114'; c.
ML / SM		112	X-2	120 psi	3.6 / 4.0	C	
	-110.4'-111.2': vertical clay seam; very dark reddish brown; mod-high plasticity.	116		80 psi		RD	Drill out to 120'.
	-112.3'-112.4': SANDSTONE lense; est. <5% fines; 15° dip.						
	-112.7'-122.7': laminated SILTSTONE; 10-15° dip.				—		
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-23
		MWD-266	3 OF 6	I-19

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML/SM	(110.4'-200': SILTSTONE/SANDSTONE)	120	X-2	200 400 PSI	2.7/4.0	C	120'-124'; 3:00 min; pull down pressure fluctuates through sample.
	-122.5'-132.5': SILTSTONE as at 110.4'; laminations up to 5° dip; iron stained.	124		80 PSI		RD	Drill out to 130'. Full return.
		128					
	-132.5'-133.2': SILTSTONE; light yellow brown w/fe-ox staining; slightly damp.	132		200 PSI	3.6/4.0	C	130'-134'; c; 3.5 min.
	-133.2-133.6'; SILTSTONE as above; fe ox laminations - horizontal to 35° dip.	136	X-3	80 PSI		RD	Drill out to 140'; 4:30 min; full return.
	-140'-144': SILTSTONE w/interbedded SANDSTONE & CLAYSTONE; laminated to thinly laminated; siltstone - light grey; sandstone - fe-ox stained; claystone light grey; bedding dip at ~10°.	140		300	4.0/4.0	C	140'-144'; c.
		144		80 PSI		RD	Drill out to 150'; 4:00 min; full return.
		148					
	-150'-154': SILTSTONE w/interbedded SANDSTONE as at 140'; thin laminated beds dipping ~20°.	152		250 300	4.0/4.0	C	150'-154'; c; 4:30 min.
	-153-153.7': CLAYSTONE; very light yellow brown; slightly damp; laminated w/dark brown clay; dip at 20°.	156				RD	Drill out to 160; 4:30 min; full return.
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD-266 / SHEET NO. 4 OF 6	DH-23 I-19

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(110.4'-200': SILTSTONE/SANDSTONE)	160	X-3				160'-164'; C; 3:30 min
ML/SM	-160'-164': SILTSTONE/CLAYSTONE: slightly damp; occ. fe-ox laminations dip at ~15°.		X-4	300 PSI	4.0/4.0	C	
		164		80 PSI		RD	Drill out to 170'; 4:30 min; full fluid return.
	FRACTURE ZONES	168					
XXXXX	170'-170.7': FRACTURE ZONE IN SILTSTONE; intensely fractured; fractures at high angle to bedding; moist; core is broken.	172		180 PSI	3.9/4.0	C	170': while flushing cuttings encountered immediate loss of circulation. Measured falling fluid head level for 40 min to 106'. Add ~100 gal water + 10 gal EZ mud then sampled at: 170-174; C; 4 min.
	171.3'-172.1': FRACTURE ZONE IN SILTSTONE/SANDSTONE; intensely fractured; sandstone appears loose, very poorly cemented; moist.	176		80 PSI		RD	Drill out to 180'; -170'-172': 50% fluid return; -172'-174: regain nearly full fluid return (~90%); -174-180': 5:00 min; ~50% fluid return.
		180		200 PSI	4.0/4.0	C	180'-184'; C; 4.50 min; fluid return fluctuates from ~50% to full.
XXXX	183.1'-194.0': FRACTURE ZONE IN SILTSTONE; closely fractured; laminated sandstone beds at 30° dip; moist.	184	X-5	60 PSI		RD	Drill out to 190'; Full fluid return.
		188					
	-190'-194': SILTSTONE/SANDSTONE unfractured.	192		120 PSI	4.0/4.0	C	190'-194'; C; 3 min; Full return.
		196				RD	Drill out to 199'; full return.
	Total Depth = 200.0'	200		180	1.0/1.0	C	199'-200'; C; 1:20 min; full return. Boring terminated at 200'.

Wahler Associates

GARVEY RESERVOIR

EXPLORATION BORING LOG		BORING NO.
PROJECT NO.	SHEET NO.	DH-23
MWD-266	5 OF 6	I-19

BORING LOCATION NE SIDE OF RESERVOIR @ CREST			GROUND EL. ~578
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING		TOTAL DEPTH 200
DRILL RIG FAILING 1500	BORING DIA. 5 5/8" ~~10"~~	DATE DRILLED 9/8/90 - 9/10/90	LOGGED BY SMK

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	WELL DETAIL 0-119': 2" PVC blank casing 119'-199': 2" well screen, 0.02" slotted. 114.5'-201.5': #3 sand filterpack. 111.3'-114.5': Bentonite seal. 0'-111.3': cement grout. note: Two piezometers installed.						9/10/90 7AM - CONTINUED REAMING HOLE TO 10" @ BELOW 100' - SWITCH OVER TO DRAG BIT FROM TRI-CONE FOR FASTER PENETRATION THROUGH SILTSTONE FOUNDATION MAT. - W.L. READING 7'8" BELOW GROUND SURFACE IN MORNING BEFORE STARTING - 8:00 - ~9:00 AM DOWN - DRAG BIT PLUGGED & HAD TO BE PULLED OUT & WORKED ON - 12:00 REAMING @ 170' - NO UNUSUAL CONDITIONS OR WATER FLOW - DRILLER NOTED WHEN DRILLING JUST ABOVE 170' - 1:30 FINISH REAMING & START FLUSHING HOLE - 2:30 FINISH FLUSHING HOLE, PULL RODS - 2:45 START PIEZO. INSTALLATION - 4:30 COMPLETED PIPE SAND & BENTONITE PLUG - 4:50 BREAK FOR DAY 9/11/90 7AM - START CEMENT-BENTONITE GROUTING BY TREMIE - BOTTOM OF TREMIE PIPE @ ~100' - W.L. IN HOLE NOTICE PIEZ. STANDPIPES 6.5' - 8:45 COMPLETE GROUTING & START BREAKDOWN TO MOVE HOME

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN OR LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-23
		MPD-2668	6 OF 6	I-19

BORING LOCATION RESERVOIR CREST - NORTH EMBANKMENT (CENTRAL SECTION)		GROUND EL. ~578'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING	TOTAL DEPTH 200'
DRILL RIG FAILING 1500 (RW) / BORING DIA. 5 7/8" – 10"	DATE DRILLED 9-11-90/9-13-90	LOGGED BY SK

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
							12:15pm
	0-0.25'-ASPHALT LINER	0					Auger out to 4'. Set up mud tub. Advance hole with 5 7/8" drag bit using rotary wash drilling (RD). Circulate EZ mud drill fluid.
	EMBANKMENT FILL						
SM	0.25'-86.5': GRAVELLY SILTY SAND (SM); yellow brown; moist; mostly fine to medium sand; est. 10-20% silt binder; gravels up to 2".	4				RD	
		8					
	-10'- GRAVELLY SILTY SAND as above; dense; est. 10-30% fines.			5/28/24	0.9/1.5	D	10'-11.5'-Standard Penetration Test (SPT) using 140# safety hammer at 30" fall (D)
		12	X-1				
						RD	
		16					
	-20'- GRAVELLY SILTY SAND as above; gravels up to 1"; 10-20% low plasticity fines; moist.	20		120 psi / 140 psi	1.3/2.0	C	20'-22'-Convert to 94mm wireline coring (C).
							Drill out to 30'.
		24		60 psi		RD	
		28					
	-30'- GRAVELLY SILTY SAND as above.			350	1.0/1.5	C	30'-31.5'; C; refusal (rock/clast?) at 31.5'; increase pulldown to 350 psi.
		32					Drill out to 40'.
				60 psi		RD	
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 1 OF 6	DH-24 I-1

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(0.25'-86.5' - GRAVELLY SILTY SAND FILL)	40					
SM	-42' - GRAVELLY CLAY SAND (SC); color change to orange brown; fine to medium sand; est. 20-30% mod. plastic fines.		S-1	60/18" 100/6"	2.0/2.0	Pb	40'-42'; 3" Pitcher Barrel Sampling (Pb); Sampler tip bent in.
		44	X-1	45-80		RD	
	-45' - GRAVELLY SILTY SAND as at 0.25'; yellow brown color; est. 20-30% fines; decrease gravels to 5-10%.				1.8/2.0	C	45'-47'; c
		48				RD	
	-50' - GRAVELLY SILTY SAND as at 45'.		S-2	60/2' 100/6"	2.5/2.5	Pb	50'-52.5'; 3" Pb; liner in good condition.
		52					
		56		60-80		Pb	
	-60' - GRAVELLY SILTY SAND as at 45'.	60	S-3	300	1.8/2.25	Pb	60'-62.25'; 3" Pb; liner slightly scarred.
		64	X-1	100		RD	
		68					
	-70' - GRAVELLY SILTY SAND as at 45'.			120	1.8/2.0	C	70'-72'; c; some chatter.
		72		80		RD	
	-75' - GRAVELLY SILTY SAND as at 45'.	76	X-2	140	2.0/2.0	C	75'-77'; c; hard drilling at bottom of sampler.
				80-60		RD	
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 2 OF 6	DH-24 I-1

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SM	(0.25-86.5'-GRAVELLY SILTY SAND FILL) -80'-GRAVELLY SILTY SAND as at 45'; est. 10-30% low plasticity fines.	80	X-2	120/15" 350/6"	1.9/2.0	C	80'-82'; c
	-85'-GRAVELLY SILTY SAND as at 45'	84		85-80 psi		RD	
	86.5'-~90'- SILTY SAND (SM); orange-yellow brown; moist to wet; fine to medium sand; est. 20-30% low plasticity fines; no gravels.			140-100	1.9/2.0	C	85'-87'; c; note quick drop in drill pressure at 85.5' from 140psi to 100psi.
	PICO FM/FOUNDATION	88		80'		RD	88'-90'-softer drilling possible Foundation contact.
SM	~90'-105'- CONGLOMERATE: GRAVELLY SILTY SAND (SM); orange-yellow brown; moist; fine to coarse sand; est. 10-20% low plastic fines; est. 5-15% fine gravel, subround to subangular, occ. gravel up to 2".	92		120-200 psi	1.8/2.0	C	90'-92'; c. 92'-End shift 5pm. 9/12/90 7AM start drilling. drillfluid level at 21'4" below ground surface.
				80		RD	
	-95'-CONGLOMERATE as above; est. 10-20% gravel; est. 10-15% silt.	96		240-280	1.9/2.0	C	95'-97'; c.
		100				RD	Drill out to 105.5'
		104					-105'-softer drilling.
SP-SM	105'-108'-SANDSTONE: SILTY SAND (SP-SM); yellow brown with some orange fe-ox stains; moist; mostly fine to medium sand; est. 5-10% low plastic fines; no gravels.		X-3	80	1.7/2.0	C	105.5'-107.5'; c.
SM	108'-146'- CONGLOMERATE: GRAVELLY SILTY SAND (SM); yellow brown with orange fe-ox stains; moist; fine to coarse sand; est. 10-15% low plastic fines; est. 10-20% fine to coarse gravel up to 2", subangular to subround.	108		80		RD	108'-drill chatter; back into gravels.
		112					
		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 3 OF 6	DH-24 I-1

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SM	(108'-146' CONGLOMERATE) -120'- CONGLOMERATE as at 108'; occ. interbedded sand lenses.	120	X-3	200/12" 380/9"	1.6/1.8	C	120'-120.8'; C. Some drill chatter.
		124		80		RD	
		128					
		132					
	-135'- CONGLOMERATE as at 108'; moist.	136		200-250/13" 300/4" 200/2"	1.8/2.0	C	135'-137'; C; some chatter.
		140		100-120		RD	Drill out to 150'. note: no drill fluid loss so far.
		144					
ML	REPETTO FM 146'-200'- SILTSTONE: SANDY SILT (ML); light olive grey with orange Fe-ox laminations; moist; low to mod plastizity; very fine sand; appears hard.	148					-146'-148'; driller notes siltstone lense. 148'- driller notes back into sand. - Add EZ mud prior to sample run.
		152		100	1.9/2.0	C	150'-152'; C; smooth drill; siltstone. Solid core sample.
		156		100		RD	Drill out to 163'. no drill rig chatter.
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 4 OF 6	DH-24 I-1

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(146'-200': SILTSTONE)	160					
				100		RD	
	-163'-165' SILTSTONE as at 146'; sample is fractured at predominantly 45° to vertical orientation		X-3				163'-165'; C; little to no chatter; sample is fractured note: undisturbed sample photographed.
		164			2.0/2.0	C	
							Drill out to 180. smooth drilling
ML		168		100		RD	-no apparent drill fluid loss.
		172					
		176					
	-180' - SILTSTONE as at 146'; no fractures.	180					180-182; C; no chatter. solid core sample.
				120	2.0/2.0	C	
			X-4				
		194					Drill out to 198'.
				0		RD	
		188					
		192					
		196					
	-198' - SILTSTONE as at 146'. 199.2'-199.7' - Color change to dark grey.						198'-200'; C.
				80	1.9/2.0	C	
	Total Depth 200'.	200					Boring Terminated 10:30 AM 4/12/90

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 5 OF 6	DH-24 I-1

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY SHK

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	WELL DETAIL 0-119': 2" PVC blank casing 119'-199': 2" Well screen, 0.02" slotted. 111.5'-201': #3 sand filter pack. 107'-111.5': Bentonite seal. 0'-111.5': cement grout. note: Two piezometers installed.						9/12/90 10:30 AM - BEGIN SETTING UP FOR REAMING HOLE FROM 5 7/8" → 10" - SETTING 12" & CASING - 10:40 AM - START REAMING W/ 10" & TRI-CONE BIT - 5:15 PM - SHUT DOWN FOR DAY - HOLE REAMED TO 180' 9/13/90 7:00 AM - - CONTINUE REAMING HOLE 180' - 201.5' - NO WATER LEVEL TAKEN THIS MORNING - 8:00 AM - COMPLETED REAMING - BEGIN FLUSHING HOLE - 8:40 AM - COMPLETED FLUSHING HOLE - START REMOVING RODS - 9:00 AM - START INSTALLING PIEZOMETER PIPE - 9:30 AM - PIPE INSTALLED (SEE DETAIL SKETCH) - START SAND BACKFILL - 11:00 AM - COMPLETE SAND & BENTONITE SEAL INSTALLATION - 11:30 AM - START GROUTING HOLE - 1:00 PM - GROUTING COMPLETED - START BREAKDOWN & CLEAN UP OF SITE

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266 B	SHEET NO. 6 OF 6	DH-24 I-1

BORING LOCATION SOUTH CREST OF RESERVOIR		GROUND EL. ~578'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING	TOTAL DEPTH 201'
DRILL RIG FAILING 1500	BORING DIA. 5 5/8" - 10" / DATE DRILLED 9-18 / 9-20	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	0 - 0.25' - ASPHALT LINER	0	11:00 AM				cut asphalt liner; auger to 3', set up mud tub. Began mud rotary drilling (RD) using EZ-mud fluid. Advance 5 5/8" drag bit.
	EMBANKMENT FILL					RD	
SM	0.25'-33.5': SILTY SAND (SM); mod. yellowbrown with brown mottling; slightly moist; fine-med sand with some coarse; 20-40% low pl fines; ~10-15% gravels up to 1"; appears compact.	4		0psi			Smooth drilling using rod weight (0psi pulldown).
		8	11:10				10'-12'; Advance modified Pitcher barrel (MPb) with 2.5" split spoon; 1 min; smooth drill
			X-1	100	2.0/2.0	M Pb	
		12		0		RD	drill to 20'; 8:40 min; 0psi
	-14'-14.5': CLAYEY SAND layer, dark grey.	16					
	-19.5'-21': CLAYEY SAND layer; dark grey.	20		140-150	2.0/2.0	M Pb	20'-22'; Pb; 1:50 min; smooth drill
				0		RD	drill to 25'; 5:37 min
		24					- stiffer drilling at 24'.
			S-1	40psi → 140	2.5/3.0	Pb 3"	25'-28'; 3" Pitcher Barrel (Pb); 3:50 min; smooth drill; full fluid return. 27.5' - increase pulldown to 140psi
	-28'; SILTY SAND as at 2'; color change to yellowbrown; occasional subangular gravels to 2".	28	S-2	100	2.5/2.5	Pb 3"	28'-30.5'; Pb; 2 min; smooth drill; full return.
	~30'-33'; increase coarse sand and fine gravels (crushed quartz) to ~20%.	32	S-3	80 / 140	1.9/2.5	Pb 3"	30.5'-33'; Pb; 2:57 min; smooth drill; full return. 32.5' - increase pulldown to 140psi
	PICO FM		S-4	80	1.0/2.5	Pb 3"	33'-35.5'; Pb; 3:10 min; slight drill chatter; full return.
SP-SM	33.5'-41': "SANDSTONE" SAND - SILTY SAND (SP-SM); yellow brown; appears moist; fine to medium sand with some coarse; ~5-12% low pl fines; appears spongy to touch	36	S-5	80	1.0/1.0	Pb 3"	35.5'-36.5'; Pb; 1 min; smooth drill; full return.
			S-6	60	1.0/1.0	Pb 3"	36.5'-37.5'; Pb; 2:50 min; smooth drill; full return.
			S-7	60	1.2/1.5	Pb 3"	37.5'-39'; 0:40 min; smooth drill; fast; full return.
		40	S-8	100	1.2/1.5	Pb 3"	39'-40.5'; 1:03 min; smooth drill; full return

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-25
		PROJECT NO. MWD-266 / SHEET NO. 1 OF 6	I-12

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(33.5'-41': SANDSTONE)	40	S-8				
SP	41'-48': CONGLOMERATE: GRAVELLY SAND (SP); yellow brown w/orange mottling; appears moist; fine to coarse sand; 15-30% fine-med gravels, subrnd; 5-12% fines.		S-9	70-80	1.3/1.5	Pb 3"	40.5'-42'; Pb; 1:02 min; smooth drill; full return.
			S-10	80	1.2/1.5	Pb 3"	42'-43.5'; Pb; 1:00 min. Slight chatter; full return.
SM	-44'-48'- increase silt binder to ~20%.	44	S-11	120	1.2/1.5	Pb 3"	43.5'-45'; Pb; 1:10 min; slight drill chatter; full return.
			S-12	100 200 100	1.2/1.5	Pb 3"	45'-46.5'; Pb; 1:41 min; slight chatter full return.
			S-13	100	1.5/1.5	Pb 3"	46.5'-48'; Pb; 1:50 min; slight chatter;
SP-SM	48'-52'- SANDSTONE: SAND-SILTY SAND (SP-SM); dusky yellow brown; appears moist; fine-med sand w/some coarse; 10-15% silt binder; mod. consolidated; spongy to touch,	48	S-14	80	1.5/1.5	Pb 3"	-decrease gravel @ 48'; 48'-49.5'; Pb; 1:20 min; smooth drill full return.
			S-15	60	1.3/1.5	Pb 3"	49.5'-51'; Pb; 1:30 min; smooth drill; full return.
SP-SM	52'-68'- CONGLOMERATE w/INTERBEDDED SANDSTONE: SILTY GRAVELLY SAND & SILTY SAND; orange brown-yellowbrown; moist. fine-coarse sand. 10-20% fine gravels; 10-15% silt binder; weakly cemented; with thin interbedded sand lenses.	52		0,		RD	drill out to 60'. -alternating slight to mod. rough drill chatter. -Gravels in cuttings.
		56					
		60	X-1	300 250 300	2.0/2.0	C	60'-62'; Advance 94mm wireline sampler; 3:28 min; mod. chatter; full return.
		64		0		RD	drill out to 70' Slight-mod drill chatter
	-68'-68.5'; SILTSTONE LENSE	68					
SM	68.5'-86'; SANDSTONE; SILTY SAND (SM); light grey w/orange laminations; very moist; fine sand w/some med-coarse; 15-20% silts; 5-10% fines gravels up to 2".			300 200 450	1.7/2.0	C	70'-72'; C; 2:20 min; slight chatter. full return. alternating stiff/soft drilling ← 2" cobble in shoe.
		72		312		RD	drill out to 80' Slight-mod. drill chatter
	-occasional cemented lenses to 86'.	76		100			
		80					-79'; harder drilling; rough chatter.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD-266 / SHEET NO. 2 OF 6	DH-25 I-12

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SM	(68.5'-86': SANDSTONE) - 80'-SILTY SAND as at 70'; increase orange mottling; Slight increase in gravels.	80	X-1	300-350	2.0/2.0	C	80'-82'; c; 3:48 min; slight chatter; full return
		84				RD	drill out; slight chatter
ML	86'-97'-SILTSTONE; light olive brown; appears damp; LOW PL; 5-15% very fine micaceous sand; minor rust orange mottling; soft; friable. - 90'-color grades to light grey; decrease sand to <5%.		3:15			3	-86'; driller notes softer drilling: SILTSTONE.
		88	S-16	100 / 140	2.0/2.5	Pb 3"	87'-89.5'; Pb; 3:52 min; smooth drill; full return.
			S-17	140	1.7/2.5	Pb 3"	89.5'-92.'; Pb; 4:30 min; smooth drill, full return
		92	4:45			RD	End of shift: 5pm; mud level at 2.5' TOC.
SW	97'-140'-CONGLOMERATE: GRAVELLY SAND (SW); dusky yellow brown w/ heavy red Fe-ox stains; very moist; fine to coarse; 15-20% fine-med gravel; <10% silt binder; loosely consolidated; weakly cemented.	96		—			
	- occasional thin siltstone seams to 106'.	100	X-2	300 / 250	2.0/2.0	Pb 3"	100'-102'; c; 2:17 min; smooth. Full return. alternating hard/softer drilling.
		104				RD	
ML	- 106'-109'-SILTSTONE Bed.			100			-106'-109'; smooth drill silts in cuttings.
		108					
SP	- 109'-CONGLOMERATE as at 97'; damp; very tight; mod. consolidated; 15% silt; poorly graded.			400	0.5/0.5	C	110'-110.5'; c; 5:45 min; slight chatter, full return; hard drilling
		112		0			drill out to 120'
							mod-rough drill chatter.
		116		80			118'-increase pulldown pressure to 90 psi.
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-25
		MWD-266	3 OF 6	I-12

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP	(97'-140.5' CONGLOMERATE) - decrease in silt binder. - 120.5-121.5': SANDSTONE lense; dusky yellow; fine-med sand, w/ coarse; est. 10% silt binder; occ fine gravel; moist; some orange mottling.	120	X-2	7:43 / 400 / 250	2.0/2.0	C	120'-122'; c; 3:10 min; slight chatter; full return; - after drill. - at 121' sample may be sec abt.
		124		7:55		RD	drill out to 130'. mod. drill chatter
		128					
SW	- 130': conglomerate as at 97'; increase orange mottling; predom. f-med sand with coarse; est. 15% fine gravels; <10% silt binder.			8:10 / 250 / 8:23	0.5'/5'	C	130'-130.5'; 5:40 min. mod. chatter; hard; full return
		132		80 PDI		RD	drill out to 140' mod. chatter
		136					
	- 140-140.5' Conglomerate as above - wet!	140		8:12 / 300	2.3/2.3	C	140'-142.3; c; 3:14 min; mod. chatter; full return
ML/SM	140.5'-160.6': SILTSTONE w/ interbedded fine SANDSTONE; olive grey with orange rust laminations dipping horiz to 5°; low pl silts w/10-15% vfg micaceous sand; alternating with beds of vfg silty sand (rust color); damp; hard; sample breaks along bedding beds 2-3" thick; ~50-50 silt to sand in beds	144		8:45 / 100		RD	drill out to 150'. smooth drill
		148					
	150' - SILTSTONE/SANDSTONE as at 140.5'; occ. thin dark grey clay beds; 1-2"; hard.			6:55 / 200 / 200	2.0/2.0	C	150'-152'; c; 1:51 min; smooth; full return.
		152		7:13			- 152' - fine sand in shoe drill out to 160'
		156					
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 4 OF 6	DH-25 I-12

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
ML/SM	40.5'-160.6' SILTSTONE/SANDSTONE)	160					
	160.6'-179.5': CONGLOMERATE: GRAVELLY SAND(SP); dusky yellow brown w/orange brown; moist; fine to coarse sand; 10-20% fine gravel.		X-3	200 400	3/8	C	160'-160.8'; 5:40 min, smooth full return.
SP						RD	drill out to 170'
		164		100			Slight-mod drill chatter
		168					
	-170'-conglomerate as at 160.6'; slightly moist, mod. consolidated; wkly cemented; -5-10% silt binder			11:00			
				450 / 10:24	3'/3'	C	170'-170.3'; c; 2:52 min; mod. chatter, full return
		172				RD	Drill out to 180' mod chatter; mod
				160			
		176					-179'-very hard drilling
SM/ML	179.5'-197': SILTSTONE w/interbedded SANDSTONE (ML/SP-SM); light grey w/orange laminations; damp to slightly moist; slightly plastic silt w/est. 20% very fine micaceous sand; with alternating sand lenses with est. 20% silt binder; laminations dip at 5°; est 80% sand to 20% silt beds.	180		10:31			
				200 / 180	2.0 / 2.0	C	180'-182'; c; 2:05 min; slight chatter; full return. Faster drilling at 181'.
		184		100psi 12min		RD	Drill out to 190' smooth drilling
	-alternating sand/siltstone	188					
				11:05			
	-190-192': SANDSTONE/SILTSTONE as at 179'; damp.			200 / 250	2.0 / 2.0	C	190'-192'; c; 4:44 min; smooth to slight chatter. Fair return
		192		11:15			Drill out to 200'
	197'-201': CONGLOMERATE: SANDY GRAVEL; red brown; damp; very dense; fine to coarse gravel; 20-40% fine to coarse sand; est. 10% silt binder; very tightly packed; mod. consolidated; mod. cemented; occ. siltstone rip up clasts.	196		100			-197': hard drilling
GP		200					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 5 OF 6	DH-25 I-12

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
GP			X-3	450	0.7/1.2	C	200'-201.2'; C; 2:32 min; slight chatter; very hard; full return.
	TD = 201.2'		1:30				Boring terminated. Pull rods began to ream w/11" tricone and mud. 5:00pm end of shift; 11" tricone down to 120'-130'; mud level at 1.5' To c.
	WELL DETAIL 0-119': 2" PVC blank casing 119'-199': 2" well screen, 0.02" slotted. 1135'-200': #3 sand filter pack. 109'-113.5': Bentonite seal 0'-109': cement grout. note: Two piezometers installed.						9/20/90 - 8:00 Am: Drill out to 200'. 10:15 Am - Flush with water until 11:00 Am. drill fluid appears very thin 11:30 AM construct well. 1:30pm - complete sand/bent. seal.
							notes: ① Advance hole using E2 mud fluid to 200'. ② No unusual drilling or fluid loss conditions ③ Hole flushed with fresh water for 1 hr prior to well construction. ④ Construct well. 3:10pm complete grating

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-25
		MWD-256	6 OF 6	I-12

BORING LOCATION CREST OF SOUTH RESERVOIR EMBANKMENT			GROUND EL. ~580'
DEPTH/ELEV. WATER —	DRILL CONTRACTOR ALL TERRAIN DRILLING		TOTAL DEPTH 43.4'
DRILL RIG FAILING 1500	BORING DIA. 4"	DATE DRILLED 9/20 - 9/21	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	0'-0.25' ~ ASPHALT LINER	0					8:30pm Auger hole to 4'. Set mud tub. Advance hole w/ 4" tricone bit (RD). Circulate hole w/ EE Mud.
	EMBANKMENT FILL					RD	
SM	0.25-38.3': SILTY SAND (SM); moderate brown w/ dark grey mottling; damp to moist; fine to coarse; est. ~30-40% fines; occ. gravels; appears tight + compact.	2		200			INTENT: Continuous sample using SPT from EL. 555 to 4.5' into foundation (~EL 550').
	- occ. layers of dark grey clayey sand and sandy clay.	4					drill to 12', use est. 200psi pulldown pressure
		6					
		8					
		10					
	-12' occ. gravels	12					5:00pm End of shift, mud level 0' TOC. 9/21/96 7:00AM, start mud level at ~6" TOC.
		14					12'-14' - 2:53 min; 250psi.
		16					
	-17-17.5' dark grey sandy clay layer.						16'-18'; 1:43 min; 200psi
		18					18'-20'; 2:02 min; 220psi.
		20					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 1 OF 3	DH-26

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SM	(0.25'-38.3': SILTY SAND FILL) -20'-21' - dark grey silty sand layer, damp. 21'-21.5' - mod. tan brown silty sand; occ. crushed gravel up to 1/2", damp. -21.5'-22.8' - mottled tan brn - grey brown silty sand, damp. 22.8'-23.2' - dark grey silty sand damp. 23.2'-24.5' - mottled grey brn - tan brown silty sand, damp.	20	X-1	20/37/40	1.5/1.5	D n.s.	20'-21.5' Standard Penetration Test (SPT) using 1 1/2" ID split spoon driven with 140 lb safety hammer at 30" fall. Driller uses 2 wraps around rig pulley.
		22		23/35/28	1.25/1.5	D n.s.	21.5'-23': SPT; drill out to 23', wash out hole bottom.
		24		19/29/37	1.5/1.5	D n.s.	23'-24.5' SPT no slough.
	24.5'-30.5': SILTY SAND (SM); dusky yellow brown; slightly moist; very dense; f-med w/crse; est. 15-20% lo pl fines; occ. fine gravels. no mottling.	26		20/27/25	1.5/1.5	D	24.5-26': SPT no slough
				24/31/32	1.5/1.5	D	26'-27.5': SPT no slough
		28	X-2	26/26/32	1.4/1.5	D	27.5'-29': SPT no slough
		30		27/29/21	1.2/1.5	D	29'-30.5': SPT no slough. note: no sample in shoe, ∴ lost bottom of sample.
SM-ML	30.5'-32' SILTY SAND-SANDY SILT (SM-SC); dark yellow brown; damp; s. moist; dense/hard; fine to medium w/some coarse; 40-50% lo pl fines; tight; (rolls into to 1/8" wire when wetted.)			12/16/16	1.2/1.5	D	30.5'-32': SPT no slough
SM	32'-38.3': SILTY SAND as at 24.5'; dusky yell. brn; fine-med sand w/some coarse; occ. gravels; 10-15% nonpl silt; appears uniform color no mottling or banding.	32		15/19/18	1.15/1.5	D	32'-33.5': SPT no slough
		34		18/20/20	1.2/1.5	D	33.5'-35': SPT no slough.
	PICO FM (FOUNDATION)			16/17/17	0.9/1.5	D	35'-36.5': SPT no slough
	38.3'-43.5' - SILTY SAND "SANDSTONE" (SM-SP); light grey w/orange mottling and laminations; moist; very dense; predom f-med w/some crse; 10-15% f-med gravels, subround; 10-15% silt binder; orange laminations ~horizontal.	36					36.5'-37.9': SPT
			X-3	24/47/50/5"	0.9/1.4	D	no slough
		38		41/50/2"	0.7/0.7	D	38'-38.7: SPT no slough
SP-SM						RD	39.5-41.5: SPT
		40				D	

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-256	SHEET NO. 2 OF 3	DH-26

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(38.3'-43.4 SANDSTONE) -41'- decrease gravel content to <10%. <10% silt binder; predom. f-med. sand; smoist; very dense.	40 42	X-3	25/36/42	1.2/1.0	D	41'-41.9': SPT no sluigh. drill out to 42.5'. 42.5'-43.4': SPT
				29/50/5"	.8/.9	D	
						RD	
				27/50/5"	.7/0.9	D	
	T.D. = 43.4'.	44					Boring terminated at 43.4'. Grout hole to surface with cement/bentonite grout placed via Tremie pipe. notes: (1) All SPT drive holes were reamed out prior to next drive. (2) no water losses or unusual drilling conditions encountered. (3) - hole grouted with 70 gallons of cement mix: 4sx Portland cmnt 4 lbs bentonite. boring completed 11:45 Am. Total hours = 6.5hr

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE YIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-26
		MWD-266	3 OF 3	

BORING LOCATION			GROUND EL. ~544'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING		TOTAL DEPTH 90'
DRILL RIG FAILING 1500	BORING DIA. 5 5/8"	DATE DRILLED 9/22/90 - 9/23/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	COLLUVIUM	0					12:30pm
SM	0--7'- SILTY SAND (SM); dusky brown; damp; appears med. dense; fine to medium sand; occasional gravels; est. 30-40% low PL fines.	4				RD	Auger out to 4'. Set casing and mud tub. Drill out using 5 5/8" dragbit with rotary wash (RD). Will attempt to circulate water through hole (no EZ mud until needed).
	PICO FM						
SM	7'-61.5' CONGLOMERATE: GRAVELLY SILTY SAND (SM); light reddish brown; fine to coarse sands; 15-20% low PL fines; 10-15% gravels; occasional silt & clay stringers.	8		300			Drill to 15', convert to 94mm sampling bit. Log Cuttings
		12		100			- sands, gravels & silt to 15'
		16					15'-17'; 0:39 min, 100psi; slight-med. drill chatter,
							17'-19'; 0:30 min; 100psi
							19'-21'; 0:30 min; 100psi
		20					21'-23'; 0:34 min; 100psi
							15'-24'- f-crse sands gravels; quick drill.
		24					Full fluid return.
		28					
		32					-31'- rough chatter - gravel lense.
		36					34'-44'; 3:30 min; 100 psi; mod. chatter; gravels & sands in return cuttings.
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 1 OF 3	DH-27 (W-12)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SM-SP	(7-61.5' CONGLOMERATE)	40				RD	
		44					-46'; driller notes smoother drilling - SAND.
		48					44'-54' - 3:23 min; rough chatter to 46'. smooth from 46-54'.
		52					note: 54' - continued rapid water loss into formation. No fars just clean sands taking water. add EE mud/clear mud mix at 54'. Retain ~100% fluid return.
	-54.5' - hard cemented lense						
	55' - CONGLOMERATE: GRAVELLY SAND (SW-SM); orange brown; moist; dense; f-crse sand; 30% f-med gravels 10-15% silt binder; mod. consolidated	56	X-1	250	1.5/2.0	C	55'-57'; core w/94mm. use 2" spl.-spoon; 2:06 min; slight chatter; full return.
				120 450	1.0/1.5	C	57'-58.5'; C; 2:54 min; slight chatter; full return. note: 57'-58' 120 psi.
	-58'-58.3' - fine sand/siltstone lenses.			180-200	2.3/2.4	C	
	-58.3' - Conglomerate as at 55'.	60					58.5-60.9 C; 2:08 min; full return.
SP / ML	-61-61.5' - SAND lense; heavy red fe-oxide staining overlying Repetto siltstone. Erosional contact at ~10°. note sand is mod. cemented + brittle.			180 200	2.0/2.0	C	61'-63'; C; 2:13 min; slight chatter, driller notes sand 1' into run
		64		180	1.0/2.0	C	63'-65'; C; 1:50 min; smooth full return.
	61.5'-90' SILTSTONE: SANDY SILT (ML); light grey w/orange rust mottling and occ. black staining; damp; hard; Low PL; 10-20% m. accous very fine sand; fe-oxide laminations; tight; occasional thin sandy lenses.	68		0		RD	drill out to 75'.
		72					
	- SILTSTONE mo at 61.5'. massive no fractures.	76	3:56 X-2	250	4.0/4.0	C	75'-79'; C; 2:53 min; smooth; full return.
	-79'-79.2' - SILTY SAND: red; hard, brittle fe-ox stained; well cemented, mineralized	80		350		C	driller notes very hard drilling 79'. 79'-84'; C; 4:18 min. 79'-81' hard drilling

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 2 OF 3	DH-27 (W-12)

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML	(61.5'-90' SILTSTONE)	80	X-2	250	5.0/5.0	C	79'-84'; c; full fluid return. softer drilling at 81'-84'.
ML	-82.8'-84' Fxr zone in siltstone; vertical + 60° fxrs: closely spaced coated with drill fluid (driller thinks its ours); apparent bedding laminations at 20°; no evidence of past fxr coatings. Occasional thin hard brittle sand (red) seams throughout sample run.	84	X-3	250	5.0/5.0	C	note: sample is soft in the fxr zone as if mud has been in it for a while. 84'-90'; c; 6 min; smooth driller notes occ. hard sandy zones.
SM	- 84'-85.6' - SILTSTONE - MASSIVE	88					4:35pm
SM	-85.6'-86.5' vfg sandstone w/interbedded siltstone; fxrs at 60°; appear very thin tight; no filling. 86.5'-87.5' - unfxred. 87.5'-88.8' fxred at vertical + 60°; very thin closely spaced, tight, no filling. 88.8'-90' vf silty sandstone; unfxred lite gray; orange laminations; micaceous; 30-45% silt binder; occ. hard brittle fe ox. stained seams dipping at 10° with laminations. Thin siltstone layers < 1/2" thick throughout.						Boring terminated at 90'. backfill with coarse chip hole plug to Pico/Repetto contact at 61.5'. 5 bgs hole plug to 62.5'. End. shift 5:15pm. W.L. 0' 9/23/90 7:00 am: hole open to 60'. Construct well. W.L. at 26.8'.

notes:

① No water loss encountered.

② Fxr zone at 82.8'-84' may be connected to waterloss in A-7. Drill mud in fxrs likely due to A-7.

③ All fxrs are tight may be mechanical origin.

④ Bail water from well to 31' after sand pack placed

WELL DETAIL

0-50': 2" PVC blank casing

50'-60': 2" well screen, 0.02" slots.

40'-60': #3 sand pack.

37.4'-40': Bentonite seal.

0-37.4': Cement grout.

completed 8:30 AM 9/23/90

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 3 OF 3	DH-27 (W-17)

BORING LOCATION 5' WEST OF A-2, NORTHWEST OF RESERVOIR		GROUND EL. ~562'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING	TOTAL DEPTH 80'
DRILL RIG FAILING 1500 / BORING DIA. 5 5/8"	DATE DRILLED 9-23-90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
							9:20AM
	COLLUVIUM	0					Auger out to 2'. Set mud
SM-ML	0-7'; SANDY SILT-SILTY SAND (SM-ML); mod. brown; dry to damp; f-med. sand; 40-50% non plastic fines.			200		RD	Tub to advance hole w/ rotary wash (RD). Use 5 5/8" drag bit to 14'. Convert to 94mm coring at 14'. Circulate hole with EZmud due to sands & gravels.
		4					
	PICO FM						
SM	7'-50'; SANDSTONE: SILTY SAND (SM); f-coarse sands; 10-20% fine gravels; silt binder. Occ. silt/clay seams	8		350			- driller notes very dense material.
							- sand, gravel & clay in cuttings.
		12					-13.5'- large rock clast(?) very hard. switch to Rock bit to drill out
		16		100			14'-24'; RD; 5:24 min; ~100psi; slight drill chatter.
		20					predom. f-crse sands some clays
		24					24'-34'; RD; 5:40 min; ~100psi; slight drill chatter.
		28		100			
		32					
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 1 OF 3	DH-28 W-11

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	-40' CONGLOMERATE: GRAVELLY SAND (SP-SM); light orange brown; damp to moist; appears dense. f-course sand predom. f-med; 15-30% f subround gravels; est. 5-12% silt binder; wkly cemented. -increase moisture @ 42'.	40	X-1	150 250	2.0 / 2.0	C	40'-42' continuous core using 94 mm core barrel (c) w/ 2" split spoon: 1:27 min; smooth drill, full return.
				400	1.3 / 1.5	C	
SM	42'-43': cgl as at 40'; moist to very moist.	44		120	2.0 / 2.5	C	42'-43.5'; c; 5:37 min; slight chatter, full return. 43.5'-46'; c; 3:14 min;
				350	0.9 / 1.0	C	46'-47'; c; 3:35 min; mod chatter; hard; full return
SP-SM	43'-46 color grades to dusky yell. brown w/orange mottling; decrease gravels to 10-15% fine; predom. fine sand.	48		400	1.0 / 1.0	C	47'-48'; c; 2:13; mod. chatter hard.
				200	1.0 / 1.0	C	
	-46' cgl as at 40'; moist			300	1.0 / 2.0	C	48'-49'; c; 3:00; slight chatter. 49-51'; c; 2:35; slight chatter. sticky drilling at 50' (sand?)
ML	-47-48' - trace free H_2O on grains 48'-49' - very tight 50' - ~2" red/black mineralized layer very hard drilling; brittle;	52	X-2	200	1.8 / 2.0	C	51'-53'; c; 3:00 m; smooth.
ML	REPETO FM			120	3.8 / 4.0	C	53'-57'; c; 4:00; smooth full return.; broken core
ML	50'-54.5' SILTSTONE: SANDY SILT (ML); light grey w/orange mottling + laminations; low pl; 20-30% vfg sand; micaceous; apparent bedding dip ~7°; hard; damp - 52.5-53'; closely fxred at vert. + 60° orientations; appears tight; no staining - 51'-51.5': clay seam; mod-h: pl; silty; light gray; dmp - moist,	56		180	4.0 / 4.0	C	57'-61'; c; ~4:00 smooth full return; solid core
		60		120	3.0 / 3.0	C	61'-69'; c; 1:34 min smooth
	54.5'-57' SILTSTONE as at 50'; occ. vfg sand sized lenses light grey w/ occ. orange laminations; damp ~~dense~~; vf-f sand micaceous; ~~[illegible]~~ lo pl silts; m closely fxred at 60° and along bedding (~5°); fxrs tight and stained w/black mn/mg oxide, no water (photo.	64	X-3				Note: fxr zones appear confined to the sandier sequences of rock. Typically 40-50% vfg micaceous sands. Drill out to 70'.
	-57'-62' - no fxrs; increased thin sandstone beds	68		180 220	2.0 / 2.0	C	70'-72'; c using 2" clear plastic shelby tube; 2:56 min) full return. tubing pushed up,
	62'-62.8' - closely fxred siltstone/sandstone ~60°; no staining tight fxrs covered w/water (Drill mud from A-2?), outside core dry; water on fresh fxrs.	72		200	4.0 / 4.0	C	72'-76'; c; 4:40 min; smooth full return.
	-71.5'-72' - SILTSTONES as at 54.5'; closely fxred 60° fxrs tight no staining thin film of drill mud (A-2)	76		180	4.0 / 4.0	C	76'-80' c; 4:19 min; smooth full return. solid core, no fxrs box 76'-77' in X-3, bag the rest.
	73'-73.4': siltstone closely fxred ~60° tight; dry no mud coating		B-1				
	74.2'-75.3' fxred as at 73'. dry	80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD-266 / SHEET NO. 2 OF 3	DH-28-W-11

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	TD=80.0'	80'					Boring terminated at 80' (1:20pm). Backfilled to 60' with Volplug coarse chips.

notes:

(1) No water loss or unusual drill conditions encountered.

(2) EZ mud used in beginning but thinned down during drilling, drill fluid very clean by end of hole.

(3) Construct well

WELL DETAIL

0'-42.8': 2" pvc blankcasing

42.8-62.8: 2" well screen, 0.02" slots.

35'-62.8': #3 sand pack.

31'-35': Bentonite seal.

0'-31': cement grout.

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-28
		MWD-266	3 OF 3	W-1P

BORING LOCATION 5' WEST OF A-4, MONTEREY PARK TANK FARM			GROUND EL. ~563'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING		TOTAL DEPTH 60'
DRILL RIG FAILING 1500	BORING DIA. 5 5/8"	DATE DRILLED 9-24-90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
							7:50 AM
ML	FILL 0 - ~3' - SANDY SILT (ML); dark brown; dry to damp; non plastic; est. 30-40% fine - med sand; occ. gravel.	0				RD	Auger out to 3'. Set mud tub. Advance hole with 5 5/8" drag bit rotary drill (RD) to 13'. Circulate hole with water.
SM	PICO FM 3' - 17' CONGLOMERATE: GRAVELLY SILTY SAND (SM); dusky yellow brown with orange mottling; damp; dense; f-crse sand; 15-20% silt binder; 10-15% f-crse gravels. Tight	4 8 12					slight drill chatter - fine to coarse sands in return fluid note: add EZ mud at 13' due to excess sloughing. 8:10 AM
	-16.5-17'; brittle hard cemented layer (no recovery)	16	X-1	300 / 140	5.3	C	13'; CONVERT TO 94 mm coring system (C) using 2" split spoon sampler
				240	2.0/2.0	C	13'-13.8'; c; 3:00 min; 300 psi full return; slight chatter
				220	1.8/2.0	C	14'-16'; c; 3:15 min; full return 1st 18" wipe: 6" 240 psi
ML	REPETTO FM. 17'-60' SILTSTONE: SANDY SILT (ML); light grey w/some orange laminations; damp; hard; lo-mod plasticity; 10-15% vfg micaceous sand; clayey; occ. mod pl clay lenses interbedded; mod fractured; fxrs tight; dry stained w/brown clay; bedding fxrs at ~15° dip			120	2.0/2.0	C	16'-18'; c; 1:55 min; hard cemented layer 15" 1/foot; smooth; 1st from 15'-18'; full return
		20		120 (100%)	4.0/4.0	C	18'-20'; c; 1:24 min; smooth full return; solid core
	-21' - 1" red/black cemented layer ~10-15° dip.	24					20'-24'; 4:30 min; solid core occ. breaks along bedding.
	-24-29' - As above; tight; no significant fxrs.		X-2	140 (100%)	5.0/5.0	C	24'-25'; c; 5:00 min; full return; solid core occ. breaks along bedding.
		28					
	-29-34' - As above; tight mod. fractured; stained black dry; occ. wetness on bedding fxrs.	32		140 (100%)	5.0/5.0	C	29'-34'; c; 3:58 min; full return; solid core.
	-34-39' - As above; tight increase very fine micaceous sand at 35' to 20%.	36	X-3	140 (100%)	5.0/5.0	C	34'-39'; c; 4:56 min; full return; solid core
		40		160		C	39'-44'; c; 5:00 min; full return

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. DH-29 (W-10)
		PROJECT NO. MWD-266	SHEET NO. 1 OF 2	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	(17'-60': SILTSTONE)	40'					
ML	-39'-44': As above; tight with alternating silty sandstone vfg		X-3	160 (100%)	5.0/5.0	C	solid core; tight
clay seam	-43.7-2.10" black clay, high plasticity; slick. within sandstone from 43-44'.	44					44'-49'; c; 6:28 min;
	44-49': SILTSTONE. As above appears tighter; No fxrs appears very sandy est up to 25% vfg sand; occ. laminations at 10° dip; very hard.	48	X-4	180 (100%)	5.0/5.0	C	note harder drilling below clay seam
ML	49'-51': SILTSTONE Tight solid			180	5.0/5.0	C	49'-54'; c; 5:08 min; full return 49-51' solid core 51-52.6' - broken core 52.6'-54' - solid core.
	51-52.6': fxr zone; closely fxred at 60° to vertical; no staining; fxr surfaces coated w/water (Drill mud);	52					
	-54'-54.8'- SILTSTONE; solid			180	6.0/6.0	C	54'-60'; c; 7:00 min; 95% fluid return; driller notes slight loss ~1" from tub.
	54.5'-55.8'- closely fxred zone with water on fxr surfaces no staining.	56	X-5				
	55.8-57.1'. solid core						
	57.1'-57.4'- fxr zone w/ water on fxrs.	58					
	58.8-59.5- fxr zone w/water on fxrs; relatively fxred no staining 60° to vertical						
	TD=60.0'	60					10:10 AM Boring terminated at 60'. Thin down drill fluid. driller notes water loss during thinning. Backfill to 44' with coarse chip Volpiny. WELL DETAIL 0'-14': 2" PVC blank casing 14'-44': 2" well screen, 0.02" slot 12'-44': #3 sand pack 9-12': Bentonite seal 0-9': Cement grout.

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-29 (W-10)
		PROJECT NO. MWD-266 / SHEET NO. 2 OF 2	

BORING LOCATION			GROUND EL. 555
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING		TOTAL DEPTH 34'
DRILL RIG FAILING 1500	BORING DIA. 5 5/8"	DATE DRILLED 9-24-90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	FILL	0					12:15pm
SM	0 - 8' SILTY SAND (SM); light yellowbrown; dry to damp; fine to medium sand; est. 20-30% nonplastic fines; gravels to 2".	4		0		RD	Auger out to 3'. Set mud tub. Advance hole to 13' using Rotary Wash drilling (RD) with 5 5/8" drag bit.
	PICO FM						
SM	8'-20.7' CONGLOMERATE: GRAVELLY SILTY SAND (SM); mottled yellow brown/orange brown; damp; dense; f-c sand 20% silt/clay binder, 15% f-c gravels; very tight; mod. consolidated.	8					-8' driller notes hard material. convert to Tricone rock bit 5 5/8".
		12					-13' - convert to 94mm coring system w/2" split spoon sampler. (c).
			X-1	120 140	2.0/2.0	C	13'-15'; c; 2:00min; smooth clayey.
	-17'-19' - increase moisture to moist - very moist w/some free H_2O on grains	16		140	2.0/2.0	C	15-17'; c; ~2:50m; smooth
				200	1.5/2.0	C	17'-19; c; 2:24min; 140; mod. chatter
	REFETTO FM	20		140	2.0/2.0	C	19'-21'; 2:00 min; smooth
ML	20.8' - 34' SILTSTONE: SANDY SILT (ML); light grey w/orange mottling & laminations; damp; hard; L. pl; 15-20% vfg micaceous sand. occ thin lamination sandbeds ~10° dip, mod fxed; tight some H_2O on fxs			150	2.0/2.0	C	21'-23' 2:20min; smooth, full return solid core
	-20.8' - Red/black brittle cemented layer of siltstone no staining.	24	X-2	120	4.0/4.0	C	23-27'; c; 3:22min; full return; solid core.
	-23-27'; SILTSTONE As above. some water on 10° dip bedding plane fxs.	28		140	3.0/3.0	C	27'-30' c; 3:26min; smooth. solid core
SM	-27'-30' - occ fxs vertical coated with black mn oxide.			180	4.0/4.0	C	30'-34'; c; 5:16min
ML	-28'-29' - silty vfg SANDSTONE	32					
SM	-30'; 2/10" CLAY SEAM High PL mod. brown greasy along bedding within very sandy siltstone						
	31-31.5' - Fxs zone closely fxed at 60° to tilted no stains water coating within sandstone	36					
	33'-34' - Fxs zone as to 31' within silty sandstone.						145pm Terminate boring at 34'. Backfill w/ volplug to 30'.
	← increasing sand and siltiness; siltstone sandstone	40					WELL DETAIL 0-15': 2" PVC blank casing 15'-30': 2" well screen, 0.02" slots 13'-30': #3 sand pack 10'-13': Bentonite seal. 0-10': Cement grout

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES ON DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD-266 / SHEET NO. 1 OF 1	DH-30 W-13

BORING LOCATION NORTHWEST OF RESERVOIR			GROUND EL. 1525'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING		TOTAL DEPTH 146.0'
DRILL RIG FAILING 1500	BORING DIA. 5 5/8" - 10"	DATE DRILLED 9/24/90 - 9/26/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	FILL	0					3:15pm Auger out to 3'. Set mud tub. Advance hole with 5 5/8" rockbit rotary wash drilling (RD).
SM	0'-2' SILTY SAND (SM); light brown damp; fine sand; nonplastic silts to 30%; occ. gravels					RD	
	PICO FM						
SW-SM	2'-20' CONGLOMERATE: SILTY GRAELLY SAND (SP-SM); orange brown; damp to moist, fine to coarse; 15%-20% fine to medium subround gravels; 5-12% non plastic fines; wkly cemented: tight	4		0psi			moderate chatter f-crse sands, gravels, silt/clay in return drill fluid.
		8					
		12					-11.5'. End shift 5pm WL. 0' TOC 9/25/90 7:00AM W.L. 6.7' TOC. drill out to 15'. 15'- convert to 94mm coring system (C) spot sample at 10' intervals.
	-16.5'-17': SANDSTONE lense: SILTY SAND; yellow brown: damp; fine; est 10-15% fines;	16	X-1	220 psi	1.5/2.0	C	15'-17'; C; 2:33 min; slight drill chatter; full fluid return
	20'-52': SANDSTONE: SILTY SAND (SP-SM); yellow brown w/orange laminations; moist; fine to medium sand; est. 5-12% silt binder; occ. fine gravels; thin sub horizontal bedding laminations. Wkly cemented.	20		100 psi		RD	drill out to 25': sands & gravels 4min/10ft drilling is uniform.
		24					
				100 psi	2.0/2.0	C	25'-27'; C; 2:18 min; smooth Full return.
	-occ. gravel lenses to 35'	28		100psi		RD	drill out to 35'
	-~32': increase gravel content 10-15% (borderline conglomerate)	32					
	-35-36': SANDSTONE as at 20'; slight increase fine gravels to 10%; with occ. gravel lenses; moist	36		300	1.2/1.2'	C	35'-36.2'; C; 5:00; hard drill; full return.
						RD	drill out to 45'
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD-266 / SHEET NO. 1 OF 4	DH-31 I-34

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	(20'-52' SANDSTONE)	40				RD	slight-mod. drill chatter
SP-SM		44					
	-45'-47': sandstone as at 20'; 10-15% fine gravel; moist		X-1	300 650	2.0/2.0	C	45'-47' c; 2:43 min; slight chatter; hard; full return
	-47': red cemented sand layer heavily oxidized.	48				RD	drill out to 55'
SW-SM	52'-80' CONGLOMERATE: SILTY GRAVELLY SAND (SW-SM); yell brn w/orange mottling; moist; fine to coarse sand; fine to med gravels est 15%-20%; 5-12% silt binder; wkly cemented; mod. consolidated; tight.	52		90 psi			slight-mod. chatter
				8:15AM			
		56		290 400psi	1.8/2.0	C	55'-57': c; 4:00 min; mod. chatter; full return.
						RD	drill out to 65'
		60		80psi			sand + gravel; full fluid return.
	-65'-67': cgl as at 52'; moist; occ. siltstone rip up clasts.	64					
SM	66'-66.5'; fine laminated sandstone lense.		X-2	250 300	2.0/2.0	C	65'-67': c; 2:33 min; slight chatter, full return.
SW-SM		68					drill out to 75'
				140psi		RD	moderate drill chatter
		72					
	- increase hardness at 75'	76				RD	75'- attempt 94mm core refusal of sampler due to large clast drill out to 90' sample again.
		80					

Wahler Associates

GARVEY RESERVOIR

EXPLORATION BORING LOG

PROJECT NO.	SHEET NO.	BORING NO.
MWD-266	2 OF 4	DH-31 I-34

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(52'-80' CONGLOMERATE)	80					80'-82': c · 2:24 min; smooth sandier material starting at 80'; full return.
SM	80'-84.5' SANDSTONE w/interbedded SILTSTONE (SM/ML); light grey w/orange laminations; moist to v. moist; appears soft to firm; vfg sand; 30-40% low-mod pl silts + clay binder; thin interbedded siltstone + claystone seams; appears punky to touch; platey bedding dips w/ ~ 2-5°.		X-2	180 psi	2.0/2.0	C	drill out to 90'.
		84		80psi		RD	-84.5'-driller notes siltstone
ML	84.5'-141.5': SILTSTONE: SANDY SILT (ML); light grey w/orange mottling; damp; hard; LOW PL fines; est. 20% vfg sand, micaceous; orange laminations dip ~ 5°	88					
				100 psi	2.0/2.0	C	90'-92': c; 1:43 min; smooth alternating sand/silt layers; full return.
		92					drill out to 100'. siltstone
	-occ. sand lenses to 100'.					RD	
		96		80 psi			
	-100-100.5' fine sand lense						
	-100.5-102' - SILTSTONE as at 90'; damp; appears mod. fired at 100.5'-101'. Fers at 80° vert. some black ox staining; tight	100		140 160.	2.0/2.0	C	100'-102': c; sands at 101'; full return; smooth.
		104					drill out to 110'.
	-color change to dark grey w/black lenses at ~105'.			80		RD	note: drill mud changes from tan color to dark grey.
		108					- sampler broken pull rods to retrieve 9:50 AM
	-110'-112': SILTSTONE as at 90.0'; damp no fers; in with alternating dark grey-black silt lenses up to 4" thick, note: overall color of siltstone darkens; increase in vfg sand to 20%-25%			9:45 10:00 250 300	2.0/2.0	C	110'-112': c; 1:30 min; smooth
		112				RD	Drill out to 120'.
		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-31
		PROJECT NO. MWD-266 / SHEET NO. 3 OF 4	I-34

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(84.5'-141.5: SILTSTONE)						
ML	-120'-122': SILTSTONE as at 110'; dark grey w/occ. orange laminations no black beds; appears very hard	120	X-3	180 psi	2.0/2.0	C	120'-122'; c; 1 min; smooth full return.
	DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.	124		80 psi		RD	drill out to 130'. 120'-130' driller notes slight fluid loss: ~90% return.
	-130'-134': SILTSTONE as at 110'; few laminations appears massive; damp; very hard.	128					
	THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION. THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS	132		180	4.0/4.0	C	130'-134': c; 3:10 min; smooth 100% return.
	-140'-141': SILTSTONE at at 110'.	136		80 psi		RD	drill out to 140'.
CH	141'-141.2': Clay seam; black high PL; with some slicks.	140		11:20Am 380 400	6.0/2.0	C	140'-142.8'; 4:10 min; very hard drilling, slow.
ML SP-SM	141.5-142': vf sandstone orange brown and light grey; 30-40% silt; very dense			400	2.0/2.0	C	142'-144'; ~4:00 min; hard; full return.
	141.5'-146' SANDSTONE: SILTY SAND (SP-SM); light red brown w/orange laminations; damp; hard; vf-f sand, occ med; 5-12% silt binder; occ. siltstone seam; weakly cemented.	144	B-1	400	2/2.	C	144'-146'; c; hard; full return. 11:45Am
	-144-146: SANDSTONE as above; moist; alternating vfg-fine to med beds of sand.	148					Terminate boring at 146'. Ream out with 10" tricone rock bit. Finish at 4:30 pm. End static water level at TOC. 9/26/90 7:00 AM. Measure fluid level in hole >60' deep not encountered with sounder.
	TD = 146'						WELL DETAIL
	THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL. SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.						0'-65': 2" PVC blank casing. 65'-145': 2" well screen, 0.02" slot. 60'-146': #3 sand filter pack. 56'-60': bentonite seal. 0-60': cement grout. note: Two piezometers installed.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 4 OF 4	DH-31 I-34

BORING LOCATION RESERVOIR CREST - SOUTHEAST SECTION		GROUND EL. ~578
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING	TOTAL DEPTH 200.2'
DRILL RIG FAILING 1500 (RW)	BORING DIA. 5 7/8" / 10" DATE DRILLED 10/2/90 - 10/4/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
							10:AM Auger out to 3'. Set mud tub. Advance hole with 5 7/8" rock bit by rotary wash drilling (RD). Circulate hole with EZ mud fluid.
	0-0.25': ASPHALT LINER.	0					
	FILL					RD	
SM	0.25'-11' SILTY SAND (SM); dusky yellow brown; damp-moist; fine to coarse; est. ~15% non plastic fines; 10-15% fine gravels; appears crudely layered.	4		250 psi			
		8					
SC	11'-24': CLAYEY SAND (SC); mod. dark red-brown; moist; fine to medium w/some coarse; est ~20% slightly plastic fines; occ. gravels to 1".	12					-11': softer + smoother drilling; red brown clayey sand in return fluid; no gravels.
			10:45 X-1	80-120 psi	3.8/4.0	C	13'-17': convert to 94mm wireline coring (c) for spot sampling to 200'; 3:12 min; smooth full mud return.
		16					
				100		RD	Drill out to 25'.
		20					
	-24'-26': SILTY SAND; mod. yell. brn.; appears to be reworked pico sndstn.						
		24					
	PICO FM						
	26'-64': SANDSTONE: SAND-SILTY SAND (SP-SM); dusky yellow brown; moist; fine to medium; 5-12% fines; occ. coarse sand; some faint orange laminations; very wkly cemented.			80-120 400	2.3/2.3	C	25'-27.3': c; 3:55 min; hard drilling at 27' increase pulldown to 400psi; full return.
SP-SM		28		100		RD	Drill out to 35'.
	- increase coarse sands, well graded with increase gravels	32					alternating sands and gravels
SW-SM							
	-35': SANDSTONE as at 26'; well graded with est 10-15% fine subround gravels; moist.	36		200	2.0/2.0	C	35'-37'; c; 2:20 min; alternating sand/gravels; full return.
						RD	drill out to 45'
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 1 OF 6	DH-32 I-8

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(26'-64' SANDSTONE)	40					
GW-SM	- decrease gravels ext 5-10%.		X-1	100		RD	
		44					
	45'- SANDSTONE as at 35'; color change to light orange brown; thin red fe-ox laminations; occ. fine sand lenses 1"-2" thick; moist; decrease gravels to 5-10%.			220-240 / 350	1.7 / 2.0	C	45'-47'; c; 2:10 min; hard drilling at 47'; full return.
		48		100		RD	drill out to 55'.
		52					
	55'- SANDSTONE as at 45'; increase f-med gravels to 15%; moist	56		250 / 350	1.5 / 1.7'	C	55'-56.7'; c; 3:18 min; refusal; slight-mod. drill chatter; full return.
			X-2	12:15		RD	drill out to 65'
		60		100			Slight to mod. chatter
							62'-63'- smooth drill (fine sand lense).
	- 64.3'- cemented layer (harder drilling).	64		12:25			
SP-SM	64'-80' CONGLOMERATE; GRAVELLY SILTY SAND (SP-SM); dusky yellow brown w/orange mottling; damp; appears very dense + tight; fine to coarse; 15-20% fine to coarse gravels up to 2"; 10-15% silt binder; wkly cemented.			350 / 400	1.5' / 1.7'	C	65'-66.7'; c; 4:29 min; hard drilling; mod. chatter; full return.
		68		100		RD	drill out to 75'.
							mod. drill chatter
		72					
	75'- CONGLOMERATE as at 64'; appears moist to v. moist with some free H_2O sheen on grains; v. dense	76		400	0.7/1.7'	C	75'-75.7'; c; 2:52 min; very hard drilling; mod chatter; full return.
				100		RD	drill out to 95'
							mod. chatter
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD-266 / SHEET NO. 2 OF 6	DH-32 I-8

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(64'-80' CONGLOMERATE) 80'-114'; SANDSTONE w/interbedded CONGLOMERATE: SILTY SAND/GRAVELLY SAND (SM/SP SM); light grey to dusky yell. brown; moist; f-med sand; 5-12% silt binder; interlensed gravels up to 15%.	80		100		RD	note: overall decrease in gravels from 80'
		84					
SM	- 85-87': SANDSTONE lense; light grey w/orange laminations; moist, fine w/some medium; est 15-20% silt binder; occ. fine gravel.			1:05pm 300 350	2.0/2.0	C	85'-87'; c; 3:00 min; driller notes easier drilling from 85-86.5'; slight chatter; full return
		88	X-2				
SP-SM	- interbedded gravel lenses to 95'.			100'		RD	Drill out to 95'
		92					
SM	95'-95.5'- fine silty sand lense light grey as at 85'. 95.5-96'- CONGLOMERATE (Gravelly sand); light grey w/orange mottling; damp-moist; fine-med sand; 10-20% f-med. gravel; est 5-12% silt binder.	96		350-400	1.0/1.0	C	95'-96'; c; 2:57 min; very hard; slight chatter; full return.
SP/SM		100		100'		RD	drill out to 105'.
		104					
	105'- SANDSTONE as at 84'; fine to medium; 15% silt binder; occ. fine gravel; wkly cemented, moist. 106.5-107'- GRAVELLY SAND; yell. brn. f-med; 15% fine gravels			240	2.0/2.0	C	105'-107'; c; 1:29 min; slight chatter; full return
		108	X-3	100		RD	drill out to 115'
		112					~112-114' smoother drilling silts in return cuttings.
ML	114'-122': SILTSTONE: SANDY SILT (ml); yellow brn w/light grey mottling; damp; hard; low plasticity; 20-30% vfg sand; micaceous; tight.	116		200 psi	2.0/2.0	C	115'-117'; c; 2:21 min; full return; solid core
		120		100		RD	drill out to 125'. alternating silt + sand layers

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. DH-32
		PROJECT NO. MWD-266	SHEET NO. 3 OF 6	I-8

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(114'-122' SILTSTONE)	120					
ML	122'-200.2': SANDSTONE W/Interbedded CONGLOMERATE: SILTY SAND/GRAVELLY SAND (SP-SM); light grey w/some orange mottling; damp to moist, fine to medium w/some coarse sand; 10-20% silt binder; est. 10% fine gravels; interbedded gravelly lenses with up to 15-20% gravels.		X-3	100		RD	122'- driller notes gravels and sands
SP-SM		124		400	19/1.0	C	125'-126'; c; 2:32 min; hard drilling; Full return.
		128		100		RD	drill out to 135'
	134'-135.8': SILTSTONE: SANDY SILT (ML); light grey w/orange laminations 15-20% vfg sand; micaceous; occ. thin cemented beds; ~75° dip in bedding; alternating 1"-2" silty sand lenses; at ~135' 1/10" dark grey clay seam, no slicks.	132					134'- siltstone
ML				2:45pm 500	12/1.2	C	135-136.2'; c; 2:22 min; hard drilling; full return.
SP-SM	136'- SANDSTONE as at 122'; moist.	136		100		RD	drill out to 145'
	- interbedded sands + gravels	140		120			
	145'- CONGLOMERATE: GRAVELLY SAND (SP-SM); light grey w/heavy orange mottling; v. dense; moist; f-crse sand; f-crse gravels up to 2" ⌀.	144		3:10 400-500	03/.3	C	145'-145.3'; c; 2:40 min; very hard drilling; full return.
		148				RD	Drill out to 155'
	- interbedded sands and gravels			100			
		152					
	155'- SANDSTONE as at 136' + 122'; light grey w/orange mottling; occ. fine gravels; moist, tight.	156		450	15/.5	C	155'-155.5'; c; 3:19 min; hard drilling; full return
				100		RD	drill out to 165'
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-32
		MWD-266	4 OF 6	I-8

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SP-SM	(122'-200' SANDSTONE/CONGLOMERATE)	160					
			X-3	100		RD	
		164					
	165' SANDSTONE as at 155'; light grey; occ. orange laminations; gravels up to 1" at 10%; v. moist.			400	1.4/1.8	C	165'-166.8'; c; 3:57 min; full return.
		168					drill out to 180'
	- interbedded conglom. to 176'.					RD	slight to moderate chatter - sands and gravels in return fluid.
		172		100			
	176'-181.5' SILTY SAND; light grey as at 165', increased low PL fines to 20%; very tight. moist.	176					
		180					180'-182'; c; 3:29 min. full return; slight chatter.
	181.5'; SAND; orange brn; moist; fine-med. sand; <10% fines		X-4	400	1.7/2.0	C	END SHIFT @ 5:00PM 10/2/90 - 7:00AM. Drill to 200'.
		184		100		RD	Drill out to 190'. Sands and gravels.
		188					
	190' - CONGLOMERATE: GRAVELLY SAND (SP); mottled red brown and yellow brown; appears very moist, fine to coarse; est. 15-20% fine-med. gravels; <10% silt binder, very tight; dense.			400-500	5/5	C	190'-190.5'; c; 2:15 min; very hard drilling; full return
		192				RD	Drill out to 200'.
				200			very hard drilling.
		196					
		200					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 5 OF 6	DH-32 I-8

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(122'-200.2': SANDSTONE/CONGLOMERATE) 200'-CONGLOMERATE as at 190'; gravels +2"; moist; v. dense	200		5:00	21.2	C	200'-200.2' C; 3:00 min; very hard drilling refusal; Full return.
	T.D. = 200.2'	204				8:15AM	Boring terminated at 200.2'. No unusual drilling or water losses. Driller notes that this hole was hardest drilling to date. Pull rods, Ream hole with 10" rockbit to 200'. 12:45PM: Down to 122' with 10" rockbit. 5:00PM: End of shift + 10" hole reamed to 180'. Drill fluid level at 2.5' TOC. 10/4/90 - 6:45AM. Fluid level at 22.3'. - drill to 201' at 8:30AM. note: overdrilled hole to allow heavy cuttings to settle. - driller notes extremely hard drilling at 200'. Probable large rock clast. - 8:30 - Began flushing hole. hole continues to fill with cuttings, decide to drill out to 206. - 9:50AM - Drilled to 206', began to flush out hole. - 10:30 - Hole clear to 201'; began pulling out rods - 1:10 pm - complete sand + bentonite seal.

WELL DETAIL

0'-119': 2" PVC blank Casings

119'-199': 2" Well screens, 0.02" slotted.

115'-204': #3 sand filterpack

111'-115': Bentonite seal

0 - 111': Cement grout.

note: Two piezometers installed.

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 6 OF 6	DH-32 I-8

BORING LOCATION RESERVOIR CREST – NE FLANK OF NORTH EMBANKMENT		GROUND EL. 578'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING	TOTAL DEPTH 200'
DRILL RIG FAILING 1500 (RW)	BORING DIA. 5 7/8" – 10" / DATE DRILLED 10/5/90 - 10/6/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
							7:30 AM
	0-0.25': ASPHALT LINER	0					Auger out to 3', set mud tub. Advance hole w/ 5 7/8" rockbit using rotary wash drilling (RD). Circulate EZ mud polymer drill fluid. At 15' convert to 94mm coring for spot sampling using 2" core barrel (c).
	EMBANKMENT FILL						
SM	0.25'-97': GRAVELLY SILTY SAND (SM); dark yellow brown; moist; appears dense; fine to med. sand w/ some crse; est. 15-20% silt binder; <10% gravels, some up to 2".	4		200 psi		RD	
		8					drill out to 15'. smooth drilling, fine-crse sands and clay/silt in return drill fluid.
		12					
	-15'-17': GRAVELLY SILTY SAND, as above.	16	X-1	100 psi	1.7/2.0	C	15'-17'; c; 1:30 min; full return.
		20		120 psi		RD	Drill out to 25'. 8:00 min; full return
		24					
	-25'-26': GRAVELLY SILTY SAND as at 15'; some dark brown mottling; est. 15-20% low pl binder; clayey.			100 300	1.0/1.0	C	25'-26'; c; 1:10 min; full return refusal at 26', probable rock clast.
		28		80 psi		RD	Drill out to 40'. 10:00 min full return.
		32					
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 1 OF 6	DH-33 I-3

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SM	(0.25'-97' GRAVELLY SILTY SAND, FILL)	40					
	~40-42': GRAVELLY SILTY SAND as at 25'; occ. clayey layers with intermixed siltstone fragments; slightly moist.		X-1	150 psi	1.5 / 2.0	C	40'-42'; c; 2:00 min; full return.
		44		150 psi		RD	Drill out to 50'; full return; 9 min.
		48					
	50'-52': SILTY CLAYEY SAND; as at 40'; decrease gravels to <10%; increase low-mod pl fines to 25%; some sandy clay layering; appears tight moist.			150 200	2.0 / 2.0	C	50'-52'; c; 3:00 min; full return.
		52		150 psi		RD	Drill out to 60'.
		56					
	-60'-62': SILTY SAND as at 25'; decreased fines to 10-15%; fine gravels est 10%. tight; moist.	60		250 290	2.0 / 2.0	C	60'-62'; c; 1:08 min; full return.
		64		80-100 psi		RD	Drill out to 70'. full return.
		68					
	-70'-72': SILTY SAND as at 50'; est 20% silt/clay fines; <10% gravels; appears tight; moist.		X-2	140-200	2.0 / 2.0	C	70'-72'; c; 1:08 min; full return.
		72		80		RD	Drill out to 80'
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-33
		MWD-266	2 OF 6	I-3

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SM	(0.25-97': SILTY SAND, FILL) -80'-82': SILTY SAND as at 70'; decreased fines est. 15%; fine gravels est. 15%; color appears mottled orange-yellow brn; moist. occ. grey mottling.	80	X-2	140 150	2.0 / 2.0	C	80'-82'; c; 1:00 min; full return
		84		90 PSI		RD	Drill out to 90'
		88					
	-90'-92': SILTY SAND as at 80'; dark yellbrn; moist; est. 15-20% fines; <10% - gravels; f-med sand.			100 PSI	20/20	C	90'-92'; c; 1:11 min; full return.
		92		100		RD	Drill out 100'.
		96		—			-97': driller notes change to smoother drilling pres. sand, no gravels.
	ALLUVIUM						
	97'-101.8': SILTY SAND (SM); greyish brown; moist; fine to med.; est 20-30% low pl fines; trace gravels. (contact appears sharp)	100		280/12" 180/12"	2.0 / 2.0	C	100'-102'; c; 1:31 min; full return
SC/CL	101.8'-109': CLAYEY SAND-SANDY CLAY (SC-CL); dark red brn mottled with dark grey; moist; fine sand; est 30-50% mod. plastic fines; possible old soil layer.	104		100		RD	Drill out to 110'.
		108					
CL	-110'-112'; SANDY CLAY as at 101.8'; increased mod pl clay to 60-80%; 20% f sand; occ. fine gravel; hard; tight; damp.			100	2.0 / 2.0	C	110'-112'; c; 1:00 min full return.
		112				RD	Drill out to 120'.
		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 3 OF 6	DH-33 I-3

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
ML	120'-127' SANDY SILT (ML); light reddish brown w/grey mottling; damp; hard; low pl.; vf-to fine sand; occ. crse sand and subround fine gravels. possible wxred siltstone or swale fill. appears massive with a soil texture rather than stone; occ. charcoal fleck.	120	X-3	100	2.0/2.0	C	120'-122'; 0:50 min; smooth full return
							Drill out to 130'.
		124		100		RD	
	PICO FM						
SP-SM	127'-179': CONGLOMERATE: GRAVELLY SAND (SP) light yellow brown with orange mottling; moist; fine-medium w/some coarse sand; est. 10-20% f-med subrnd gravel upto 1"; <15% nonpl fines; occ. interbbedded light grey sand.	128					127': Driller notes material change increased gravels
				170 480	2.0/2.0	C	130'-132'; c; 4:00 min; full return some drill chatter,
		132		100		RD	
		136					
	140'-142': CONGLOMERATE (GRAVELLY SILTY SAND) as above; increased fines to est. 15-20%; fine sands predom.; moist.	140		250/18" 450/6"	2.0/2.0	C	140'-142'; c. full return.
		144		100		RD	Drill out to 150'.
		148					
	150-152: cgl SANDSTONE as at 140'; decrease gravels to <10%; silt bender est. at 5-15%; appears moist to locally v. moist.			400 450	1.9/2.0	C	150'-152'; c; 3:13 min; full return.
		152				RD	Drill out to 160'.
		156					
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 4 OF 6	DH-33 I-3

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(127'-179': CONGLOMERATE)						
SP	-160'-160.5': CONGLOMERATE - GRAVELLY SAND (SP); light reddish brown; fine-medium sand; 15-20% med-crse gravels +2"; <15% silt; appears very moist w/free H_2O on gravels.	160		450/500	1.5	C	160'-160.5'; c; 1:45 min; full return
		164		100		RD	Drill out to 170'.
		168	X-3				
	-170-170.25: CONGLOMERATE as at 160'; clasts +2"; appears wet.			500	.25/.25	C	170'-170.25'; c; 1:10 min; very hard drilling (gravels), full return
		172		100		RD	
		176					
SM	179'-181': SANDSTONE: SILTY SAND (SM) med. grey w/orange mottling. v. moist to wet; fine sand; est 20-40% silt binder. 180-180.2' & 180.8-181' - cemented sand layers; dark red; brittle; hard.	180		400 500	1.0/2.0	C	179': Driller notes increased clay/silt in drilling, clay seam. 180'-182'; c; 3:33 min; may have hit silt in bottom of run.
ML	181'-202': SILTSTONE: SANDY SILT (ML); orangish brown and mottled grey; damp; hard; lo plastic fines; up to est 20% vfg micaceous sands; occ. near vertical fractures stained/infilled with black (mn-ox) brittle deposit upto 2/10" thick. fracturing appears tight (no water)	184	X-4	100		RD	Drill out to 190'.
		188					189'-190' - Driller notes sand lense (easy drilling)
				320 psi.	2.0/20	C	190'-192'; c; 2:01 min; full return.
		192				RD	Drill out to 200'.
		196					
		200					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266	SHEET NO. 5 OF 6	DH-33 I-3

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(181'-202'- SILTSTONE).						
ML	200'-202': SILTSTONE as at 190'; color change to med. grey w/some orange mottling; increased vfg sand to est. 25%; damp; hard; no fxrs; occ. fine sand lenses -201.8'- color change to dark grey.	200	X-4	200	2.0 / 2.0	C	200'-202'; c; 1:34 min; full return
	TD= 202.0'	204					

1:50pm Boring Terminated. pull rods to began reaming down w/10" rock bit.

4:00pm reamed out to 80'.

5:00pm: End shift at 100'. mud level at 1' T.O.C.

10/5/90: 7:00am mud level at 12' T.O.C. Continue reaming to 200'.

1:30: finish reaming began to flush hole.

2:30: install well casing

5:15pm: finish grouting.

WELL DETAIL

0-129': 2" PVC blank casing
129'-199': 2" well screen, 0.02" slotted.
120'-202': #3 sand filter pack.
112.8-120': Bentonite seal.
0'-112.8': cement grout.

note: Two piezometers installed.

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING EXCAVATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-33
		MWD-266	6 OF 6	I-3

BORING LOCATION SOUTH OF RESERVOIR NEAR LOWER STORAGE AREA		GROUND EL. I 530'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING	TOTAL DEPTH 156.0'
DRILL RIG FAILING 1500	BORING DIA. 5 5/8" → 10" / DATE DRILLED 10/7/90 - 10/3/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	SOIL / FILL	0					8:45 AM
SM-ML	0'-3': SILTY SAND - SANDY SILT (SM-ML); mod. dk brn; dry-damp; fine sand, non pl fines; occ roots.					RD	Auger out to 3'; set mud tub. Advance hole with 5 5/8" rock bit to 15'. Convert to 94mm coring for spot sampling using 2" split spoon core barrel (C). Circulate hole with EZ mud polymer drill fluid.
	PICO FM						
	3.0'-156': SANDSTONE w/ interbedded CONGLOMERATE: SILTY SAND TO GRAVELLY SAND; dusky yellow brown to orange brown; see descriptions below.	4		90psi			
		8					3': contact of Topsoil/cgl. Sand + gravel in fluid return.
SP-SM	11'- SANDSTONE: SILTY SAND (SP-SM); dusky yellow brown w/ orange mottling; damp-moist. fine-med w/ some crse sand, est. 5-12% non plastic silt binder; <10% gravels up to 1". appears tight; friable; wkly cemented.	12					11': Driller notes decrease gravels
			X-1	250/12" 470/6"	1.5/1.5'	C	13'-14.5'; c; 3:55 min; full return; sandy.
	16'-20' - increase gravels	16		90psi		RD	Drill out to 20'
	-20'-22': CONGLOMERATE (GRAVELLY SILTY SAND); as at 13'; increase fine to coarse subround - subang. gravels to 15-20%; moist; tight	20		450-500psi	1.5/2.0	C	20'-22'; c; 3:29 min; full return.
		24		90psi		RD	Drill out to 30'.
		28					
	-30'-32': CONGLOMERATE as at 20'; sands are well graded fine to coarse; est. 5-15% silt binder; moist; tight.			490 520	2.0/2.0	C	30'-32'; c; 3:29 min; full return
		32		30-100'		RD	Drill out to 40' sands + gravels; full fluid return
		36					
		40					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 1 of 25	DH-34

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	(3.0'-156': SANDSTONE/CONGLOMERATE)	40	X-1				40'- rock jammed in bit sampler will not engage, pull rods to remove rock. 3" chert.
SW-SM	-42'-44': CONGLOMERATE as at 30'; well graded sand; decreased gravels to <10%; 5-15% silts; moist; tight.	44		300 500	1.0/2.0	C	42'-44'; c; 3:16 min; full return; 1' slough in sampler.
		48		30		RD	Drill out to 50'.
	50'-51.3': SANDSTONE: SILTY SAND; yellow-brown with orange mottling; moist; fine-med; 20% silt binder.	52		39/18" 50/6"	1.5'/2.0'	C	50'-52'; c; ~3 min; full return;
	51.3-52': CONGLOMERATE as at 30'; ~20% fine-med. gravels; color change to light orange brown; moist.	56		100			Drill out to 60'
	-60'-61': CONGLOMERATE as at 51.3'; moist; 10-15% silt; ~20% f-med gravels; tight.	60	X-2	400-500	0.9/1.0	C	60'-61'; c; 2:30 min; hard drilling.
		64		110		RD	Drill out to 70'
		63					color change at 67' to light grey.
	70'-71': Cgl SANDSTONE: SILTY SAND; light grey w/orange mottling; moist, fine-coarse sand; est. 10-15% silt; <15% gravels.	72		500/12" 29/12"	2.0/2.0	C	70'-72'; c; 2:23 min; full return.
SM/SP	71'-72': SANDSTONE: as at 70' decrease gravels to <5%; appears to have punky texture.			100		RD	Drill out to 80'.
	-intercedded fine sands/gravel and sand to 80'	76					Intercedded lenses of gravels and fine sands
		80					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 2 of 4	DH-34 / T-25

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(3'-156': SANDSTONE/CONGLOMERATE)	80					
SP	80'-82': CONGLOMERATE: GRAVELLY SAND; as at 60'; orange brown; moist; fine to medium; est. 5-15% silt; est. 15% gravels; tight.			500	2.0/2.0	C	80'-82'; c; 3:20 min; hard drilling; full return.
		84	X-2	100		RD	Drill out to 90'. hard drilling no interlayers softer sand as at 70'-80'.
		88					
	-90'-91': CONGLOMERATE as at 80'; very tight; slightly moist;			500	1.0/1.0	C	90'-91'; c; 3:04 min; full return; hard drilling.
		92		100		RD	Drill out to 100' interbedded sand lenses and gravelly sand lenses.
		96					
	-100'-102': SANDSTONE: SILTY SAND; light grey -/orange mottling; moist; fine to med.; 15-20% silt binder; <10% fine gravels.	100		550	2.0/2.0	C	100'-102'; c; 2:00 min; sands; full return.
		104		100		RD	Drill out to 110' interbedded sands and gravelly sands.
		108					
SP-SM	-110'-112': SANDSTONE: SILTY SAND; dusky yellow brown; moist; fine to med.; 10-20% non-plastic silt binder; <5% scattered fine cobbles and gravels.	112	X-3	200 240	2.0/2.0	C	110'-112'; c; 1:40 min; full return.
		116		100'		RD	Drill out to 120', full return. interbedded sand and gravelly sand
		120					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 3 of 4	DH-24 / T-25

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(3'-156': SANDSTONE/CONGLOMERATE)	120					
SP-SM	120'-122': SANDSTONE as at 110'; moist; slight increase in coarse sand; occ. very fine silty sand lenses interbedded.		X-3	350 / 490	2.0 / 2.0	C	120'-122'; 2; 2:19 min; full return.
		124		100		RD	Drill out to 130'. interbedded sands and gravelly sands.
		128					
SW-SM	130'-132': SANDSTONE as at 120'; well graded sands; very moist w/trace H_2O sheen; est. 15% fine gravels; 5-12% non-pl silts; (may make water)			200 / 500	2.0 / 2.0	C	130'-132'; c; 3:00 min; full return.
		132					
	DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.					RD	Drill out to 140'. Sands and gravelly sands
		136		100			
	140-142': SANDSTONE as at 130'; appears very moist; est 10-20% fines; decreased fine gravels to <15%.	140		350 / 500	2.0 / 2.0	C	140'-142'; c; 3:42 min; full return.
	THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION. THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS. THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL. SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.	144		100		RD	Drill out to 154'. interbedded sands and gravelly sands
		148					
		152					
	-154'-155': SANDSTONE as at 140'; increased orange mottling, moist. -155'-156': CONGLOMERATE: GRAVELLY SAND orange brown, moist.			350 / 500	2.0 / 2.0	C	154'-156'; c; 3:40 min; full return.
		156					3:10 pm
	T.D. = 156'						Boring has connected at 156. Ream out hole with 9" [illegible] 3:30 pm end drill at 30'. 6:45 AM: 10/8/99 Continue drilling 12:50 pm: drilled to 154.7 Bott.
	WELL DETAIL 0-70.9' - 2" PVC Blank casing. 70.3'-150.9': 2" well screen, 0.02" slot 65-150': #3 sand pack 62'-65': Bentonite Seal; 0-62': Cement grout.		Note: Two piezometers installed.				

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD266	SHEET NO. 4 OF 4	DH-34 I-25

BORING LOCATION EAST OF RESERVOIR NEAR ENTRANCE GATE		GROUND EL. ± 511
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING	TOTAL DEPTH 137'
DRILL RIG FAILING 1500 / BORING DIA. 5 5/8" — 10"	DATE DRILLED 10/9/90 - 10/11/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	0 – 0.25': Asphalt Pavement.	0					12:00pm Auger out to 3'. Set mud tub. Advance hole with 5 5/8" rockbit using Rotary Wash Drilling (RD) to 13'.
	FILL					RD	
SM	0.25'-29': GRAVELLY SILTY SAND; dark yellowbrown to mottled brown; moist; fine to coarse sand; est 20% low pl fines; est 10-15% subrnd-subang fine-med gravels; appears layered and intermixed.	4		100 - 200 psi			note: sands and gravels in return fluids
		8					13': convert to 94 mm wireline coring for spot sampling with 2" core barrel (CC).
	13-15'; GRAVELLY SILTY sand as above; moist; appears dense	12	X-1	160	1.8/2.0	C	13'-15'; c; 1:00 min; full return.
		16		100		RD	
	-20'-22'; GRAVELLY SILTY SANDS as at 13'; occ. horizontal layers of yellowbrown sand; appears dense.	20		140 200	1.7/2.0	C	20'-22'; c; 1:17 min; full return
		24		100		RD	Drill out to 30'; full fluid return
	ALLUVIUM (?)	28					29': Driller notes material change; increase gravels.
SP-SM	29'-37': GRAVELLY SILTY SAND (SP-SM); mottled reddish-yellowish brown; moist; fine to coarse sands; est. 12-15% silt texture; up to 15% fine subrnd gravels; appears to have a massive soil texture.	32		390 psi	1.3/2.0	C	30'-32'; c; 1:15 min; full return.
							Drill out to 40'.
	PICO FM	36					
ML	37'-45': SILTSTONE; see description at 40'.						37': Driller notes material change, probable siltstone.
		40					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-35
		PROJECT NO. MWD266 / SHEET NO. 1 of 1	55-22

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML	(37'-45': SILTSTONE) 40'-42': SILTSTONE: mottled light grey orange brn w/some red oxide staining; camp; appears hard; Lo-mod ph; est 20-30% v.f.g. micaceous sands; apparent dip up to 30°; occ. interbedded fine sand lenses 1"-2" thick; moist.	40	X-1	220	2.0/2.0	C	40'-42'; c: ~2:00 min; full return.
		44		100		RD	Drill out to 50'; full return. 45': Driller notes sands
SP-SM	45'-94': CONGLOMERATE/SANDSTONE: GRAVELLY SILTY SAND (SP-SM); dusky yellow brown w/orange mottling; moist; appears dense & tight; fine to med. sand w/some coarse; est 15% silt binder; est 10-15% fine gravels; typically interlensed with fine silty sand; very weakly cemented; mod. consolidated; appears tight.	48		485	1.8/2.0	C	50'-52'; c: 2:10 min; full return.
		52		100		RD	Drill out to 60'; full return; sands w/ some gravels.
		56					
	60-62'; Sandstone; silty sand as above; decreased gravels to <10%; decreased silt to est. 5-12%; appears v. moist to wet; H_2O sheen on grains; v. weakly cemented; appears tight.	60	X-2	180	2.0/2.0	C	60'-62'; c: 1:23 min; full return
		64		100		RD	Drill out to 70' sands & gravels
		68					
	70'-72'; SANDSTONE as at 60'; increased fines to est 15%; fine gravels; moist.	72		150	2.4/2.0	C	70'-72': ~2:30 min; full return.
				100		RD	Drill out to 80'; sands & gravels
		76					
		80					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-35
		PROJECT NO. MWD266 / SHEET NO. 2 of 2	22

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(45'-94': CONGLOMERATE/SANDSTONE)	80					
SP-SM	80'-82'; CONGLOMERATE, EXCEPTIONALLY SILTY SAND; yellow brown-orange brown; moist; fine sands; est 10-15% silt binder; est. 15% fine med gravels; poorly graded predom. f-med sand; wkly cemented, Mod. consolidated. appears tight.			500	2.0/2.0	C	80'-82'; C; 1:43 min; full return
		84		100		RD	Drill out to 90'. sands + gravels
		88	X-2				
	90'-92'; SANDSTONE: SILTY SAND; dusky yellow brown; some orange mottling; moist-v. moist, f-med. sand acc. crse; acc. fine gravels; 10-20% silts; tight (as at 60').	92		340 390	2.0/2.0	C	90'-92'; C; 1:57 min; full return.
ML acc. SM	94'-101': SILTSTONE; see description at 100'.	96		100		RD	94': SILTSTONE sd. increased sands layers of silt/sand.
	-100'-101': SILTSTONE w/thin interbedded sandstones; light gray to mottled orange brown; damp (siltstone) to moist (sand lenses); lo pl fines; acc. fine silt/sand lenses.	100		200 290	2.0/2.0	C	100'-102'; C; 1:44 min; full return
SP-SM	101'-137': SANDSTONE/CONGLOMERATE					RD	Drill out to 110'. sands and some gravels.
	101'-102': SANDSTONE: SILTY SAND; moist-v. moist, fine to med.; 20-40% lo pl fines;	104	X-3	100			
		108					
	110'-110.7'; SANDSTONE as at 90'; v. moist; predominately fine w/some med. sand; acc siltstone rip up clasts			550	.7	C	110'-110.7'; C; 3.29 min; full return; very hard drilling
		112					
		116		100		RD	Drill out to 120'. sands + gravels.
		120					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-35
		PROJECT NO. MW07616 / SHEET NO. 22	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(101'-137'; SANDSTONE/CONGLOMERATE)	120					120'-122'
	120'-122': CONGLOMERATE: GRAVELLY SAND; very moist; mottled yellow brown-orange brown; fine to coarse sand; est up to 25% fine-med. gravels; est. 10% silt binder; wkly cemented; mod. consolidated; appears tight.			500/12" 250/12"	2.0/2.0	C	
SP-SM		124		100		RD	Drill out to 130'. sands and gravels
		125					DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.
	130'-132': SANDSTONE: SILTY SAND; light grey w/some orange mottling; moist to very moist; fine to coarse sand; <10% gravels; est. 5-12% silt.		X-3	500	2.0/2.0	C	130'-132'; c; 2:30pm.
		132		100		RD	drill out to 135'
	135'-137': SANDSTONE as at 130'; very moist; frequent orange laminations.	136		320	2.0/2.0	C	135'-137'; c; 1:12; full return. 4:35pm
	TD = 137.0'.						Boring terminated at 137'. pull rods up and shift at 5:00pm. 10/10/90 - USGS performs downhole seismic velocity study. 1pm. began reaming out w/10" tricone. 5:00pm. End shift at 100'. mud at ~70'. 7:00am 10/11/90 - mud level at ~20'. Continue reaming w/10" 11:15AM: complete grout seal.
	WELL DETAIL 0-53.5': 2" PVC blank casing 53.5'-133.5': 2" well screen, 0.02" slotted. 48'-133': #3 sand filter pack. 43.5'-48': Bentonite seal. 0'-43.5': cement grout. note: Two piezometers installed.						THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION. THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS. THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL. SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MW0266 / SHEET NO. 4 OF 4	DH-35 I-22

BORING LOCATION SOUTH OF RESERVOIR AT PROPERTY LINE			GROUND EL. ± 470'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING		TOTAL DEPTH 200'
DRILL RIG FAILING 1500	BORING DIA. 5 5/8" → 10"	DATE DRILLED 10/16 - 10/18/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	TOPSOIL (TILLED)	0					8:30AM
SM	0.0 - 11' SILTY SAND (SM); dark brown; damp; very fine to fine sand; est. 30-40% non plastic silts; occ. organics; occ. gravels.			200 300 psi		RD	Auger out to 2.5'; set mud tub. Advance hole to 13' with 5 5/8" rock bit using Rotary wash Drilling (RD). Circulate water and Insta Pac 425 liquid polymer drillfluid. At 13' convert to 94mm Coring system for spot sampling to 200' using 2" ID core barrel (C).
		4					
		8					
	PICO FM						11'- Driller notes gravels.
SP-SM	11'-138': CONGLOMERATE / SANDSTONE; GRAVELLY SILTY SAND (SP-SM); dark orange brown; damp; fine to med. sand; est 10-15% non plastic silt binder; est 10-15% fine subround gravels; wkly cemented; friable.	12					
				160-390	1.5/2.0	C	14'-16'; C; 1:33 min; full return; smooth
		16	X-L	100		RD	Drill out to 20'
	20'-22': SANDSTONE as at 12'; increase silt binder to ~30%; predom. fine sand w/ occ. gravels; some med. brown staining on fxr (?) surfaces.	20		200 300	1.9/2.0	C	20'-22'; C; 2:15 min; full return; smooth drill
		24		100		RD	Drill out to 30' Slight to moderate chatter; sands-gravels in return fluid.
	note: samples at 11' to 22' appear weathered (e.g. darker color more silty).	28					
	30'-32': SANDSTONE: GRAVELLY SAND (SP); orange brown w/ yellow banding; damp; fine to med. sand w/ some crse; <10% silt; about 10-15% fine gravels; appears less wxred than above; friable; wkly cemented.	32		330 500	2.0/2.0	C	30'-32'; C; 4:12 min; full return; smooth drill
				100			Drill out to 40' sands and gravels.
		36					
		40					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 1 of 1	DH-36 / 5-27

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(11'-138': CONGLOMERATE/SANDSTONE)						
SP-SM	40'-42': SANDSTONE (SP-SM) as at 30'; color change to dusky yellow brown; decrease fine gravels to <10%; est 10-15% fines; friable appears moist; predom. fine-med. sand; occ. granitic clast to +2".	40	X-1	250-500	2.0/2.0	C	40'-42'; c; 2:13 min; full return; slight drill chatter.
		44		100		RD	Drill out to 50'. Sands and gravels.
		48					
	50'-52': SANDSTONE (SP-SM) as at 40'; increase orange mottling color grades to yellow brown; moist; friable	52		300	2.0/2.0	C	50'-52'; c; 1:48 min; full return; slight drill chatter.
		56		10:10 100		RD	Drill out to 60'.
	59.5'-61.5': SILTSTONE (ML); light grey; damp; hard; lo pl fines; 20-30% vf micaceous sand. some orange mottling.						60' ½ hr downtime, plug stuck in drill rod. 59.5' - SILTSTONE
ML (sharp contact)	61.5'-62': SANDSTONE (SP-SM) as at 50'; moist.	60	11:00 tm X-2	250	2.0/2.0	C	60'-62'; c; 1:30 min. smooth to slight chatter; full return.
SP-SM		64		100		RD	Drill out to 70'. sands + gravels
ML	-68-68.5': SILTSTONE LENSE.	68					68'-68.5': SILTSTONE
SP-SM	-70'-72': SANDSTONE (SP-SM) as at 50'; increase grain size to fine to coarse; <10% fine gravels; very moist; friable.	72		250	1.8/2.0	C	70'-72'; c; ~2:30 min full return; mod. drill chatter. Note: ~6" of sample fell out of tube.
		76				RD	Drill out to 80'. Sands + gravels.
		80					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MW0266 / SHEET NO. 2 OF 6	DH-36 / E-27

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(11'-138': CONGLOMERATE / SANDSTONE) 80'-81': SANDSTONE (SP-SM): light grey w/orange mottling; fine to coarse w/some fine gravels	80	X-2	300 500	2.0 / 2.0	C	80'-82'; c; 4min; full return; hard drilling.
	81'-82': fine SANDSTONE; light grey w/occ orange mottling; est 10-15% silt; very dense; tight; damp, occ orange lamination at ~5-10% dip.	84		100		RD	Drill out to 90', sands & gravels
		88					
	90'-92': SANDSTONE (SP-SM); as at 80'-81'; light grey with orange banding; moist; occ. thin gravelly layers; wkly cemented; friable; occ. fine sand lenses. 91'-92': color change to light grey.	92		500	2.0 / 2.0	C	90'-92'; c; 4:13min; full return; hard drilling.
		96		100		RD	Drill out to 100'.
	100'-102': SANDSTONE (SP-SM) GRAVELLY SILTY SAND as at 90'; color change to orange brn; very moist to locally wet w/ H_2O sheen; fine to coarse; ~~occ~~ 10-15% fine gravels; est 10% silts.	100		300/13" 500/6"	2.0 / 2.0	C	100'-102'; c; 2:17min; full return.
		104		100		RD	Drill out to 110'. moderate chatter. Driller notes slight fluid loss into formation thru out hole.
		108					
	110'-112': SANDSTONE (SP-SM): dusky yell. brn w/orange mottling; moist; fine-med sand; est. 10% silt binder; <10% gravels. friable; wkly cemented. typically lensed w/ fine-med. sand beds.	112	X-3	500	2.0 / 2.0	C	110'-112'; c; 2:47min; full return.
		116		100		RD	Drill out to 120'. moderate chatter sands + gravels
		120					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 7 of 7	DH-36 / T-27

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(11'-138': CONGLOMERATE/SANDSTONE) 120'-122': SANDSTONE as at 110'; moist, clasts up to 1"; some w/red out gravels; est 10-15% fines.	120	X-3	500	2.0/2.0	C	120'-122'; c; 2:17min; full return.
		124		100		RD	Drill out to 130'. sands + gravels 125': Driller notes increased clays (fines) information material.
		128					
	130'-132': SANDSTONE: (Based on drill action and pump pressure).	132		200 2:10am	0.0/2.0	C	130'-132'; c; 1:41min; full return. 2" clast jammed in shoe. no sample recovery.
		136		100		RD	Drill out to 140'. sand + gravels w/ some silt cuttings in return fluid.
ML	138'-151.8' SILTSTONE: SANDY SILT (ML); light grey w/orange mottling; damp; hard; low plasticity fines; est. 20-30% vfg micaceous sand; apparent dips at 10° to 20° within orange laminations. -141.5': color change to dark grey.	140		20			138'- Driller notes siltstone decrease drill pressure to keep pump under control.
				200	2.0/2.0	C	140'-142'; c; 1:50min; full return; smooth drill
		144		20 psi		RD	drill out to 150'. interbedded fine sands and siltstone.
		148					
	150'-152': SILTSTONE as at 140'; light grey w/orange laminations and mottling damp; hard.			250 300	2.0/2.0	C	150'-152'; c; 1:30min; smooth; full return.
SP-SM	-151.8'- Fine sand lense; grey; moist; friable	152				RD	Drill out to 160'. Drill notes increased sand at 152'. 154': Gravels
		156					
ML	-159-159.5': SILTSTONE LENSE.	160					159': SILT STONE LENSE.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 4 OF 6	DH-36 27

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(151.8 - 200': SANDSTONE/CONGLOMERATE) 160'-160.7': SANDSTONE; SILTY SAND (SP-SM); grey-yellow brn; moist, Fine to medium; est 5-12% fines; friable; tight. similar to that at 120'.	160	X-3	500	.7/.7	C	160'-160.7'; c; Full return; very hard; refusal.
				100		RD	DRILL out to 170'. Sand + gravel
		164					
		168					
	-170'-172': SANDSTONE: SILTY SAND as at 160'; moist-v.moist, tight; predom. fine sand; est 20% silt; <10% fine subrnd gravels;		X-4	450 500	2.0 / 2.0	C	170'-172'; c; 1:23 min. Full return; mod. drill chatter.
		172		100		RD	Drill out to 180'. sands and gravels w/occ. silt lenses.
		176					
	180'-180.5'; CGL/SANDSTONE; GRAVELLY SAND (SP); orange brown; moist; F sheets med; 10-20% fine gravels est <10% silt; v. tight; friable.	180		552	.5/.5'	C	180'-180.5'; c; 1:41 min; full return; refusal.
				100		RD	Drill out TO 190'.
		184					
		188					
	190'-190.25': CONGLOMERATE; SANDY GRAVEL; orange brown; Clasts +2" (stuck in shoe).			4:20pm 500	.25/.25	C	190': drill plug stuck in hole trip rods to remove. END SHIFT 5:00pm 10/17/90 07:00 190'-190.25'; c; 2:18 min; Full return; refusal
		192		100		RD	Drill out to 200'. Mod.-rough chatter sand and gravel.
		196					
		200					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MW0266 / SHEET NO. 5 OF 5	DH-36-27

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(151.8'-200': SANDSTONE/CONGLOMERATE) 200'-200.25': CONGLOMERATE: GRAVELLY SAND as at 190'; orange brown; moist; est 15% silt binder; very tight. T.D. = 200.25'.	200		550	.25/25 7:45PM	C	200'-200.25'; C; 1:9mm; refusal; full return. Bor: a terminated at 200.25'. Pull rods. Ream out hole with 10" tricone rock bit. 5pm: Reamed to 200'. pull 60' rod and shift. 10/19/90 7:00AM: Drill to 202'. Began flushing out hole. CONSTRUCT WELL.
		204					

WELL DETAIL

0'-40': 2" PVC blank

40'-200': 2" well screen, 0.02" slotted.

32.6'-200': #3 sand filter pack.

29'-32.6': Bentonite seal.

0 - 29': Cement grout.

note: Two piezometers installed.

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 6 OF 8	DH-36 27

BORING LOCATION RESERVOIR CREST AT SOUTHEAST CORNER			GROUND EL. ~578'
DEPTH/ELEV. WATER	DRILL CONTRACTOR ALL TERRAIN DRILLING		TOTAL DEPTH 201.5'
DRILL RIG FAILING 1500	BORING DIA. 5 5/8" — 10"	DATE DRILLED 10/18/90 – 10/20/90	LOGGED BY JM

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	0-0.25: ASPHALT LINER	0					2:00PM. Auger out to 3'. Set mud tub. Advance hole with 5 5/8" rockbit to 13' using Rotary Wash Drilling (RD). At 13' convert to 94mm wireline coring system for spot sampling using 2" split spoon sampler (C). Circulate hole with Insta-Pac Polymer.
SM	PICO FM					RD	
	~5'-109': SANDSTONE w/interbedded CONGLOMERATE: SILTY SAND/GRAVELLY SAND; dusky yellow brown to orange brown; see descriptions below.	4		100			
		8					0-12' cuttings consist of sand, gravel and silt fragments
SP-SM	-12'-14': SANDSTONE. SAND-SILTY SAND (SP-SM); dusky yellow to orange brown; moist; fine to medium sand; est 5-20% low pl fines; <5% subrnd gravels; -12-12.5 - dusky yell; ~5% fines -12.5-13' - orange brn est. 15-20% silt.	12	X-1	150 psi	1.0/2.0	C	12'-14'; C; 0:45min; full return; smooth drilling. note: 94mm coring using a new outer bit with teeth.
		16		100		RD	Drill out to 20'.
							change back to old bit.
		20					-20': Attempt sample run hit refusal on large clast drill to 21'.
	-21'-23': SANDSTONE: SILTY SAND (SP-SM); yellow brown w/orange mottling; appears moist, fine to medium; occ coarse; est. 5-15% silt binder; <10% fine subrnd gravel; tight; friable.			180 psi	2.0/2.0	C	21'-23'; C; 1:13min; full return; smooth drill.
		24		100		RD	Drill out to 30' sands + gravels
		28					
	-30'-31.5': SANDSTONE as out 21'; predom fine sand w/med; est 15-20% silt binder; 10-15% fine subang-subrnd gravel; damp; very tight; very dense mod well consolidated			350/12" 500/6"	1.0/1.5	C	30'-31.5'. C; 3:57min full return. smooth drill. 5:00pm end shift. 7:00AM 10/19/90 drill out to 40'
		32		100		RD	
		36					
		40					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO. DH-37
		PROJECT NO. MWD266 / SHEET NO. 1 OF 6	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(5'-109': SANDSTONE/CONGLOMERATE)						
	40-42': SANDSTONE: SILTY SAND; orangish brown; slightly moist, fine & medium w/some coarse grained; est 10-20% low cn silt binder; tight; friable.	40	X-1	350-550	2.0/2.0	C	40-42'; C; full return
SP-SM		44		100		RD	Drill out to 50' sand + gravels
		48					
	50'-51.5': SANDSTONE as at 40'; light orange brown; s. moist, predom fine sand w/some med-crse; est 20% silt. <10% fine gravel; very tight; mod consolidated.			350 550	1.0/1.5	C	50-51.5'; full return
		52		100		RD	Drill out to 60' sands + gravels in return fluid.
		56					
	60-62': SANDSTONE. SILTY SAND as at 40'; yellow brown; moist, fine-medium; est 10-15% silt; occ. fine gravels; thin orange laminations at ~5° dip. friable.	60		500	2.0/2.0	C	60'-62'; C; 3:16 min; full return; slight chatter
		64		100		RD	Drill out to 70' sand + gravel
		68					
	70'-72': SANDSTONE as at 60'; yellow brown, moist; est 10% fines; friable.	72	X-2	450	2.0/2.0	C	70'-72'; C; 1:54 min; full return.
				100		RD	Drill out to 80'. Sand + gravel
		76					
		80					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MW0266 / SHEET NO. 2 of 6	DH-37

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SP-SM	(3'-109': SANDSTONE/CONGLOMERATE) 80'-82'; SANDSTONE c-g at 70'; increase gravels to est. 10-20%, fine-med; sub round.	80	X-2	450	2.0/2.0	C	80'-82'; c; 3:00 min full return. note attempted sample run at 90' refusal due to large clast in shoe. Drill out rock and sample again at 90.25'.
		84		100		RD	Drill out to 90'.
		88					
	90'-92': SANDSTONE as at 70'; moist; gravels at <10%; f-med. sand; 10-15% silt binder.			450	2.0/2.0	C	90'-92'; c; full return
		92					Drill out to 100'. sands + gravels
		96		100		RD	
	100'-101': SANDSTONE as at 80'; moist; est 10-20% gravels; 10-15% silts. 101'-102': decrease gravels to less than 10%; predom. fine sand; est 10-15% silt; moist	100		400 500	2.0/2.0	C	100'-102.0'; c; 3:07 min; full return.
		104		100		RD	Drill out to 110'. sand + gravels to 109'.
	109'-111.8' SILTSTONE: SANDY SILT: olive gray w/orange mottling; damp; low plasticity; 15-30% micaceous fine sand. -111.8' - fine sand - heavy red fox staining. damp; dense.	108					-109' - smooth drill increase pump pressure: SILTSTONE
ML				160	2.0/2.0	C	110'-112'; c; 1:46 min. full return; smooth drill. disturbed sample rock in shoe.
SP-SM	111.8'-184': SANDSTONE w/interbedded CONGLOMERATE; see descriptions below.	112				RD	Drill out to 120'. Sands + gravels
		116					
		120					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET NO.	DH-37
		MWD266	3 of 6	

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(111.8'-184': SANDSTONE/CONGLOMERATE)						
	120'-122'. SANDSTONE: SILTY SAND; dusky yellow brown w/ orange mottling; moist; fine to med. sand w/some clay; est. 10-15% silt binder; <10% fine subrounded gravels; friable. occ. siltstone ripup clasts; occ. lenses of fine sand	120		450	2.0/2.0	C	120'-122': c; ~3:00 min; slight chatter; full return
		124	X-3	100		RD	Drill out to 130 sand + gravel
SP-SM		128					
	130'-130.25': SANDSTONE as at 120'; s. moist; very dense; very tight.			550	.25/.25	C	130'-130.25'; c; 2:30 min; refusal; full return
		132		250		RD	Drill out to 140'. driller notes very hard drilling. Sands + gravels full return
		136					
	137'-138': SILTSTONE lense						
ML							137': SILTSTONE lense
	140'-140.3': CONGLOMERATIC SANDSTONE as at 130'; mottled orange-yellow brown; predom. fine-med sand; increased fine-coarse gravels to ~15%; <10% silt binder; appears very dense; very tight; s. moist.	140		500	.3/.3	C	140'-140.3'; c; 2:00 min; refusal; full return.
SP-SM		144		200		RD	Drill out to 150'. 140-144'- Sands 144'- sands + gravels very hard drillin
		148					
	150'-150.3': CONGLOMERATIC SANDSTONE as at 140'; moist.			500	.3/.3	C	150'-150.3'; c; 2:05 min; refusal; full return
		152				RD	Drill out to 160' mod. chatter hard drilling
		156					
		160					

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 6	DH-37

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(111.8 – 184' SANDSTONE / CONGLOMERATE)	160					
SP-SM	160'-160.3': CONGLOMERATE: GRAVELLY SAND; orange brown; moist; fine to coarse sand; est. 30% fine-med. gravels; <15% silts; mod. consolidated; poorly graded.		X-3	500	3/3	C	160'-160.3'-C; 1:35 min; full return; refusal
						RD	Drill out to 170'
		164		200			
		168					
	170'-170.3': CONGLOMERATE as at 160'; moist; appears very dense.			500	3/3	C	170'-170.3'; C; 1:54 min; refusal; full return.
		172					Drill out to 180'.
						RD	SAND and GRAVELS
				150			
		176					
	180'-180.5': SANDSTONE: SILTY SAND; mottled orange-yellow brown. very moist to wet. F-med. sand; est. 10-15% fine gravels; est. 10-15% silt; very tight; note free H_2O sheen on grains.	180		500	3/5	C	180'-180.3'; C; 2:00 min; refusal; full return
				200		RD	
		184		80-100			184'-Siltstone; increased pump pressure
ML	184'-200'- SILTSTONE: SANDY SILT; see descriptions below.						
		188					
	190'-193.5': SILTSTONE (SANDY SILT); dark grey-black; damp; slightly plastic; est. 10-15% very fine sand; massive; no fracturing or bedding.			200 (100%)	3.5/3.5	C	190'-193.5'; C; 3:25 min; full return solid core
		192					
			X-4				193.5-199'; C; full return
		196		20	5.5/5.5	C	
	196.5'- Color change to olive-gray w/orange mottling; increase very fine sand to 20-30%.						
	198-198.5': SAND lense; fine to medium; orange color; wet.						199-202'; C; full return
		200		500		C	

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MW0266 / SHEET NO. 6 OF 6	DH-37

BORING LOCATION			GROUND EL.
DEPTH/ELEV. WATER	DRILL CONTRACTOR		TOTAL DEPTH
DRILL RIG	BORING DIA.	DATE DRILLED	LOGGED BY

SOIL CLASS.	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	(184'-200': SILTSTONE)						
Sp-sm	198.5'- SILTSTONE as at 196.5'; appears platey.	200	X-4	500	3.0/3.0	C	1:45 pm
	200'-202': SANDSTONE (SILTY SAND); light grey w/orange mottling; wet. Fine to med. sand; est 10-15% silt; occ. fine gravel.	204	X-4				Boring Terminated at 202'. Convert to 10"+ rizone to ream out hole, 6:10 pm end shift at 90'. 10/20/90 - 7:00 Am continue to ream to 200'. 1pm: Finish reaming to 201.5' began flushing out hole.
	TD=202'						

WELL DETAIL

0'-119': 2" PVC blank casing.
119'-199': 2" Well Screen, 0.02" slotted.
115'-201': #3 sand filter pack
110.5-115.: Bentonite seal.
0'-110.5': cement grout.
note: Two piezometers installed.

DATA ON THIS LOG ARE AN APPROXIMATION OF THE GEOLOGIC AND SUBSURFACE CONDITIONS BECAUSE THE INFORMATION WAS OBTAINED FROM INDIRECT, DISCONTINUOUS, AND POSSIBLY DISTURBED SAMPLING NECESSITATED BY USE OF SMALL-DIAMETER HOLES. ROTARY AND WASH BORING HOLES HAVE FURTHER COMPLICATIONS IN THIS REGARD BECAUSE OF THE NEED TO USE DRILLING FLUID AND/OR CASING IN ADVANCING HOLES.

THIS LOG INDICATES CONDITIONS IN THIS HOLE ONLY ON THE DATE INDICATED AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS AND ON OTHER DATES. ANY WATER LEVELS SHOWN ARE SUBJECT TO VARIATION.

THIS HOLE WAS LOGGED IN SUCH A WAY AS TO PROVIDE DATA PRIMARILY FOR DESIGN PURPOSES AND NOT NECESSARILY FOR THE PURPOSES OF SPECIFIC CONTRACTORS.

THE STRATIFICATION LINES OR DEPTH INTERVALS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES, AND THE TRANSITIONS MAY BE GRADUAL.

SOIL CLASSIFICATIONS SHOWN ON LOGS ARE FIELD CLASSIFICATIONS BASED ON THE UNIFIED SOILS CLASSIFICATION SYSTEM.

WAHLER ASSOCIATES	GARVEY RESERVOIR	EXPLORATION BORING LOG	BORING NO.
		PROJECT NO. MWD266 / SHEET NO. 6 of 6	DH-37

APPENDIX E

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIALS IS LARGER THAN #200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
			GP	POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
		GRAVEL WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON PLASTIC FINES.
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES.
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
			SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES.
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES.
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE	SILTS & CLAYS LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY.
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.
	SILTS & CLAYS LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS.
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOIL.

DEFINITIONS OF TERMS

GRAIN SIZES

U.S. STANDARD SERIES SIEVE

200 40 10 4 3/4" 3" 12"

SILTS & CLAYS DISTINGUISHED ON BASIS OF PLASTICITY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

MOISTURE CONDITION (INCREASING MOISTURE ⟶)

DRY — SLIGHTLY DAMP — DAMP — MOIST (PL) — VERY MOIST — WET (SATURATED) (LL)

KEY

SAMPLE NUMBER

SAMPLE CONTAINER:

- BAG ..... B
- JAR ..... J
- SHELBY TUBE ..... S
- BOX X
- DRIVE SAMPLER
- RINGS ..... R
- LINERS L

DRIVE SAMPLERS

- 2" O.D. STANDARD PENETROMETER ... SPT
- 2.5" O.D. CALIF. SAMPLER ..... CS
- 3" O.D. MODIFIED CALIF. SAMPLER ... MCS

MODE

METHOD OF ADVANCING HOLE:

DRILL

- FLIGHT AUGER ..... AD
- BUCKET AUGER ..... BA
- SPIN AUGER ..... SD
- HOLLOW STEM AUGER .. HA
- ROTARY DRILL ..... RD
- CABLE TOOL ..... CT

SAMPLER

- DRIVE ..... DR
- PITCHER BARREL ..... PB
- CORE C
- PUSH ..... P

RECOVERY

RECOVERY RATIO INDICATED BY A FRACTION:

$$\frac{1.2}{1.5} = \frac{\text{FOOTAGE RECOVERED}}{\text{FOOTAGE SAMPLED}}$$

REMARKS

INCLUDES DRILLING INFORMATION, E.G. WATER LEVEL, DATES.

REFUSAL: STOPPED BY MATERIAL TO HARD FOR EQUIPMENT.

TERMINATED: SUFFICIENT INFORMATION OBTAINED.

ABANDONED: STOPPED BECAUSE OF DIFFICULTIES EXPLAINED ON LOGS.

PENETRATION RESISTANCE (PR)

(RECORDED AS BLOWS/0.5 FOOT)

SANDS & GRAVELS

RELATIVE DENSITY	BLOWS/FOOT*
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CLAYS & SILTS

CONSISTENCY	BLOWS/FOOT*	STRENGTH**
VERY SOFT	0-2	0-1/4
SOFT	2-4	1/4-1/2
FRIM	4-8	1/2-1
STIFF	8-15	1-2
VERY STIFF	15-30	2-4
HARD	OVER 30	OVER 4

* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) Split-Barrel sampler (ASTM-1586 standard penetration test).

** Unconfined compressive strength in tons/sq ft. Read from a pocket penetrometer (PP).

NOTE: COLOR BASED ON ROCK COLOR USING CORRESPONDING MUNSELL NUMERICAL DESIGNATION.

RUST	GARVEY RESERVOIR	KEY FOR SOIL EXPLORATION LOGS
		PROJECT NO. 88264.340 / FIGURE NO. E-1

BORING LOCATION: Reservoir Crest, Northwest side	APPROVED BY: ASB	GROUND EL: 578.1
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Drill	TOTAL DEPTH: 232'
DRILL RIG: Failing 1500 / BORING DIA.: 5½" – 10"	DATE DRILLED: 10/5 – 10/7/93	LOGGED BY: KEB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. (psi) / ~~RGB~~	REC.	MODE	REMARKS
	0'–0.4' AC Liner	0				RD	8:30 AM spud hole, set up in auto, add about 2 gallons EZ Mud water soluble polymer emulsion
SM	EMBANKMENT FILL 0.4'–35.0' SILTY SAND: moderate yellowish brown; damp; medium dense; 20% silty fines, 10% gravel clasts to 1/2" diameter	4					10/6/93: reamed to 10" diameter 0' to 130'
		8					
	1" diameter gravel clasts		X-1	400 200 100	2.0/2.0	PB	9.7'–12.0' 9:30 AM
		12		0		RD	12'–20' Rotary Drill switched to 94 mm soil sampler wire line system. Drill by rod weight. "pretty fast" penetration. Moderate chatter
		16					
SM	becomes moist, 30% fines	20		80	2.0/2.0	C	20.0'–22.0' 10:45–10:46 Core 1 min. Full fluid return
				100		RD	22'–30' RD 11:55
		24					
		28					
				100	1.0/2.0	C	30.0'–32.0' 11:00
		32		60		RD	32'–40' RD 11:10
	PICO FM. 35'–50.5' SILTSTONE; marbled dark yellowish brown and greenish gray; moist; 5% very fine grained sand; massive; very soft; friable. Moderately fractured; with grayish black stains on fracture surfaces.	36		80			moist clay 35'–40' per driller
Slst		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266B	SHEET: 1 of 7	DH-38 I-17

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
slst	35-50.5 SILTSTONE (con't)	40	X-1	80	2.0/2.0	C	40.0'-42.0' 11.20 No chatter
				80		RD	42'-50' RD
		44					
		48					
ss	50.5-61.5' SANDSTONE; greenish gray; damp; very fine to fine grained sand; 10% silt; massive; very soft; friable;			80	2.0/2.0	C	50'-52' 11.40
		52		80		11:45 RD	52'-60' RD
		56					
slst	61.5'-78.0' SILTSTONE; dark yellowish orange; damp; trace fine grained sand; massive; soft; friable;	60	X-2	80	2.0/2.0	C	60'-62' 11:55 No chatter Full fluid return
		64		80		RD	62-70' RD No chatter
		68					
	becomes friable to weak	72		80	2.0/2.0	C	70-72' 12:10
				80		RD	72-80' RD 12:20
		76					
ss	78.0-100' SANDSTONE; pale and dark yellowish orange; moist; fine to coarse grained subangular sand;	80					began to water 78.5'

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-38
		MWD-266B	2 of 7	I-17

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER:	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SS	massive; soft in hardness; friable; weathered to well graded SAND with GRAVEL; 10% to 15% gravel clasts to 1" diameter; SILTSTONE clasts to 2" diameter; 5% to 10% fines	80	X-2	60 to 80	2.9/2.0	C	80'-82' C 12:30-12:05 chatter's on interlayered gravels
		84		0		RD	82'-90' RD
		88		60			87.5' "really tight packed" per driller
				120	2.9/2.0	C	90'-92' Core
		92		0		RD	92'-100' RD 1:00 moderate-to-slight Chatter No fluid loss
		96					
		100		100	2.9/2.0	C	100'-102' C 1:15
cgl	100'-110' CONGLOMERATE; lt. brown moist; 30%-40% medium grained sand; 60%-70% fine to coarse grained gravel clasts to 2" diameter; sub rounded; massive; soft; friable; severely weathered to very dense POORLY GRADED GRAVEL with 5% to 10% fines	104		0		RD	102'-110' RD 1:15
		108					
SS	110'-179' SANDSTONE; light greenish gray; moist; fine to medium grained sand; friable; severely weathered to POORLY GRADED SAND with 5% to 10% fines	112	X-3	120-140 200	2.0/2.0	C	110-112' C 1:30
				0		RD	112'-120' RD
		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-38
		MWD-266B	3 of 7	I-17

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~RQD~~	REC.	MODE	REMARKS
	PKO FM	120	X-3	120	20/20	C	120'-122' C 1:40 PM.
	110'-179' SANDSTONE: con't			0		RD	122'-130' RD
		124					
SS							
		128					
				80	20/20	C	130'-132' C 2:00 PM
	becomes pale yellowish orange; fine to very fine grained	132				RD	132'-140' RD 2:05
		136					
		140		100	20/20	C	140'-142' C 2:20 PM No fluid loss
	with interlayered yellowish gray layers						142'-150' RD 2:25
		144					
		148					
SS				120	20/20	C	150'-152' C 2:35 PM
		152					152'-160' RD 2:40 PM
		156					
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-38
		MWD-266B	4 of 7	I-17

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~RQD~~	REC.	MODE	REMARKS
SS	110'-179' SANDSTONE; (con't) becomes very moist Some minor layers with 20% gravel clasts to 1" diameter	160	X-4	40-60	2.0/2.0	C	160'-162' C
		164		0		RD	
		168					
	approximately 6" thick CLAYSTONE layer in sampler shoe.	172		150-200	2.0/2.0	C	170'-172' C 3:15 fast coring raised pulldown pressure
				0		RD	172'-180' RD 3:20
		176					
SSt	179'-206' SILTSTONE: light olive brown; damp to moist; thinly laminated to very thin bedded; soft; friable; little fractured.	180		80-100	2.0/2.0	C	mud return pressure rose to 20 psi at 179' 180'-182' C 3:45
						RD	182'-190' RD
		184					
		188					
				50	2.0/2.0	C	190'-192' C 4:05
		192				RD	192'-200' RD
		196					
		200					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-38
		MWD-266B	5 of 7	I-17

BORING LOCATION:		APPROVED BY:	GROUND EL.
DEPTH/ELEV.WATER:	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. ~~PSI~~ ~~RQD~~	REC.	MODE	REMARKS
slst	PICO FM 179'-206' SILTSTONE (con't)	200	X-4	120	2.0/2.0	C	200'-202'C 4:28
						RD	202'-210'RD 4:40
		204					
	REPETTO FM 206'-232' SILTSTONE; dark greenish gray; damp; massive; soft; friable to plastic; little fractured;	208					
			X-5	60	2.0/2.0	C	210-212'C 4:50
		212				RD	212'-220'RD
		216					
slst		220		60	2.0/2.0	C	220'-222'C 5:15
						RD	222'-230'RD 5:20
		224					
		228		80	2.0/2.0	C	5:35 PM 10/5/93
	Total Depth 232.0'	232					Water level 10/6/93 7AM is 72.2' below surface.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DN-38 I-17
		MWD-266B	6 of 7	

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED.	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	WELL CONSTRUCTION 150'-230' – 2-2" 0.020 slotted PVC 0-150' – 2-2 blank pvc casing 142'-230' – #3 Lonestar sand 137.5-142' - bentonite pellets 0 – 137.5' - cement/bentonite grout						Notes: Drill pilot hole with 5½" bit to 232' 10/5/93 Used 1 5 gallon jug of E2 mud drill fluid No noticable water loss was observed. Reamed pilot hole to 10" diameter to 230' 10/6-10/7/93 Used 2 5 gallon jugs E2 mud. Water level A.M. 10/6/93 was 72.2' below ground surface Flushed drill hole w/about 600 gallons clear water Set 2 piezometers, installed #3 filter pack and bentonite pellet plug 10/7/93 Tremie cement/bentonite grout to surface 10/8/93 AM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DN-38
		MWD-266B	7 of 7	I-17

BORING LOCATION: Reservoir Crest south side	APPROVED BY: A S B	GROUND EL: 579.0
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Drl.	TOTAL DEPTH: 315.0
DRILL RIG: Failing 1500 / BORING DIA.: 5½"	DATE DRILLED: 10/8-10/9/93	LOGGED BY: REB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. ~~PSI~~ RQD	REC.	MODE	REMARKS
	0.0-0.25' Asphalt Liner	0				12:00	start 12:00 noon, core asphalt, auger to 25', set up mud tub, Auger to 10' with 5½" drag bit.
	EMBANKMENT FILL		X-1	0		AD	
SC	0.25'-20.0' CLAYEY SAND with GRAVEL: dark yellowish orange; damp; 15% plastic fines; 15% subangular gravel clasts to 1½" diameter	4					
		8					
	Gravel clasts > 2½" diameter					1:40 pm	10.0'-12.0' Sample with Pitcher Barrel modified for split spoon sampler
				60-300	1.5/2.0	PB	
		12		0		RD	1:55 12.0'-20.0' RD switch to 94mm core sample rods with 5½" bit
		16					
		20				2:10	20'-22' Core (C)
				80	2.0/2.0	C	
				0		RD	22'-30' RD
		24					
	PICO FM						
	26.0-108.0' SANDSTONE; dk yellowish orange; damp; massive; soft-friable to weak; little fractured; 25% silty fines; 5% gravel clasts; weakly cemented with limonite and clay(?)	28					
SS						2:25	30'-32' C
				60	1.7/2.0	C	
		32				2:30	32'-40' RD
				0			
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DM-39
		MWD-266B	1 of 9	I-9E

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	PICO FM	40	X-1	60 / 60%/80	2.9/2.0	C	40'-42' C slight chatter
	26'-108' SANDSTONE (con't)			0		2:45 RD	42'-50' RD
SS		44					
		48					
				80-120 / 80	96/2.0	C 2:55	50'-52' C large gravel clasts in shoe
		52		0		RD	52'-60' RD
		56					
		60	X-2	200	0.6/2.0	3:05 C	60'-62' C moderate chatter No drill fluid loss 0'-62'
				0		3:10 RD	62'-70' RD
		64					
		68					
SS				80	1.7/2.0	3:45 C	70'-72' C
	becomes pale yellowish orange with dark reddish brown Fe ox stains on coarse gravel clasts; 30%-40% gravel, 20% fines	72		0		3:50 RD	72'-80' RD
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-39
		MWD-266B	2 of 9	I-9E

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER:	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA..	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR (psi) / RQD	REC.	MODE	REMARKS
		80	X-2	100-600	1.3/2.0	4:05 C	80'-82' C
	PICO FM			0		4:10 RD	82'-90' RD
SS	26'-108' SANDSTONE (con't)	84					
		88				4:15	
				80	2.9/2.0	C 4:25	90'-92' C
		92		0		RD	92'-100' RD
		96					
						4:35	
		100		120-100	2.4/2.0	C	100'-102' C
				0		4:48 RD	102'-110' RD
		104					
		108					
	108'-160' CONGLOMERATE: pale yellowish tan to dark reddish brown Fe oxide stains on coarse gravel clasts; [illegible] friable; weak; 50% gravel clasts 15% silt, fine, 35% poorly sorted sand					4:55	
				80-120	2.9/20	5:05 PM	110'-112' C pulled rods 20' off bottom 10/8/93 end of shift
cgl		112		60-100		RD 7:30 AM	10/9/93 AM. circulated 3' sloughing from cuttings and RD 112'-120'
		116					"Alot harder per driller
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-39
		MWD-266B	3 of 9	I-9E

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR (PSI / ROD)	REC.	MODE	REMARKS
	Pico FM	120				7:40	
cgl	108'-160' CONGLOMERATE (con't) subrounded to sub-angular gravel clasts, 15% sand, 10% fines		X-3	80-160	2.0/20	C	120'-122' C moderate chatter to heavy chatter
				40		7:50 RD	122'-130' RD
		124					
		128				8:05	
				120 180	1.4/20	C	130'-132' C driller says formation is getting much harder. He anticipates slower reaming.
		132		0		8:15 RD	132'-140' RD
		136					
		140				8:25	140'-142' C
	60% gravel clasts			80	1.7/20	C	
				50		8:30 RD	142'-150' RD
		144					
				100			Cobble
		148		50			
						8:47	150'-152' C
cgl				140	2.0/20	C	
		152		0		5:55 RD	152'-160' RD
		156					
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-39
		MWD-266B	4 of 9	I-9E

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~PCI~~ ~~RCD~~	REC.	MODE	REMARKS
		160				9:05	160'-162' C
SS	160'-194' SANDSTONE; dark yellowish orange; thick bedded; soft, friable; 10% to 15% silty fines		X-4	60-80	2.0/2.0	C	
		164		0		9:10 RD	162'-170' RD
		168					
						9:30	170'-172' C
	becomes pale yellowish brown with light brown Fe ox stains; 25% gravel clasts; minor SILTSTONE interlayers 1" thick; soft and weak.			60	2.0/2.0	C	
		172				9:35 RD	172'-180' RD
		176		—			
		180				9:50	180'-182' C moderate chatter
				80-100	2.0/2.0	C	
SS		184		0		10:00 RD	182'-190' RD
		188					
						10:10	190'-192' C
				100	2.0/2.0	C	
		192		0		10:20 RD	192'-200' RD
cgl	194'-200' CONGLOMERATE; dark yellowish orange with light brown Fe ox stains; medium bedded; soft, friable; weakly cemented; 15% fines; 55% subangular gravel clasts	196		100			
				60			
		200					

Wahler Associates

GARVEY RESERVOIR

EXPLORATION BORING LOG		BORING NO.
PROJECT NO.	SHEET:	DH-39
MWD-266B	5 of 9	I-9E

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / PD / RQD	REC.	MODE	REMARKS
		200	X-4	220 / 120	2.0/2.0	10:35 C	200'-202' C Major chatter
	PICO FM			0		RD	202'-210' RD
	194'-289' CONGLOMERATE (cont)	204					
cgl		208					
	4" thick CLAYSTONE layer		X-5	100-140	2.0/2.0	11:00 C	210'-212' C moderate chatter
		212		150		11:10 RD	212'-220' RD
				0			
		216					
		220		160	2.0/2.0	11:30 C	220'-222' C moderate to heavy chatter
	with cobbles 224'-234'	224		180-220		11:35 RD	222'-230' RD Cobble - 20 min per 4" moderate to heavy chatter
				80			
		228					
				220-360	1.4/2.0	12:15 C	230'-232' C heavy chatter 231.5'-232'
cgl		232		120		12:25 RD	232'-240' RD heavy chatter
		236					
				40			moderate chatter
		240					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-39
		MWD-266B	6 of 9	I-9E

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1800	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~BSI~~ ~~RGD~~	REC.	MODE	REMARKS
	PICO FM	240	X-5	100-140	2.0/2.0	12:40 C	240'-242' C
	194'-289' CONGLOMERATE (cont) becomes moist					12:50 RD	242'-250' RD
cgl		244		120			heavy chatter
		248					
				250-600 300-500	1.4/1.7	1:10 C	250'-251.7' C refusal 251.7'
		252		80		20 RD	251.7'-260 RD
		256					
		260	X-6	300-600 300	1.1/2.0	1:40 C	260'-262' C
				60		1:55 RD	262'-270' RD
		264					
		268					
				220	2.0/2.0	2:10 C	270'-272' C
	with 20-25% fines becomes weak, greater induration.	272		0-80		2:15 RD	272'-280' RD
cgl		276					
		280					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-39
		MWD-266B	7 of 9	I-9E

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Dri		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA..	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / PSI RQD	REC.	MODE	REMARKS
cgl	PICO FM 194'-288' CONGLOMERATE (con't)	280 284 288	X-6	220-600 80		2:40 C 2:45 RD	280'-282' C 282'-290' RD
ss	288'-300' SANDSTONE; light olive gray; thin bedded; very soft to soft; friable to weak; weakly to moderately cemented with limonite; 30% silty fines 10% gravel	292 296		100 240-290	2.0/2.0	3:10 C 3:20 RD	291'-293' C 293'-300' RD
cgl	300'-315' CONGLOMERATE, medium dark gray; soft; weak; 30% fines, 45% gravel clasts to > 2" diameter, 25% sand well cemented with Calcite, strong effervescence in HCl.	300 304 308 312		350-600 220 80 600 320 340 500	1.0/1.0 3/3	3:30 C 3:50 RD 4:10 C 4:30 RD	300'-301' C Refusal at 301' 301'-310' RD 310'-310.3' C 310.3'-315' RD 315' Refusal with 94mm rods/5½" bit. 10/9/93
	Total Depth 315.0'	316 320					5 min No Advance Complete 5½" diameter drill hole 5 pm 10/9/93

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-39
		MWD-266B	8 of 9	I-9E

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	WELL CONSTRUCTION 235'-315' -1 2" 0.020 slotted PVC 0'-235' -1 2" blank pvc casing 230'-315' -#3 Lonestar Sand 224'-230' -bentonite pellets 0'-224' - cement/bentonite grout	320 324 328 332 336					Notes: Drill 5½" diameter hole to 315' 10/8 and 10/9/93. Drilling refusal at 315' at 5 P.M. 10/9/93. Drilling became fairly difficult at about 110' depth and very difficult at about 200' depth. Used about 7 gallons EZ mud drilling fluid. It was decided to set one 2" piezometer in this hole and to move over about 10', drill another hole and set the second piezometer there as reaming to 10" would be time consuming and difficult. 10/10/93 flushed hole with fresh water drill hole open to 315' Construct well. Completed well 10/10/93 1:15 PM.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DN-39
		MWD-266B	9 of 9	I-9E

BORING LOCATION: Reservoir crest, south side	APPROVED BY: ASS	GROUND EL: 579.0
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri.	TOTAL DEPTH: 230.0
DRILL RIG: Failing 1500 / BORING DIA.: 5½"	DATE DRILLED: 10/10 - 10/11/93	LOGGED BY: KEB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~CH~~ ~~RQD~~	REC.	MODE	REMARKS
	3" AC	0				AD	0'-5' AD 2:30
	EMBANKMENT FILL	5					
	0-26 CLAYEY SAND as in I-9E.					RD	5'- RD
SC		10					Drilled with 5½" tricone bit, entire depth.
		15					
		20					I-9W located 11' west of I-9E
		25					
	PICO FM						
	26'-108' SANDSTONE as in I-9E.	30					
		35					
SS		40					
		45					
		50					
		55					
		60		40			
		65					
		70					
		75					
		80					
		85					
		90					
		95					
		100					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DN-40
		MWD-266B	1 of 4	I-9 W

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
		100					
SS	26-108' SANDSTONE (con't)	105		60			4:00 PM moderate to heavy chatter
	108'-160' CONGLOMERATE: as in I-9E.	110		100			
cgl		115					
		120					
		125		30			4:30 moderate chatter
		130					
		135		60-80			135'-145' drills harder per driller
		140					
		145		80-100			5:00 PM. end of shift 10/10/93 7:00AM 10/11/93 Continued to drill from 145' moderate to heavy chatter
		150					
		155					
		160		0			
SS	160'-194' SANDSTONE: as in I-9E	165					
		170					
		175					
		180		160			
		185					
		190					
cgl	194'-200' CONGLOMERATE as in I-9E.	195					
		200					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	ON-40
		MWD-266B	2 of 4	I-9W

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. ~~Cal~~ ~~Red~~	REC.	MODE	REMARKS
	PICO FM	200				RD	
cgl	194'-288' CONGLOMERATE; cont.	205					
		210					
		215					
		220					
		225					
		230					
		235					
		240					
		245					
		250					
		255					
		260					
		265					
		270					
		275		40			
		280					
		285					
	288'-300' SANDSTONE	290					
ss		295					
		300					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-40 I-9w
		MWD-266B	3 of 4	

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER:	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ~~RQD~~	REC.	MODE	REMARKS
		300	X-2	200-400		RD	drills cased
	300'-325' CONGLOMERATE; as in I-9E.	305					
cgl		310					
		315					
		320		60			
	REPETTO (?) FM.						
slst	325'-330' SILTSTONE: olive gray	325					
		330					
	Total Depth 330.0'						completed 5½" hole 12 Noon 10/11/93
	Well Construction 0-235'-2" blank pvc casing 235'-330' - 0.020" slotted pipe 0-219.5'-cement/bentonite grout 219.5'-228'-bentonite pellets 228'-330'-#3 Lonestar Sand						Notes: Drilled 5½" rotary hole to 330'. Used 10 gallons EZ mud. No significant water loss. 145' depth at end of shift 10/10/93. Drilled to 330' at Noon 10/11/93. Flushed hole with 600 gallons fresh water. Set piezometer with 95' screen, sand to 228' depth, bentonite pellets to 219.5' depth, cement/bentonite grout to surface.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-40 I-9W
		MWD-266B	4 of 4	

BORING LOCATION: Reservoir Crest, east side	APPROVED BY: ASB	GROUND EL: 579.4
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Drl.	TOTAL DEPTH: 232'
DRILL RIG: Failing 1500 / BORING DIA.: 5½"-10"	DATE DRILLED: 10/12-10/19/93	LOGGED BY: RE B

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. ~~PB~~ ~~RQD~~	REC.	MODE	REMARKS
SC/CL	3" AC EMBANKMENT FILL 0'-8': CLAYEY SAND/SANDY CLAY: dark yellowish orange; damp; 40% to 60% sand; 10% gravel; 40% to 50% moderately plastic fines.	0 4 8	X-1	0		RD	Spud hole, set up mud pit 12:00 noon 0-10' drag bit
SC	8'-21.5' CLAYEY SAND: yellowish orange; damp; dense; 15% to 20% clayey fines; 25% gravel clasts to 2" diameter 55%-60% fine to coarse grained sand	12 16		100	2.0/2.0	PB	10'-12' PB switch to Pitcher Barrel modified to accomodate a 3" Ø split spoon sampler.
						RD	12'-20' RD
		20		500	1.0/1.0	C	20'-21' C 3" cobble in shoe
				100	1.5/2.0	C	21'-23' C
	PICO FM	24				RD	23'-30' RD
SS	21.5'-56.0' SANDSTONE: dark yellowish orange; damp; massive; soft; little fractured; 20% to 30% fines; 10% subangular gravel clasts to ½" diameter	28		100	2.0/2.0	C 2.15	30'-32' C
		32		0		RD	32'-40' RD
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266B	SHEET: 1 of 7	DH-41 I-4

BORING LOCATION:	APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.	TOTAL DEPTH:
DRILL RIG: Failing 1500 / BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR/ROD	REC.	MODE	REMARKS
		40				2:25	
	PICO FM		X-1	100	1.4/2.0	C	40'-42'C
	21.5'-56' SANDSTONE (cont)			0		2:30 RD	42'-50' RD
SS		44					moderate chatter
		48					
						2:40	
				100	2.0/2.0	C	50'-52'C
		52		0		2:45	52'-60' RD
		56					
CS	56'-85' CLAYSTONE: dark yellowish orange with dark reddish brown stains on fractures; damp; thin to thick bedded; soft; weak; 25% fine to medium grained sand.					2:55	
		60	X-2	100	2.0/2.0	C	60-62 C
				0		RD	62'-70' RD
		64					
		68					
						3:15	
				100	2.0/2.0	C	70'-72'C
		72		60		RD	72'-80' RD
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-41
		MWD-266B	2 of 7	I-4

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR psi / RQD	REC.	MODE	REMARKS
cs	becomes moderate brown	80	X-2	100	2.0/2.0	3:30 C	80'-82'C
		84		0		RD	82'-90' RD No chatter
ss	85'-98' SANDSTONE: dark yellowish orange; damp; massive; soft; weak; 15% to 20% clayey fines; 5% subangular gravel clasts; 75% to 80% fine to medium grained sand.	88		60-80	2.0/2.0	3:40 C	90'-92'C
		92		0		3:50	92'-100' RD slight chatter
		96					
cs	98'-108' CLAYSTONE; grayish orange; damp; thin to very thin bedded; soft; plastic to weak	100		80-100	2.0/2.0	4:10 C	100'-102'C
		104					102'-110' RD little chatter
ss	108'-118' SANDSTONE; pale yellowish brown; massive; soft; friable; 15% silty fines; 10% subangular gravel clasts to 1" diameter	108				4:25	
		112	X-3	100	2.0/2.0	C	110'-112'C
						RD 4:30	112'-120' RD moderate chatter
cgl	118'-120' CONGLOMERATE: dark yellowish orange; massive; soft; weak; 15% silty fines; 30% sand; 55% gravel	116		40			
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	D4-41
		MWD-266B	3 of 7	I-4

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. ~~BL~~ ~~RCC~~	REC.	MODE	REMARKS
		120	X-3	100	1.9/2.0	4:40 C	120'-122' C moderate-heavy chatter
	PICO FM					4:50	122'-130' RD
cgl	118'-160' CONGLOMERATE (cont)	124					
		128					
				100	2.0/2.0	4:55 C	130'-132' C moderate-heavy chatter End of shift 5:00 PM 10/12/93
		132				RD	7:10 AM 10/13/93 132'-135.5' RD
		136		100	0.4/2.0	C	moderate-heavy chatter
	45% gravel 45% sand 10% silty fines			100	2.0/2.0	C	[illegible]
		140		60		RD	[illegible]
		144		60			137½-139½ C complete fluid loss with circulating at 135½'. No return at 135½. 137½, some return at 137½. 139½, gradual fluid loss [illegible]
	[illegible] 150-152'	148	X-4	40	2.0/2.0	C	139½-150 RD [illegible]
cgl		152				RD 5:55	[illegible] moderate [illegible] fluid loss [illegible] 152'-156' RD.
		156					
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-41
		MWD-266B	4 of 7	I-4

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1300	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~RQD~~	REC.	MODE	REMARKS
ss	160'-170' SANDSTONE; yellowish gray; moist. soft; friable; 75% fine to medium grained sand 10% fine gravel clasts; 15% silty fines	160	1-4	100	2.0/2.0	C	160'-162' C full fluid recovery
		164		0		9:10 RD	162'-170' RD
		168				9:20	
cgl	170'-229' CONGLOMERATE dark yellowish brown; damp soft; friable; 70% sub-angular gravel clasts to 1½" diameter. 15% fine to medium grained sand; 15% silty fines	172		120 180	1.6/2.0	C	170'-172' C heavy chatter full fluid recovery
		176		0		RD	172'-180' RD
		180				9:40	
				100	2.0/2.0	C	180'-182' C
		184		0		RD 9:50	182'-190' RD
		188				10:05	
		192		100	2.0/2.0	C	190'-192' C
						10:15 RD	192'-200' RD heavy chatter
		196					
		200					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-41
		MWD-266B	5 of 7	I-4

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~/RQD~~	REC.	MODE	REMARKS
	PICO FM	200				10:30	
	170'-229' CONGLOMERATE (con't)		X-5	140	2.2/2.0	C	200'-202'C
				100		10:40 RD	202'-210' RD moderate chatter full fluid return
cgl		204					
		208					
						10:50	
				180	1.4/2.0	C	210'-212'C moderate chatter end of shift 10/13/93 11:00Am. Pulled 100' rod
		212		0		10:30A 10/18 RD	
		216					10/18/93 10:30AM began shift. Significant loss of fluid on beginning of hole. Recovered before drilling 212'-220'. Full Recovery of fluid 212'-220'
						10:35	
		220		200-520	1.2/1.5	C	220'-221.5'C refusal at core barrel at 221.5'
				80		10:45 RD	222'-230' RD
		224					
	229'-232' SANDSTONE: Light olive gray; damp; thick bedded; soft; friable; non calcareous; poorly sorted; fine to medium grained sub-angular sand.	228					
ss				80	1.6/2.0	11:00 C 11:15	230'-232'C refusal after heavy chatter 231.5'-232.0'
	Total Depth 232	232					12:00 Noon Begin reaming with 10" diameter tricone bit. Began adding Insta Pac liquid polymer drill fluid @ 2-3 caps per 100 gals; 60' depth at 1 pm; 145' depth at 6 pm.
		236					
		240					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266B	SHEET: 6 of 7	DH-41 I-4

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	Well Construction 0'–150' 2" blank pvc casing 150'–230' 0.020" slotted pvc 0'–140' Cement/bentonite grout. 140'–144' 3/8" bentonite pellets 144'–232' #3 Lonestar sand Note: two piezometers installed						10/19/93 Water level at 24' below ground surface. Reamed to 10" from: 145' 7Am. 180' at 8:45 190' at 10:20 200' at 11:30 210' at 1:40 230' at 4:30 overdrilled to 235' at 5 P.M. circulated till 6 P.M. 10/20/93 Water level at 25.1 feet below ground surface. Circulated and flushed drill hole. 3½' coarse slough settled to bottom. Set 2 2" ø piezometers. 8:30A to 1:30 P.M. R.g down, clean up, and move till 3:45 P.M.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-41
		MWD-266B	7 of 7	I-4

BORING LOCATION: Southwest corner of Site	APPROVED BY: KSB	GROUND EL: 430'
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri.	TOTAL DEPTH: 182'
DRILL RIG: Failing 1800 / BORING DIA.: 5½"-10"	DATE DRILLED: 10/20-10/23/93	LOGGED BY: KEB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	PICO FM	0				AD	5:00PM. Move to site "Rig up", Set up mud pit. Auger to 2.5'
	0'-30' SANDSTONE; dark yellowish orange; damp; thick bedded to massive; very soft; friable; little fractured; 20% subangular to subrounded gravel clasts to 1½" diameter; 15% silty fines	4		0		5:30 RD	2.5'-10' RD
		8					10/21/93 7 AM Rotary drill with drag bit to 10'
		12	X-1	0	2.0/2.0	PB	10'-12' PB sample with PB modified to core with 3" split spoon sampler
SS				40		RD	12'-20' RD Switched to 94mm wireline sampling system
		16					
		20		100	2.0/2.0	C	20'-22' C full fluid recovery
	with moderate reddish brown limonite cemented lenses 1" thick	24		40		RD	22'-30' RD moderate chatter
		28					
cgl	30'-169' CONGLOMERATE: dark yellowish brown, damp, massive; soft; friable; little fractured; 60% subrounded to subangular gravel clasts to 2" diameter; 10% silty fines; 30% fine to medium grained sand	32		100	2.0/2.0	C	30'-32' C slight chatter
		36		40		RD	32'-40' RD
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-42
		MWD-266B	1 of 5	I-40

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~BA~~ ~~ROD~~	REC.	MODE	REMARKS
cgl	30'-169' CONGLOMERATE; (con't) 45% gravel, 40% sand, 15% fines.	40	X-1	100	2.0/2.0	8:30 C	40'-42' C full fluid recovery
		44				RD	42'-50' RD
		48					
		52		120	2.0/2.0	8:45 C	50'-52' C moderate to heavy chatter
		56		100		8:55 RD	52'-60' RD heavy chatter "harder" per driller
		60	X-2	180	2.0/2.0	9:05 C	60'-62' C full fluid recovery
		64		140		9:10 RD	62'-70' RD heavy chatter
cgl	60% gravel clasts greater than 2" diameter 15% fines	68					
		72		140	1.5/2.0	9:25 C	70'-72' C
		76		100		9:35 RD	72'-80' RD heavy chatter
		80		80			

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	PH-42
		MWD-266B	2 of 5	I-40

BORING LOCATION: Southwest corner of site	APPROVED BY:	GROUND EL: 430'
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.	TOTAL DEPTH: 182'
DRILL RIG: Failing 1800 / BORING DIA.: 5½"/40"	DATE DRILLED: 10/20-10/23/93	LOGGED BY: RSB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR Psi / RPM	REC.	MODE	REMARKS
		80	X-2	320	1.3/2.0	9:45 C	80'-82'C heavy chatter
	30-169' CONGLOMERATE (con't)			200		9:55 RD	82'-90'RD full fluid recovery
cgl		84		100			
		88		40		10:10 C	90'-92'C heavy chatter
	75% gravel, 15% sand, 10% fines	92		140-350	1.8/2.0	RD	92'-100'RD
		96		160			
		100		140	2.0/2.0	10:40 C	100'-102'C full fluid recovery
						10:50 RD	102'-110'RD
		104					
cgl		108					
			X-3	200	1.7/2.0	11:00 C	110'-112'C
		112		60		11:10 RD	112'-120'RD
		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266B	SHEET: 3 of 5	DN-42 I-40

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER:	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ~~BSI~~	REC.	MODE	REMARKS
		120				11:25	
				400 / 250	1.3/20	C	120'-122'C heavy chatter
cgl	30'-169' CONGLOMERATE: (cont) yellowish gray sandstone lens.	124		40		11:35 RD	122'-130' RD Full fluid recovery
		128					
						11:45	
				80 / 240 / 180	1.4/20	C	130'-132'C
		132		40		12:40 RD	132'-140' RD
		136					
		140				12:50	
				300	20/20	C	140'-142'C Moderate chatter
		144		100		1:00 RD	142'-150' RD Full fluid recovery
		148					
						1:40	
cgl	becomes soft; weak to moderately strong			400 / 320	1.4/20	C	150'-152'C moderate chatter
		152		100 / 220		1:50 RD	152'-160' RD moderate to heavy chatter
		156					
				160			
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	OH-42
		MWD-266B	4 of 5	I-40

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. / RQD	REC.	MODE	REMARKS
cgl	30-169' CONGLOMERATE (con't)	160	X-4	120	1.7/2.0	2:05 C	160'-162' C
		164		100		2:15 RD	162'-170' RD 160'-
		168					
cgl	169'-182' CONGLOMERATE; Medium dark gray; moist, massive; soft, weak to moderately strong; 40% fine to coarse gravel, 25% silty fines, 35% fine to medium grained sand. gravel clasts are subrounded to well rounded to 2" diameter	172		600-320	2.0/2.0	2:25 C	170'-172' C
		176		200		RD	172-180' RD
		180		180-300-500	1.5/2.0	2:55 C	180'-182' C
	TOTAL DEPTH - 182'					3:10	3:40pm Began reaming hole w/ 10" tricone bit. Reamed to 40' at end of shift 10/22 Resumed reaming 160' at end of shift. 10/23 Resumed reaming to bottom at 183.5'. Flushed hole with clear water. About 1.5' of slough at bottom. Construct piezometers.
	WELL CONSTRUCTION: 100'-180' - 2-2" 0.020 slotted PVC; 0'-100' - 2-2" blank PVC casing; 95-182' - #3 Lonestar sand; 89.4'-95' - 3/8" bentonite pellets; 0-89.4' cement/bentonite grout.	184					
		188					
		192					
		196					
		200					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DN-42
		MWD-266B	5 of 5	I-40

BORING LOCATION: West Side of project site	APPROVED BY: A.S.B	GROUND EL: 513.0
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Inc.	TOTAL DEPTH: 142.0
DRILL RIG: Failing 1500 / BORING DIA.: 5 1/2"-10"	DATE DRILLED: 10/24-10/25/93	LOGGED BY: REB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	PICO FM						0-25' AD
slst	0'-9.5' SILTSTONE: Pale yellowish orange; slightly damp; massive; soft; weak; moderately fractured; weakly cemented.	0				AD	Begin drilling w/ 30 cm
		4				RD	2.5'-10' RD drill to 10' with a drag bit
		8					
cgl	9.5'-18' CONGLOMERATE: Dark yellowish orange; moist massive; soft; friable; 20% silty fines; 5% sub-angular gravel clasts to greater than 3" diameter; 75% poorly sorted sand.	12	X-1	500-80	2.0/2.0	AB	10'-12' C Sample with a tether Barrel modified to use a 3" o.d. split spoon.
						7:35 RD	12'-20' RD
		16					
SS	18.0'-61.0' SANDSTONE; Yellowish gray; damp to moist; massive; soft; friable; weakly cemented; 15% silt fines; 5 to 10% subangular gravel clasts to 2" diameter					7:45	
		20		80	2.0/2.0	C	20'-22' C Switch to Stationary line sampling system with 2 1/2" o.d. split spoon "punch core"
		24				RD	22'-30' RD
		28				4:40	
	Consists: yellowish orange			100	2.0/2.0	C	30'-32' C
		32		100		5:10 RD	32'-40' RD Slight chatter No fluid loss
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-43
		MWD-266B	1 of 4	I-33

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. PSI / RGD	REC.	MODE	REMARKS
		40				8:15	
	18'-61' SANDSTONE (cont)			60	2.0/2.0	C	40'-42' C drill mud washed sand formation from sampler
						8:20	
		44		60		RD	42'-50' RD
SS							
		48					
						8:30	
	SILTSTONE Interlayers			120	2.0/2.0	C	50'-52' C moderate chatter
		52					
				40		8:35 RD	52'-60' RD
		56					
						8:43	
		60					
	61'-70' CONGLOMERATE:			120-200	2.0/2.0	C	60'-62' C Slight chatter
GJ	Dark yellowish orange; damp to moist; very thick bedded; soft; friable to weak; moderately cemented; 65% sub rounded gravel clasts to 2" diameter; 15% silty fines; 20% poorly sorted sand	64				8:50 RD	62'-70' RD
		68					
						8:55	
	70'-97' SANDSTONE; light olive gray; damp; very thin bedded; soft; friable to weak; poorly cemented with well cemented, 1" thick, SILTSTONE interbed; 25% silty fines; 5% fine gravel clasts; light brown Fe ox cement 70'-71'			120	2.0/2.0	C	70'-72' C
		72					
SS				80		9:05 RD	72'-80' RD
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-43
		MWD-266B	2 of 4	I-33

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Dri		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR psi / RQD	REC.	MODE	REMARKS
		80				9:15	
	Sand becomes coarser with 10% subangular gravel clasts to 1½" diameter			120	2.0/2.0	C	80'-82' C full fluid return
				40		9:20 RD	82'-90' RD
SS		84					
		88					
						9:30	
	30% silty fines 70% fine grained sand			100	2.0/2.0	C	90'-92' C
		92				9:35	92'-100' RD
				40			
		96					
Slst	97'-103' SILTSTONE: Pale olive and moderate brown; damp; very thin bedded; soft to moderately hard; weak to moderately strong; weakly cemented pale olive layers and well cemented moderate brown layers; pale olive layers are silts, moderate brown layers are lean clays					9:52	
		100		100-150	2.0/2.0	C	100'-102' C
							102'-110' RD
		104		80		RD	
cgl	103'-119' CONGLOMERATE: Dark yellowish brown; moist; very thick bedded; soft; weak to moderately strong; weakly to moderately cemented; 60% well rounded to sub-rounded gravel clasts greater than 2" diameter; 15% silty fines; 25% poorly sorted fine to coarse grained sand	108				10:10	
				200-800	1.5/1.7	C	110'-111.7' C Refusal at 111.7'
		112				10:20 RD	111.7'-120' RD
				240+			
		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-43
		MWD-266B	3 of 4	I-33

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. / RQD	REC.	MODE	REMARKS
						10:35	
CS	119'-133' CLAYSTONE: greenish gray and dark yellowish orange; moist; soft; weak to moderately strong; weakly cemented; Fat clays	120	X-3	180-220	2.0/2.0	C	120'-122' C No Chatter, full fluid Return
						RD	122'-130' RD
		124					
		128					
				100	2.0/2.0	C	130'-132' C Full Fluid Return No Chatter
		132				RD	132'-140' RD
	bit chatter on 1' gravel lense 133' to 134'			40			
SS	133'-142' SANDSTONE; Pale olive with dark yellowish orange Fe ox stains on bedding fractures; very thin to thin bedded; soft; friable; weakly cemented; 15% to 30% silty fines fine and medium well sorted sand	136					
		140				11:35	
				60	2.0/2.0	C	140'-142' C
	TOTAL DEPTH 142.0'					11:35	Began reaming to 10" diameter with tricone bit at 12 Noon. Reamed to 115' by end of shift, 6 PM. No fluid loss.
		144					
	Well Construction 0'-60' - 2" blank pvc casing 60'-140' - 0.020" slotted pvc	148					
	0'-51.3' - cement/bentonite grout 51.3'-56.1' - 3/8" bentonite pellets 56.1'-142.5' - #3 Lonestar Sand.						
	note: Two piezometers installed.						10/25/93, 7:00 a.m. Begin reaming with 10" rock bit. Completed reaming to 142.5 at 9:30 am. Flushed hole with clear water.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-43
		MWD-266B	4 of 4	I-33

BORING LOCATION: West side of site	APPROVED BY: RJB	GROUND EL: 487.8
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Inc.	TOTAL DEPTH: 127.0
DRILL RIG: Failing 1500 / BORING DIA.: 5½"-10"	DATE DRILLED: 10/25-11/1/93	LOGGED BY: RE B

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~PSI~~ ~~RQD~~	REC.	MODE	REMARKS
SS	PICO FM SANDSTONE; dark yellowish brown; damp to moist; very thick bedded; soft; friable; little fractured; 25% subangular gravel clasts to 2½" diameter; 15% silty fines; 60% fine to coarse grained, poorly sorted sand.	0				3:30pm AD	setup mud pit. drilled to 2.5' with auger and set surface casing.
		4		100-180		RD	2.5'-10' RD switch to drag bit and drill to 10'
		8				4:35	
		12		180-600-100	1.2/2.0	C	10'-12' C switch to 54mm wireline "punch core" system
						4:44 RD	12'-20' RD
		16					
		20				4:50	
	becomes grayish yellow with 1" thick, well cemented, moderately hard layers			140	2.0/2.0	C	20'-22' C end of shift 5pm 10/25
		24		60		RD	Resumed 10/26 22'-30' RD
		28					
SS		32		120	[illegible]	C	
						RD 7:15	
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. EH-44
		PROJECT NO. MWD-266B	SHEET: 1 of 4	F-42

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1800	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
cgl	40'-70' CONGLOMERATE: Dark yellowish orange and pale olive sandy; medium to thick bedded; soft; friable to weakly lithified; fractured; 45% subangular gravel clasts to 2" diameter; 15% silty fines; 40% fine to medium grained sand. Weakly cemented	40				7:15	
				120	2.0/2.0	C	40'-42' C full flute [illegible]
		44				7:25 RD	42'-50' RD [illegible]
		48				7:35	
				200-350-250	2.0/2.0	C	50'-52' C
		52				7:45 RD	52'-60' RD
		56					
		60	X-2	130-150	2.0/2.0	C	[illegible]
				50		8:05 RD	[illegible] RD [illegible] diameter
		64		50			
		68				8:15	
SS	70'-88' SANDSTONE: Dark yellowish orange to pale olive; thin bedded; soft; friable; lithified; fractured; 25% subangular gravel clasts to 1½" diameter; 30% silty fines; 45% [illegible]			170-300	2.0/2.0	C	70'-72' C
		72				8:25 RD	72'-80' RD
		76		60			
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-44
		MWD-266B	2 of 4	I-42

BORING LOCATION: Westside of site	APPROVED BY:	GROUND EL: 487.8
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Inc.	TOTAL DEPTH: 127.0
DRILL RIG: Failing 1500 / BORING DIA.: 5½"-10"	DATE DRILLED: 10/35-11/1/93	LOGGED BY: KEB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SS	70-98' SANDSTONE; Lenticular	80			2.0/2.0	C	80'-82' full fluid recovery
		84				8:40 R	82'-90' RD
		88				8:53	
cgl	98'-95' CONGLOMERATE: Dark yellowish orange; stone; thick bedded; soft; moderately strong; little fractures; well cemented; 55% subrounded to subangular gravel clasts to 2½" diameter; 10% silty fines; 35% poorly sorted fine to coarse grained sand	92		2.0/2.0	2.0/2.0	C	90'-92' C full fluid recovery
						RD	92'-100' RD
SS	95'-124' SANDSTONE; Dark yellowish orange; thick bedded; soft; friable; massive; poorly cemented; 10% gravel clasts to 1" diameter; 15% silty fines; 75% fine to medium grained sand; with occasional well cemented claystone beds to 2" thick	96					
		100		100/150	2.0/2.0	9:10 C	100'-102' C
		104		60		RC	102'-110' RD
		108				9:25	
			X-3	100	2.0/2.0	C	110'-112' C
SS		112		180		RD	112'-120' RD
		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266B	SHEET: 3 of 4	DH-44 I-42

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. / RQD	REC.	MODE	REMARKS
		120				9:40	
ss	95'-124' SANDSTONE (cont)			160	2.0/2.0	C	120'-122' C
						9:45 RD	122'-125' RD
cgl	124'-127' CONGLOMERATE: Dark yellowish orange; thick bedded; soft; friable; massive; weakly cemented; 50% subangular gravel clasts to 2" diameter; 10% silty fines; 40% poorly sorted sand	124		250-260	1.5/2.0	C	125'-127' C
		128					10:10 AM tripped out 94mm sampling system. Began reaming to 10" diameter hole with tricone bit. Reamed to 65' at 1:00 PM 127' at 4:30 10/26/93
	Total Depth 127'	132					
	Total reamed depth 130'						
	WELL CONSTRUCTION 0'-48.3' blank pvc casing 48.3'-128.3' .020" slotted pvc 0'-39.4' cement/bentonite grout 39.4'-42.8' 3/8" bentonite pellets 42.5'-130' #3 lonestar sand						11/1/93 Reamed by flushing hole with clear water. W.L before flushing at 42' below grd surf. About 5' of cuttings settled in hole. Drilled out cuttings and overdrill hole to 130' to accommodate cuttings and reach design tip elev of EL 360'. Flushed hole with clear water. About 1 foot slough at bottom of hole. Install 2-2" ϕ piezometers.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-44
		MWD-266B	4 of 4	I-42

BORING LOCATION: South area	APPROVED BY: ASB	GROUND EL: 505.9
DEPTH/ELEV.WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri.	TOTAL DEPTH: 164'
DRILL RIG: Failing 1500 / BORING DIA.: 6 7/8"	DATE DRILLED: 11/2-11/3/93	LOGGED BY: REB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~DSI RQD~~	REC.	MODE	REMARKS
	SOIL	0				12:30 PM. RD	0'-10' RD with 7 7/8" drag bit
ML	0'-2' SILT: Pale yellowish brown; slightly damp; very stiff						
	Pico Fm	4					
cgl	2'-20' CONGLOMERATE; Dark yellowish orange; moist; thick to very thick bedded; soft; friable to weak; weakly to moderately cemented; 15% silty fines; 40% poorly sorted fine to coarse grained sand; 45% subangular gravel clasts to 2" diameter.	8				12:50	
			X-1	200	2.0/2.0	PB	10'-12' OB: sample with Pitcher Barrel modified to use a 3" O.D. split-spoon sampler
		12				RD	12'-20' RD
		16					
	20'-50' SANDSTONE: Dark yellowish orange; very thin to thin bedded; very soft to soft; friable; weakly cemented; 15% to 25% silty fines; 75% to 85% poorly sorted fine to medium grained sand	20				1:25	
				100	1.7/2.0	C	20'-22' C switch to 94 mm wire line "punch core" sampler
		24		60		1:30 RD	22'-30' RD Moderate chatter
SS		28					
				100	1.8/2.0	1:45 C	30'-32' C
		32				RD 1:55	32'-40' RD
		36					moderate chatter
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-45
		MWD-266B	1 of 5	I-26

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR psi/psi	REC.	MODE	REMARKS
SS	with 10% gravel clasts	40		100	2.0/2.0	2:00 C	40'-42' C
		44				2:05 RD	42'-50' RD Note: 2' to 3' of cuttings are filling the hole after each sample and this has to be re-drilled before we can add a rod.
		48					
gl	50'-60' CONGLOMERATE; Dark yellowish orange; moist; thick to very thick bedded; soft, friable; weakly cemented; 15% silty fines; 30% poorly sorted fine to coarse grained sand; 55% subangular gravel clasts to greater than 2" diameter	52		120	1.7/2.0	2:25 C	bit chattering on gravel interlayers 50'-52' C slight to moderate chatter full fluid return.
		56				2:35 RD	52-60 RD heavy chatter 57' to 58'
SS	60'-107' SANDSTONE: Dark yellowish brown; moist; thin bedded; soft, friable; weakly cemented; 30% silty fines; 60% poorly sorted fine to medium grained sand; 10% subrounded gravel clasts to greater than 2" diameter	60	X-2	100	2.0/2.0	2:45 C	60'-62' C
		64		60		2:55 RD	62'-70' RD
		68					
		72		60	0.0/2.0	3:05 C	70'-72' C No recovery. Sampler did not lock into drill collar due to sand in rods
				180-200	1.3/2.0	C	72'-74' C 3:20- circulate and clean mud pit. Heavier fluid and larger hole increasing more sand in hole.
		76		20-40		4:05	4:05 PM 74'-80' RD
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-45
		MWD-266B	2 of 5	I-26

BORING LOCATION:	APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.	TOTAL DEPTH:
DRILL RIG: Failing 1500 / BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. ~~RQD~~	REC.	MODE	REMARKS
		80				4:15	
	PICO FM			100	1.7/2.0	C	80'-82'C slight chatter full fluid return
	60'-107' SANDSTONE; (con't)			0		4:20 RD	82'-90' RD moderate to heavy chatter
SS		84					
		88					
						4:40	
	10% fine gravel clasts to 3/4" diameter			100	2.9/2.0	C	90'-92'C
		92				4:45	92'-100' RD
		96					
						5:00	
	30% subangular gravel Clasts to 1½" diameter	100		100	1.1/2.0	C	100'-102'C
						5:10 RD	102'-110' RD
		104					
slst	107'-127' SILTSTONE; Light bluish gray; damp; thick bedded; soft; weak; slickensided fracture surface at 110.5' dips about 40°	108	✓				107' mud pump pressure rose
			X-3	100	2.0/2.0	C	110'-112'C 5:45 pm stop drilling
		112				6:30 pm RD	
		116					11/3/93 water level is 22.7' before beginning 112'-120' RD
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-45
		MWD-266B	3 of 5	I-26

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~31 #36~~	REC.	MODE	REMARKS
slst	107'-127' SILTSTONE (con't)	120				6:45	
				80	2.9/2.0	C	120-122' C
		124		0		6:55 RD	122'-130' RD
cgl	127'-160' CONGLOMERATE Dark yellowish orange; damp; thin bedded; soft; friable; weakly cemented; 20% silty fines 35% medium grained sand; 45% subangular gravel clasts to greater than 2" diameter	128				7:05	
				120	1.2/2.0	C	130'-132' C full fluid return
		132				7:15 RD	132'-140' RD Moderate chatter
		136					
						7:30	
		140		100-180	2.9/2.0	C	140'-142' C moderate chatter
						7:35	142'-150' RD
		144		50-100			Moderate to slight chatter
		148					heavy chatter
						7:55	
				100-250	1.7/2.0	C	150'-152' C moderate chatter full fluid return
		152				8:05	152'-160' RD
				40			
		156					
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-45
		MWD-266B	4 of 5	I-26

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. ~~RQD~~	REC.	MODE	REMARKS
						5:25	
Slsty SS	160'-164' Interlayered SILTSTONE and SANDSTONE: Olive gray; moist, very thin bedded to thin bedded; silts are soft and weak; sands are very soft to soft and friable; silts are moderately cemented sands are weakly cemented; sands are well sorted, fine grained.	160	X-4	100	20/20	C	160-162'C
						RD	162'-164' RD
		164					Completed hole at 9:00AM. Flushed hole with 500 gallons freshwater. Set 1-1"ϕ and 1-2" ϕ piezometer Cleaned up and moved 2pm 11/3/93

Total Depth 164'

Well Construction

0'-80' -2" blank PVC casing
0-90.5'-1" blank PVC casing
80.1' -160.1' -2" .020 slotted PVC
80.5'-160' -1" .020 slotted PVC
0-72.3' cement/bentonite grout
72.3'-75.0' 3/8" bentonite pellets
75.0'-164.0' #3 lonestar sand

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DN-45
		MWD-266B	5 of 5	I-26

BORING LOCATION: Southeast corner of project site	APPROVED BY: A.S.B.	GROUND EL: 517.5'
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Inc.	TOTAL DEPTH: 164'
DRILL RIG: Failing 1500 / BORING DIA.: 6 7/8"	DATE DRILLED: 11/3 – 11/4/93	LOGGED BY: R.E.B.

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	PICO FM	0				3:00 RD	0'-10' RD 3pm set up mud pit and drill to 10' with 7 7/8" drag bit.
CS	0'-16' CLAYSTONE; yellowish gray; damp; moderately hard; moderately strong; thin bedded; little fractured; highly plastic; moderately well cemented	4					
		8					
			X-1	100	2.0/2.0	P.B.	10'-12' PB sample with a Pitcher Barrel modified to use a 3" ø split spoon
		12				3:50 RD	12'-20' RD 15' switched to 94 mm wireline "punch core" system
SS	16'-28' SANDSTONE; Dark yellowish orange; damp; thin bedded; soft; friable; 35% silty fines; 60% very fine to fine grained sand; 5% sub angular gravel clasts to greater than 2" diameter weakly cemented	16					
		20				4:15	
				100	2.0/2.0	C	20'-22' C
		24				4:40 RD	22'-30' RD
CGL	28'-36' CONGLOMERATE: Dark yellowish orange; damp; thin bedded; soft; friable; 15% silty fines; 35% poorly sorted fine to coarse grained sand; 50% subangular gravel clasts to 1 3/4" diameter; weakly cemented.	28					
						4:30	
				120	9.8/2.0	C	30'-32' C
		32				4:35 RD	32'-40' RD
SS	36'-44' SANDSTONE; Dark yellowish orange; damp; thin bedded; soft; friable; weakly cemented; 25% silty fines; 75% fine to medium grained sand	36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-46
		MWD-266B	1 of 5	I-23

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR (psi) / RQD	REC.	MODE	REMARKS
		40				4:50	
SS				80	2.9/2.0	C	40'-42' C No fluid loss
						4:55 RD	42'-50' RD moderate chatter
	44'-89' CONGLOMERATE: Moderate brown; damp; thin bedded; soft; friable; weakly cemented; 15% silty fines; 25% fine to medium grained sand; 60% gravel clasts to greater than 2" diameter	44					
		48				5:05	
cgl				160	1.5/2.0	C	50'-52' C
		52				5:10	52'-60' RD
		56					
		60					5:30 stopped drilling
			X-2	100	1.3/2.0	C	60'-62' C 64 mil/4 W.L. = 7.2'
						RD	62'-70' RD
		64					
		68					
				70	2.0/2.0	C	70'-72' C
cgl		72				6:20	72'-80' RD
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-46
		MWD-266B	2 of 5	I-23

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ~~RQD~~	REC.	MODE	REMARKS
		80				6:45	80'-82' C
				120	1.5/2.0	C	
GI		84		0		6:50 RD	82'-90' RD moderate chatter No fluid loss
		88					
	89'-128' SANDSTONE; yellowish gray; damp; thin bedded; soft, friable; 40% silty fines 50% very fine to medium grained sand					7:10	
				100	1.6/2.0	C	90'-92' C
		92				7:20 RD	92'-100' RD
SS		96					
						7:35	
		100		80	1.5/2.0	C	100'-102' C
						7:45 RD	102'-110' RD
		104					8:10 RD
		108					
						8:25	
	20% silt+ fines 15% gravel clasts to 1¼"		X-3	100	1.9/2.0	C	110'-112' C
		112				8:30	112'-120' RD
SS		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-46
		MWD-266B	3 of 5	I-23

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Drill		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~psi~~ ~~RQD~~	REC.	MODE	REMARKS
SS		120		80	2.0/2.0	8:50 C	120-122' C slight to moderate chatter. full fluid return
		124				9:00 RD	122'-130' RD
cgl	128'-148' CONGLOMERATE: Dusky yellow; damp; thick bedded; soft; friable; weakly cemented; 15% silty fines; 35% poorly sorted fine to coarse grained sand; 50% subangular gravel clasts to greater than 2" diameter	128		80	1.2/2.0	9:10 C	130'-132' C moderate chatter
		132				9:20	132'-140' RD
		136					
		140		120	2.0/2.0	9:35 C	140'-142' C
		144				9:45 RD	142'-150' RD
SS	148'-164' SANDSTONE: Light greenish gray; damp; thin bedded; very soft; friable 25% silty fines; 10% subangular gravel clasts to 1½" diameter; weakly cemented; lithic.	148		80	2.0/2.0	9:55 C	150'-152' C
		152				10:05 RD	152'-160' RD
		156					
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-46
		MWD-266B	4 of 5	I-23

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR.	REC.	MODE	REMARKS
		160				10:15	
SS	148'-164' sandstone cont		X-4	100	0.8/2.0	C	160'-162' C
						RD	162'-164' RD
	Total Depth 164'	164				10:30	Circulate and thin out with about 800 gallons fresh water. Set 1 1"ø and 1 2"ø piezometer.
		168					

Well Construction

0'-81.3'-2" blank pvc casing
0'-81.8'-1" blank pvc casing
81.3'-161.3' 2" .020 slotted pvc
81.8'-161.3'-1" .020 slotted pvc
0'-69.9'-cement/bentonite grout
69.9'-74.8'-3/8" bentonite pellets
74.8'-164.0'-#3 lonestar sand

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-46
		MWD-266B	5 of 5	I-23

BORING LOCATION: Northeast area by Orange Ave.	APPROVED BY: ASB	GROUND EL: 503
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Drl.	TOTAL DEPTH: 126.5
DRILL RIG: Failing 1500 / BORING DIA.: 6 7/8"	DATE DRILLED: 11/4 - 11/5/93	LOGGED BY: RSB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~PEN REC~~	REC.	MODE	REMARKS
	PICO FM	0				RD	0-10' RD 330 PM Set up mud tub and RD with drag bit
CS	0'-18' CLAYSTONE: Dark to moderate yellowish brown, moist; very soft; plastic; 45% clay; 35% subangular gravel clasts to 2" diameter	4					
		8					
			X-1	120	1.8/20	PB	10'-12' PB Sample with Liner Barrel modified to push a 3" od. split spoon
		12					12'-20' RD end of shift 11/4/93 13'
		16					
SS	18'-24' SANDSTONE: Dark yellowish orange; damp; soft, friable; 15% to 25% silt/fines; [illegible] to 2" diameter; [illegible] 70% poorly sorted fine to coarse sand [illegible] very fine [illegible] layers	20				6:25	11/5/93 6 AM; began drilling w/ 94 mm wireline sampling system.
				140	2.3/2.0	C	
		24				6:30 RD	20'-22' C 22'-30' RD
		28					
cgl	28'-38' CONGLOMERATE: Dark [illegible] gray; damp; soft, friable; fine sand; weakly cemented [illegible] gravel [illegible] 2" diameter					6:45	
				120	1.9/2.0	C	30'-32' C
		32				6:50 RD	32'-40' RD
		36					
SS		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266B	SHEET: 1 of 4	DH-47 I-21

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~RQD~~	REC.	MODE	REMARKS
	38'-83' [illegible] light brown damp [illegible] Gravelly [illegible] well [illegible] 35% silt [illegible] poorly sorted fine to medium grained sand.	40			15/15	C	[illegible]
		44		0		TC RC	40.5'-42'C [illegible] Coffee [illegible] 42'-50' RD Full fluid return moderate chatter.
SS		48					
				100 100	20/20	C	50'-52'C
		52				TC RC	52'-60'RC
		56					[illegible] chatter 55-57
		60					
	with [illegible] 20% subangular gravel clasts to 1½" diameter		X-2	100 100	19/20	C	60'-62'C
		64				RD	62'-70' RD
		68					
SS				[illegible]		C	70'-72'C
		72		100		835 RD	72'-80' RD
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266B	SHEET: 2 of 4	DN-47 I-21

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SS	REPETTO FM 83'-112' CLAYSTONE; Light olive gray with dark yellowish orange mottles or stains; slightly damp; thick(?) bedded; weakly cemented; very hard; moderately plastic	80				8:50	
				120	1.7/2.0	C	80'-82' C
		84				8:55 RD	82'-90' RD mud pump pressure rose to 50 psi at 88'
CS		88				9:05	
				100	2.0/2.0	C	90'-92' C
		92				RD	92'-100' RD
		96					
						9:30	
		100		120	2.0/2.0	C	100'-102' C
						10:10 RD	
		104					102'-110' RD
		108					
						10:25	
			X-3	120	2.0/2.0	C	110'-112' C
		112				10:35 RD	112'-120' RD
SLST	112'-126.5' SILTSTONE; light olive gray to dark gray; soft in hardness; weakly cemented.	116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-47
		MWD-266B	3 of 4	I-21

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
slst	112'-126.5' SILTSTONE con't.	120		80	2.9/20	10:50 C	120'-122' C
						10:55	122'-126.5' RD
		124					
	becomes medium dark gray						10:10
	TOTAL DEPTH 126.5'	128					Reached TD in medium dark gray SILTSTONE Circulated and thinned down fluid with 800 gallons of fresh water. 12:15 pulled drill rod Set 1"Ø and 2"Ø piezometers.
		130					
	Well Construction 0'-45.3'-2" blank pvc casing 0-44.8'-1" blank pvc casing 45.3-125.3-2" .020 slotted pvc 44.8'-125.3'-1" .020 slotted pvc 0'-36.8'-cement/bentonite grout 36.8'-39.6'-3/8" bentonite pellets 39.6'-126.5'-#3 Lonestar Sand	134					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-47
		MWD-266B	4 of 4	I-21

BORING LOCATION: Reservoir Crest, southwest side	APPROVED BY: ASB	GROUND EL: 579.0
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Inc.	TOTAL DEPTH: 334.5
DRILL RIG: Failing 1500 / BORING DIA.: 6 7/8"	DATE DRILLED: 11/5-11/7/93	LOGGED BY: RSB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SM	FILL 0'-10' SILTY SAND; gravelly; Dark yellowish orange; damp; dense; 35% silty fines; 40% poorly sorted sand; 25% gravel clasts	0 4 8				RD	11/5/93 set up mud tub and drilled through asphalt, spudded hole with 7 7/8" drag bit. Drill to 13' with drag bit 0'-20' RD
Slst	PICO FM 10'-21' SILTSTONE; Marbled light brown and yellowish gray; damp; thin bedded; soft; friable; closely to moderately fractured;	12 16 20					15' switch to 4" mm wireline sampling system with 2 1/2" split spoon sampler
SS	21'-58' SANDSTONE; Dark yellowish orange; damp; very soft; friable; thin bedded; 15% silty fines; 75% poorly sorted sand; 10% subangular gravel clasts to 1 1/2" diameter	24 28 32 36 40	X-1	[illegible]	2.4/2.0	[illegible] 7:35	[illegible] 21'-40' RD

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. DH-48
		PROJECT NO. MWD-266B	SHEET: 1 of 9	I-13

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED: 11/5-11/7/93	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
		40		2-100	29/20	C	40'-42' C
	PICO FM						42'-60' RD
	21'-58' SANDSTONE (con't)	44				8:00 RD	
SS							
		48					
		52					
		56					
	58'-115' CONGLOMERATE: Pale and dark yellowish orange; poorly sorted; bedded; 15% silty fines; 15% poorly sorted sand; 70% subangular gravel clasts to greater than 2" diameter					5:23	
cgl		60		100	12/20	C	60'-62' C
						5:30 RD	62'-80' RD
		64					
		68					
		72					
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH 48
		MWD-266B	2 of 9	I-13

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Dri		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
		80		100	1.9/2.0	C	80'-82' C
	PICO FM 58'-115' CONGLOMERATE (cont)					RD	82'-100' RD
		84					
cgl		88					
						9:30	
		92					
		96					
						10:00	
		100		120	1.9/2.0	C	100'-102' C heavy chatter, no fluid loss
						10:05	102'-120' RD
		104				RD	
cgl		108					
	115'-160' SANDSTONE: dusky yellow, damp; thin to medium bedded; soft in hardness friable; 35% silty fines; 15% subrounded gravel clasts; 50% very fine to fine sand.	112					
SC		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-48
		MWD-266B	3 of 9	I-13

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR. ~~RQD~~	REC.	MODE	REMARKS
		120				10:35	
	PICO FM		X-2	100	2.0/2.0	C	120'-122'C
	115-160' SANDSTONE: (con't)					10:45	122'-140'RD
SS		124					
		128					
		132					
		136					
	40% gravel; 15% silt; 45% fine grained sand	140				11:10	
				100	2.0/2.0	C	140'-142'C
						11:15 RD	142'-160'RD
		144					
		148					
SS							
		152					
		156					
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH43 I-13
		MWD-266B	4 of 9	

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Dri		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
cgl	160'-215' CONGLOMERATE: Dark yellowish orange; damp; thick bedded; very soft; friable; weakly cemented; 15% silty fines; 30% poorly sorted fine to coarse grained sand; 55% gravel clasts to 2½" diameter.	160		100	2.0/2.0	11:55 C	160'-162' C
		164				12:00	162'-180' RD moderate chatter Full fluid return
		168					
		172					
		176					
		180		120-300	97/2.0	C	180'-182' C
		184				1:55 RD	182'-200' RD
		188					
cgl		192					
		196					
		200					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH 48 I-13
		MWD-266B	5 of 9	

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED.	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~PSI~~ ~~RQD~~	REC.	MODE	REMARKS
cgl	PICO FM 160-215 CONGLOMERATE (con't)	200 204 208		140	1.4/2.0	1:25 C RD	200'-202' C slight to moderate chatter, full fluid return
		212	X-3	500-300	0.4/2.0	2:20 C	210'-212' C
						2:30 RD	212'-220' RD
slst	REPETTO FM 215'-298' SILTSTONE with very fine grained SANDSTONE interlayers. Greenish gray with light brown FeOx stains; damp; thin bedded; soft; weak; moderately to little fractured; weakly cemented.	216 220 224 228 232 236 240		— 100	2.0/2.0	C 3:00 RD	220'-222' C 222'-230' RD
				100	2.0/2.0	3:20 C	230'-232' C
						3:30 RD	232'-240' RD

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-48
		MWD-266B	6 of 9	I-13

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
		240				3:45	240'-242'C
	REPETTO FM			120-200	2.0/2.0	C	
	215-298' SILTSTONE (cont)					3:50 RD	242'-250'RD
slst		244					
		248					
	becomes grayish olive green			100	2.0/2.0	C	250'-252'C
		252				4:15 RD	252'-260'RD
		256					
		260				4:30	
	becomes medium dark gray		X-4	80	2.0/2.0	C	260'-262'C
						4:40	262'-270'RD
		264					
		268					
slst	10" thick medium brownish olive gray fine sand layer			160	2.0/2.0	C	270'-272'C end of shift 5pm 1/6
		272				RD	Begin [illegible] 7/03 272'-280'RD
		276					
		280					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-48
		MWD-266B	7 of 9	I-13

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
		280				6:25	
	REPETTO FM			200-140		C	280'-282' C
						RD	282'-[illegible] RD
slst	215-298' SILTSTONE (cont)	284					
		288					
						C	
		292		20			292'-[illegible]
		296					
	298'-308' CLAYSTONE; Medium dark olive gray; moist; thin bedded; soft; plastic; highly plastic clay	300		100	7/10	7:30 C	300'-[illegible]
CS						RD	302'-[illegible]
		304					
		308					
	308'-33[illegible] SILTSTONE; Greenish gray; damp; thin bedded; soft; [illegible]					310	
slst				20	20/20	C	310'-312' C
		312					
		316					
		320					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-46 I-13
		MWD-266B	8 of 9	

BORING LOCATION:		APPROVED BY:	GROUND EL.
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
						8:40	
slt	REPETTO FM 308'-331' SILTSTONE cont	320		100	2.0/2.0	C	320'-322'C
						8:50 RD	322'-330'RD
		324					
		328				9:05	
				140	2.0/2.0	C	330'-332'C
SS	331'-334.5' SANDSTONE: Medium gray, damp, thin to medium bedded, very soft, friable; 10% silty fines; 10% angular gravel clasts to 3/4" diameter; 80% poorly sorted fine to medium grained sand	332				RD	332'-334.5'RD
		336					
	Total Depth 334.5'					7:20	Completed [illegible] 334.5' [illegible]
		340					
	Well Construction 0'-250.0' - 2" blank pvc casing 0'-250.5' - 1" blank pvc casing 250.0'-330.0' - 2" .020 slotted pvc 250.5'-330.0' - 1" .020 slotted pvc 0'-234.7' - cement/bentonite grout 234.7'-244.4' - 3/8" bentonite pellets 244.4'-331.5' - #3 lonestar sand						11:30 pulled rods and set 1 1" and 1 2" piezometer. Note: No noticable fluid loss during drilling

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DN-48
		MWD-266B	9 of 9	I-13

BORING LOCATION: Southwest corner of site	APPROVED BY: ASB	GROUND EL: 419.1
DEPTH/ELEV.WATER:	DRILL CONTRACTOR: All Terrain Explo. Drill.	TOTAL DEPTH: 102'.
DRILL RIG: CME-550 / BORING DIA.: 5⅞; 6¾"	DATE DRILLED: 11/6-7/93	LOGGED BY: LAF

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
ML	COLLUVIUM 0.0-5 GRAVELLY SANDY SILT; moderate yellow brown; dry to damp; gravel varies from ¼" to >1" dia. SPARSE occurrence. SAND is fine to coarse - predominately fine.	0 4					Began advancing boring @ 9:05 a.m. w/ 5⅞" O.D. Tri-cone bit. Approx. 1 gal of E-2 Mud water soluble polymer emulsion
Slty SS	PICO FORMATION 5-71 SILTSTONE/SANDSTONE; interlayered; yellow gray w/ limonite stainings; damp to slightly moist; very fine-grained sand; very micaceous little to no plastic fines.	8				RD	
		12		11 17 28 23	2.0 2.0	DR	10-12' DRIVE 2.5" ID CA. MOD SPLIT-SPOON SAMPLER w/ 140 lbs. using pneumatic hammer w/ 30" drop @ 9:30 No fluid loss
		16				RD	
	@ 20' SANDSTONE, weakly cemented, banded by lt. gray and rusty orange bands. Trace plastic fines.	20		~200	2.0 2.0	C	20-22' SWITCHED to 94-mm wire line sampler @ 10:07 a.m.
		24	X-1			RD	
	@ 31' layers of silt and sand interlayered very micaceous. Trace of plastic fines.	28		~200	2.0 2.0	C	30-32' @ 10:30 a.m.
		36				RD	
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-49
		MWD-266B	1 of 3	I-41

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
slst	5-71' SILTSTONE (can't)	40	X-1	200-300	0/2.0	C	40-42 @ 10:48 a.m. Lost Sample
				200-300	0/2.0	C	42-44 @ 10:53 a.m. Lost sample No fluid loss
		44		200-300	0/2.0	C	44-46' @ 11:00 w/ catcher installed. Still no sample recovered.
	@ 46' : SANDSTONE; more strongly cemented w/ minor thin seams of SILT. STILL very micaceous			200-300	1.0/2.0	C	1-2" drop in fluid level - good circulation @ 11:10 pulled rods.
		48					46'-48' @ 11:30 A.m. full fluid recovery
		52				RD	
		56	X-1	—			
	@ 60' SILTSTONE/SAND Stone. Yellowish gray stained by rusty orange to orange. Sand is v. fine grained; moist	60		200	2.0/2.0	C	60'-62' 12:00 p.m. No fluid loss
slst		64					
		68				RD	
cgl	71' - 80': Conglomerate (sandstone) Yellow gray; moist; fine grained; poorly graded; soft and very friable; Little to no fines. Rare gravel	72		300	1.5/2.0	C	70'-72' @ 12:26 pm at 71' slight to moderate chatter no fluid loss
		76				RD	@ 75' more chatter ON & OFF.
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-49
		MWD-266B	2 of 3	I-41

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
cgl	80'-100.5': Conglomerate (Gravelly SAND): Yellow gray; very moist; Sand is fine to coarse grained w/ little to no fines. Gravel 1/4 to 1/2" dia; rare 1" dia. Gravel approx. 15-20%.	80	X-2	~300	2.0 / 2.0	C	80-82 @ 12:50 p.m. No fluid loss
		84				RD	
		88					
	@ 90-91': Color change to Dark yellowish orange. Increase in gravel size fraction. Gravel size avg. 1" dia., subangular to subrounded. Increase in fines to approx. 10-15%.	92	X-2	~300	1.0 / 2.0	C	90-92 @ 1:10 p.m. No fluid loss. Slight chatter @ 91 ft
		96				RD	
slst	100.5'-102' SILTSTONE: Grayish yellow green w/ limonite banding; damp to slightly moist; weakly cemented. Micaceous layers parallel to banding. Contains thin fine sand layers. Little to no plastic fines.	100		~100-300	2.0 / 2.0	C	100-102 @ 1:35 p.m. Moderate chatter @ 100.5 ft.
		104					Boring terminated @ 1:35. AT 3:10 Began reaming 5 7/8" hole to 6 3/4". Ended reaming hole @ 90 ft. Water level @ 1 ft from TOC. 11/7/93 7:00 a.m. continue reaming with 6 3/4" bit. Completed reaming barrel to 102'. Flushed boring with clear water. Probed depth after flushing open to about 100'. Installed piezometers.
	TOTAL DEPTH: 102'						
	WELL CONSTRUCTION: 0-49.5' - 2" I.D. AND 1" I.D. Sch. 40 Blank PVC Casing. 49.5-99.5' - 2" I.D. and 1" I.D. Sch. 40 Screen (0.020) PVC casing w/ flush threaded end cap. Filter Pack & SEAL: 44-99.5' - #3 Lonestar Sand; 39'-44' - Volclay 3/8" Bentonite Pellets; 0-39' - Neat cement grout	108					
		112					
		116					
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-49
		MWD-266B	3 of 3	I-41

BORING LOCATION: toe of north main dam near P-5	APPROVED BY: ASB	GROUND EL: 432.7
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Exploration Drilling	TOTAL DEPTH: 118'
DRILL RIG: CME 550 / BORING DIA.: 7 3/4"	DATE DRILLED: 11/7/93 - 11/8/93	LOGGED BY: LAF

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SC	FILL 0.0 - 7.0 CLAYEY SANDY GRAVEL. Dark yellow orange brown. Gravel 1/4 to 1" dia. subangular. Sand is fine to coarse grained. approx. 30%. Plastic fines: approx. 15%. Poorly graded.	0 4				RD	Advanced boring @ 3:45 p.m. w/ 5 7/8 O.D. Tri-Cone bit Moderate amount of chatter Approx 1 qt. of EZ Mud used.
slst	REPETTO FORMATION 7.0' - 116.0' SILTSTONE (SANDY SILT) Dusky yellow w/ minor orange mottling; Slightly damp; very stiff to hard. Approx. 10%. plastic fines. Contains very fine sand. Occasional cemented sand. approx. 25%.	8 12 16	X-1	25 35 50/6	1.5 / 2.0	DR RD	10'-12' Drive 2.5" ID ca. MOD. split spoon sampler w/ no liner, with a pneumatic hammer w/ 30" drop. 6" fluid loss. Switched to drilling w/ 7 7/8" tri-cone with diamond wire core sampler.
	@ 18' SILTSTONE SAME AS ABOVE. SILT / SAND / SANDY SILT; slightly damp. Little fractures - appears more cemented than above	20 24	X-1	~100	2.0 / 2.0	C RD	18-20' @ 4:45 No fluid loss End of shift @ 5:00 pm Begin drilling 11/8/93 @ 6:30 am. No fluid loss overnight.
	@ 28' SILTSTONE; SAME AS ABOVE - homogeneous & massive. Damp to slightly moist; thinly banded with manganese staining.	28 32 36	X-1	~200	2.0 / 2.0	C RD	28-30 @ 7:15 a.m. pull blow count
	@ 38' SILTSTONE - SAME AS ABOVE - homogeneous & massive. Damp to slightly moist. Light olive brown.	40	X-1	[illegible]	2.0 / 2.0	C	38-40 @ 7:35 a.m. [illegible]

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-50
		MWD-266B	1 of 4	I-5

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	[illegible] 7-11.9' SILTSTONE [illegible] thin plastic lines. [illegible]	43					Recirculated [illegible] water in hole [illegible] hole (approx. [illegible] gallons) by adding fresh water
		44				RD	
slst							
	@ 48' : SANDY SILT/SILTY SAND; Light Olive Gray w/ [illegible] to [illegible] brown, [illegible] consistency, moist. Increase in mica content. Sand is v. fine grained. Trace plastic fines.	48	X-1	~300	2.0/2.0	C	48-50' @ 8:05 a.m. [illegible]
		53				RD	
		54					
	@ 58' : SILTY SAND; Light Olive Gray; moist; appears loosely consolidated [illegible] Mica, trace plastic lines. Total fines approx. 30-40%.	58	X-2	180-200	2.0/2.0	C	58-60 @ 8:20 a.m. Recirculated [illegible] water in hole to flush out silt in [illegible] hole (approx. 30-40 gallons fresh water) [illegible] fresh water added.
		64				RD	
	@ 68' : SILTY SANDSTONE Olive Brown w/ dark yellow [illegible] consistency, moist, loosely cemented, trace mica, fine grained. Fines approx. 25%.	68	X-2	~150	2.0/2.0	C	68-70' @ 9:50 a.m. full return
		73				RD	
slst		74					
	@ 79' : SILTSTONE : Light Olive [illegible] to yellow [illegible] brown, [illegible] consistency, moist, [illegible]	79	X-2	~150	2.0/2.0	C	78-80' @ 9:30 [illegible] full return

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	[illegible]
		MWD-266B	2 of 4	I-5

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	REPETITIO[illegible]	80					
	[illegible] Thin layers of fine grained sand. Trace to [illegible]	81				RD	
sl/st	@ 85' SILTSTONE; Dark blue green; moist; massive, weakly cemented. U fine grained sand, approx. 15-20%. Trace plastic fines.	88	X-2	-250	2.0/2.0	C	88-90' @ 9:37 a.m. Recirculated mud & 30 sacks of bentonite to clean out boring - begin sampling.
	@ ~ 90': Thin sand, layer approx. 2" thick, lt. olive brown, poorly graded.	92				RD	Flushed out hole added new clean water & 2 qt of EZ mud.
	@ 98': SILTSTONE - Same as above; damp to moist; weakly cemented, massive.	100	X-2	-350	2.0/2.0	C	98-100' @ 11:10 a.m. no fluid loss
		104				RD	
	@ 115' [illegible] as in 99'	108			0.0/2.0	C	108-110' @: Lost sample - slipped out of teeth.
		112			0.1/2.0	C	110-112 @ 11:45 a.m. recovered small amt. of siltstone chips; [illegible] cuttings [illegible]
		116				SD	[illegible]
	TOTAL DEPTH - 115'	120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-50
		MWD-266B	3 of 4	I-5

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	WELL CONSTRUCTION 50'-110' Screen 2" ID and 1" ID Sch 40 (1.020") PVC w/ flush threaded end cap. 0-50' Blank 2" and 1" ID. Sch 40 PVC. SAND PACK and Seal 45'-118' Limestone #2 sand 39'-45' Volclay 3/4" Bentonite Pellets. 0-39' Neat Cement Grout w/ Bentonite						Notes At 1:45 p.m. used approx. 500 gallons of fresh water to flush 7 3/4" boring to 118'. Recirculated fresh water for approx. 30 minutes after flushing. @ 1:50 Begin to pull rods - 2:15 all rods out of the hole - measured depth to 116.5 bgs. 3:56 completed Trimming sand pack to 45'. 3:56-4:10 trimmed 3/4" Volclay bentonite pellets. 4:30: Completed piezometer I-5. 5:00 left site.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	D4-50
		MWD-266B	4 of 4	I-5

BORING LOCATION: North area, near P-6		APPROVED BY: A S B	GROUND EL: 441.5
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH: 114.0
DRILL RIG: Failing 1500	BORING DIA.: 6 7/8"	DATE DRILLED: 11/8/93	LOGGED BY: RER

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR/RQD	REC.	MODE	REMARKS
	FILL	0				AD	0-30' [illegible]
CL	0-5': CLAY; dk yellowish brown; damp; stiff.	4				RD	deep (pipe). Moved north about 8'. Encountered 2" steel pipe. Moved slightly south to avoid pipe. Drilled with augers 0-25'. Switched to 6 7/8" drag bit (RD)
	REPETTO FM						
cs	5'-10' CLAYSTONE; Light olive gray; damp; very thin bedded; soft, plastic.	8					
			X-1	160	1.5/20	PB	10-13 Samples w/ Pitcher Barrel (PB)
		12				930 RD	modified to use 3" ϕ split spoon. 12-15' 6 7/8" drag bit
slst		16					15' - switched to 94 mm. wireline punch core sampling system.
	10'-114' SILTSTONE: Dark yellow; damp; very thin bedded; soft; friable; weakly (?) cemented.	20		120	2.0/2.0	C	20'-22' C
						RD	22'-30' RD
		24					
		28					
						1012	
				120	1.8/2.0	C	30'-32' C
		32				RD	32'-40' RD
slst		36					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266B	SHEET: 1 of 4	DH-51 F-11

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~RQD~~	REC.	MODE	REMARKS
	REPETTO FM	40				10:15	40'-42'C
	10'-114' SILTSTONE (cont'd)			120	2.0/2.0	C	
S/St						10:25	42'-50' RD
		44					
		48					
	Pale green stain on fracture surface.			120	2.0/2.0	C	50'-52'C
		52				10:35 RD	52'-60' RD
		56					
		60				10:45	
	small black stains on near horizontal fracture surface. Extensive black stains on steeply dipping fractures		X-2	100	2.0/2.0	C	60'-62'C
						RD	62'-70' RD
		64					
		68					
S/St						11:00	
				140	1.7/2.0	C	70'-72'C
		72				11:10 RD	72'-80' RD
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-57
		MWD-266B	2 of 4	I-11

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~psi~~ / ~~RQD~~	REC.	MODE	REMARKS
		80				11:25	80'-82'C
				100	2.0/2.0	C	
	REPETIO FM					11:35	82'-90' RD
slst	10'-114' SILTSTONE (cont)	84		100			
							85' drills hard no mud pump pressure
		88					
	90.5' becomes dark greenish gray; very thin bedded; little fractured			100	2.0/2.0	C	90'-92'C
		92				11:50	92'-100' RD
				100			
		96					
		100		140	2.0/2.0	C	100'-102'C
						12:15	102'-110' RD
		104					
slst		108					
				140	2.0/2.0	C	110'-112'C
		112					112'-114' RD
						RD	
	Total Depth 114.0'	116				12:40	Reamed hole w 6 7/8" bit to remove cake on wall, circulated and thinned fluid with about 800 gallons freshwater.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	OH-51
		MWD-266B	3 of 4	I-1

BORING LOCATION:		APPROVED BY:	GROUND EL.
DEPTH/ELEV. WATER :	DRILL CONTRACTOR: All Terrain Expl. Dri.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	Well Construction 0'-32.0' - 2" blank pvc casing 0'-32.5' - 1" blank pvc casing 32.0'-112.0' - 2", .020 slotted pvc 32.5'-112.0' - 1", .020 slotted pvc 0'- 22.5' - cement/bentonite grout 22.5'-27.0' - 3/8" bentonite pellets 27.0'-113.0' - #3 lonestar sand						No drill fluid loss during drilling. Set 1 1" diameter and 1 2" diameter piezometer and cleaned up and moved 6 P.M.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-51
		MWD-266B	4 of 4	I-11

BORING LOCATION: North dam, downstream slope; near P-4	APPROVED BY: A.S.B		GROUND EL: 480.5'
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: ALL TERRAIN EXPL. DRILL		TOTAL DEPTH: 118'
DRILL RIG: CME550	BORING DIA.: 7 3/4" O.D.	DATE DRILLED: 11/9 & 10/93	LOGGED BY: LAF

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
SC	EMBANKMENT FILL 0-39.5' Clayey Gravelly SAND: Lt. Brown, dry, appears med dense. Gravel ½ to 2" dia, subangular to subrounded, approx. 25% SAND is fine to medium grained. Fines approx. 20%.	0 4				HA	Advance boring w/ 8" O.D. Hollow-Stem @ 10:00 a.m. Approx 1 pt of EZ-mud used.
	@ 8' Clayey Gravelly SAND, dark yellowish orange. Slight decrease in gravel and fines.	8	X-1	-100	2.0/2.0	C	8-10' Switched to 9.1 mm wire line sampler w/ 7 3/4" tri-cone bit @ 11:00 a.m. abt of chatter NO fluid loss
		12 16				RD	
	@ 18' Clayey Gravelly SAND as above.	20	X-1	-250	2.0/2.0	C	18-20' @ 11:25 moderate chatter
		24				RD	
SC	@ SANDY Gravel: Increase in coarse sand and gravel content. Gravel is predom. ¼" dia., subangular.	28	X-1	-200	2.0/2.0	C	28-30' @ 12:45 Difficulty maintaining hole open to 28'. Added approx 2 gallons of EZ-mud and circulated for approx. 15 min. Added 5 FT. rod extension to drill beyond sample depth.
		32 35				RD	
	@ 38' Increase in gravel size of gravel increases to 1" dia (2.5cm). 39.5'-48': Clayey SAND: Olive gray, moist, appears med. dense.	40	X-1	-250	2.0/2.0	C	38-40' @ 1:15 no fluid loss.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO. DH-52
		PROJECT NO. MWD-266B	SHEET: 1 of 4	I-20

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
SC	CLAYEY SAND (cont) Sand is fine to medium fine grained w/ occasional med to coarse grained. Fines approx. 30%. Rare gravel in sample.	40				RD	@ 1:20 p.m. pulled out all rods - lost rod in plugged w/ sand & gravel. @ 1:25 p.m. pump cleared rods back in hole.
		44					
		48	X-1	~200	0.3 / 2.0	C	48'-50' @ 1:50 p.m. Recovered small portion of sample
CL	48-56 SANDY CLAY; Dark yellowish brown, moist, appears soft. Sand is v. fine to fine grained. Rare gravel.			~200	0 / 2.0	C	50-52 @ 1:55 p.m. lost sample drilled out boring to 58'.
		52					
	REPETTO FM					RD	
slst	56-88' SILTSTONE; Dusky yellow w/ rusty orange mottling; damp to slightly moist; Appears v. stiff. Approx. 10% plastic fines, weakly cemented. Sand is v. fine grained.	56					
			X-2	~250	2.0 / 2.0	C	58-60' @ 2:10 p.m. no fluid loss
		60					
		64				RD	
		68					68-70' @ 2:30 p.m.
	@ 68': SILTSTONE, crumbles to v. fine to fine sand - SANDY SILT. Moderately cemented; Lt. olive brown in color. Massive w/ slight fractures marked by limonite staining.		X-2	~250	2.0 / 2.0	C	
		72				RD	
		76					
	@ 80': SANDY SILT/SILTY SAND. Trace plastic fines		X-2	~300	2.0 / 2.0	C	78-80' @ 3:10
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-52
		MWD-266B	2 of 4	I-80

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER:	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
slst	56-118' SILTSTONE: con't.	80					
		84				RD	
ss	88'-98' SILTY SANDSTONE; olive gray w/ thin pale olive banding; MOIST to mod. moist; appears med. dense & massive w/ some fractures. Sand is v. fine grained.	88	X-2	~250	2.0 / 2.0	C	88-90' @ 3:30 p.m. no fluid loss
		92				RD	
slst	98'-118' SILTSTONE; light olive gray and moderate yellow brown banding and staining; MOIST; appears hard. weakly cemented with fractures stained by limonite. Sand is v. fine grained; approx. 25%.	96					
		100	X-2	~300	2.0 / 2.0	C	98-100' @ 3:53 p.m.
		104				RD	
	@ 108' Sandy silt is predominantly light olive gray.	108	X-3	~250	2.0 / 2.0	C	108-110' @ 4:20 p.m.
		112				RD	
		116					
	TOTAL DEPTH 118'	120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO. MWD-266B	SHEET: 3 of 4	DH-52 I-20

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
	WELL CONSTRUCTION 60'-110' : Screen 2" ID 1" ID Sch. 40 (0.020) PVC w/ flush thread end cap. 0'-60' : Blank 2" ID w/ 1" ID Sch. 40 PVC w/ slip cap. SAND PACK & SEAL 55'-112' Lonestar #3 SAND (tremied) 49'-55' : 3/8" Volclay Bentonite Pellets (tremied) 0-49' : Cement-Bentonite Grout Finished well in 8 5/8" Stove-pipe						NOTES 11/10/93 @ 7:00 am lost 25-30 ft. of hole cleaned hole & installed casing to 125 FT bgs. 8:13: Reream to flush hole approx. 500 gallons fresh water used. 9:24 a.m. Well constructed to 110'. 10:20 a.m. Finished placing sand pack [illegible] used 9 in 60 ft [illegible] #3 sand & 1 bucket of 3/8" Volclay Bentonite pellets all tremied down [illegible]

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DA-52
		MWD-266B	4 of 4	I-20

BORING LOCATION: North side of site	APPROVED BY: ASB	GROUND EL: 4832
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Drl.	TOTAL DEPTH: 112.0
DRILL RIG: Failing 1500 / BORING DIA.: 6 7/8"	DATE DRILLED: 11/15-16/93	LOGGED BY: RER

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR (psi) / RQD	REC.	MODE	REMARKS
	FILL	0					Begin Drilling 10:30Am
SM	0-5' SILTY SAND moderate brown; damp medium dense.					AD	0'-1½' AD Set surface casing.
		4		60			1½'-10' RD with 8" diameter drag bit
	COLLUVIUM						
CH	5'-16' FAT CLAY with SAND; Dark yellowish brown; moist; very stiff; 15% medium grained sand	8					
			X-1	60	2.0/20	PB	10'-12' PB Sample with Pitcher Barrel modification to use 3" od split spoon.
		12		60		11:00 RD	12'-13' RD with Drag Bit. Switched to 9 + mm wire line sampling system with 2½" od punch core split spoon sampler
	REPETTO FM.	16					
slst	16-112' SILTSTONE: Moderate yellow brown to light olive brown; damp; very thin bedded; soft; friable; with very thin fine grained SANDSTONE inter layers	20		120	20/20	C	13'-20' RD 20'-22' C
		24		60		11:20 RD	22'-30' RD
		28				11:30	
	becomes light olive gray with small to moderate dark yellowish orange stains and 1½" diameter Limonite concretions	32		100	2.0/2.0	C	30'-32' C
				60		11:35 RD	32'-40' RD
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-53
		MWD-266B	1 of 3	I-39

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl. Drl.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / ROD	REC.	MODE	REMARKS
slst	16-112' SILTSTONE (con't) With very thin to thin CLAYSTONE interlayers of high plasticity	40		100	2.0/2.0	11:45 C	40'-42'C
		44		60		11:55 RD	42'-50' RD
		48					
	9" thick fine to medium grained very soft, friable, SANDSTONE interlayer	52		100	2.0/2.0	12:05 C	50'-52'C
		56		60		12:10 RD	52'-60' RD mud pump pressure rose slightly
		60	X-2	100	2.0/2.0	12:25 C	60'-62'C
		64		60		12:30 RD	62'-70' RD
		68					
slst		72		100	2.0/2.0	12:40 C	70'-72'C
		76				12:50 RD	72'-80' RD
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-53
		MWD-266B	2 of 3	I-38

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR: All Terrain Expl. Inc.		TOTAL DEPTH:
DRILL RIG: Failing 1500	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
		80					
				120	20/20	C	80'-82'C
	16-112 SILTSTONE - con't						82'-90'RD
		84				RD	
slst				60			
		88					
						1:15	
				120	20/20	C	90'-92'C
		92				1:20 RD	92'-100'RD
		96					
						1:35	
		100					
				120	20/20	C	100'-102'C
	becomes Olive black thick to very thick bedded with shell fossils.					1:50 RD	102'-110' RD
		104					
slst		108					
						2:05	
				120	20/20	C	110'-112'C
		112					
	TOTAL DEPTH - 112' WELL CONSTRUCTION: 0-50' 1" and 2" ϕ blank PVC casing 50'-110', 1" and 2" ϕ 0.020" slotted PVC 0-39.7' cement/bentonite grout 39.7-44.3' 3/8" bentonite pellets 44.3-112' # 3 Lonestar sand						2:15 reached T.D. pulled rods and reamed mud cake on sidewalls. Circulated and thinned fluid. No fluid loss during drilling.

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-53
		MWD-266B	3 of 3	I-38

BORING LOCATION: Reservoir Crest South side	APPROVED BY: ASB	GROUND EL: 579.1
DEPTH/ELEV. WATER:	DRILL CONTRACTOR: All Terrain Expl Dr	TOTAL DEPTH: 213.5
DRILL RIG: Failing 1500 / BORING DIA.: 6 7/8"	DATE DRILLED: 11/19-11/20/93	LOGGED BY: KEB

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~BL FEED~~	REC.	MODE	REMARKS
	0'-0.25' Asphalt liner EMBANKMENT FILL 0.25'-28' SILTY SAND with GRAVEL (SM); Dark yellowish orange; damp to moist; dense to very dense. 30% silty fines; 15% gravel clasts to 1" diameter; 55% poorly sorted fine to coarse grained sand.	0 4 8					setup mudtub surface casing 8:AM 0'-10' RD drill to 10' with 8" drag bit. 10' switched to 94mm wireline "punch core" system
						10:00	10'-12' C
			X-1	80	1.3/2.0	C	
SM		12				11:3 RD	12'-20' RD begin drilling 11:35
				20			
		16					
						11:45	
		20					20'-22' C
	becomes olive gray and light olive gray and dark yellowish orange thin bedded with minor thin clay layers			100	2.0/2.0	C	
						11:50 RD	22'-30' RD
		24					
	PICO FM	28					28' smooth drilling. No pump pressure
CS	28'-40' CLAYSTONE: Dusky yellow with moderate brown stained fine sand layers; damp; thin(?) bedded; soft; plastic; moderately plastic clay					12:05	30'-32' C
				120	0.8/2.0	C	
		32				RD	32'-40' RD
				40			
		36					
		40					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	CH-55
		MWD-266B	1 of 6	I-7

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR/EL/REC	REC.	MODE	REMARKS
						12:30	
ss	40'-60' SANDSTONE: Dark yellowish orange; damp to moist; thick bedded; very soft; friable; 20% silty fines; 80% fine to medium grained sand	40		100	2.9/20	C	40'-42' C
						12:35	42'-60' RD
		44					
	with gravel 45'-49'						slight to moderate bit chatter 45'-49'
		48					
		52					
		56					Moderate bit chatter 57'-58'
	with gravel 57'-58'						
						12:55	
cgl	60'-80' CONGLOMERATE: Dark yellowish orange with grayish brown stains on gravel clasts; moist; medium(?) bedded; soft; friable; weakly cemented; 10% to 20% fines; 50% subangular gravel clasts to 2" diameter; 30% to 40% poorly sorted, fine to coarse grained sand	60		100-120	0.7/2.0	C	60'-62' C moderate to heavy bit chatter. Full fluid return
						1:00 RD	62'-80' RD
		64					
		68					
		72					Moderate to heavy bit chatter full fluid return
		76					
		80					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-55
		MWD-266B	2 of 6	I-7

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV. WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
	80'-200' SANDSTONE: Dark yellowish orange; damp; thin bedded; very soft; friable; weakly cemented; 20% silty fines; 30% fine gravel; 50% poorly sorted fine to medium grained sand.	80	Y-2	80-100	2.0/2.0	1:20 C	80'-82' C slight to moderate bit chatter. full fluid return
		84				RD	82'-100' RD
		88					
SS		92					
		96					heavy chatter 96' to 98'
		100		120	2.0/2.0	1:55 circulate, minor fluid loss to formation 2:30 C	100'-102' C
						2:35 RD	102'-120' RD
		104					
		108					
		112					
SS		116					heavy chatter 117'
		120					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-55
		MWD-266B	3 of 6	I-7

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~PSI RQD~~	REC.	MODE	REMARKS
	PICO FM	120				3:30	120'-122' C
SS	80-200' SANDSTONE (cont.)			100	2.0/2.0	C	
						3:40 RD	122'-140' RD
	becomes light olive gray w/ thin dark yellowish orange interlayers.	124					
		128					
		132					
		136					
		140				4:10	
	becomes soft, moderately cemented with light brown Fe ox stains			300	98/2.0	C	140'-142' C end of shift 1/19/93
						6:00 RD	water level 1/19/93 end of shift is 3' bgs
		144					begin shift 6 AM, 1/20/93 WL=11.16 bgs 142'-160' RD
		148					
SS		152					moderate bit chatter
		156					
		160					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-55
		MWD-266B	4 of 6	I-7

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR / RQD	REC.	MODE	REMARKS
		160				6:40	
	PICO FM			100	2.0/2.0	C	160'-162'C
	80-200 SANDSTONE (con't)					6:55 RD	162'-180'RD full fluid return
	becomes dk yellowish orange.	164					
SS							
		168					
		172					
		176					
		180		—		7:20	
	becomes grayish yellow with moderate brown stains on fine grained layers		X-3	100-260	2.0/2.0	C	180'-182'C No chatter, pump pressure up slightly
		184					
		188					
SS							
		192					
		196					
		200					

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	DH-55
		MWD-266B	5 of 6	I-7

BORING LOCATION:		APPROVED BY:	GROUND EL:
DEPTH/ELEV.WATER :	DRILL CONTRACTOR:		TOTAL DEPTH:
DRILL RIG:	BORING DIA.:	DATE DRILLED:	LOGGED BY:

SOIL CLASS	DESCRIPTION	DEPTH	SAMPLE NO.	PR ~~BI RQD~~	REC.	MODE	REMARKS
cgl	200'-206' CONGLOMERATE: Dark yellowish orange with moderate reddish brown stains on gravel clasts; damp to moist; thick bedded; very soft; friable; 15% silty fines; 25% poorly sorted fine to coarse grained sand; 60% subangular gravel clasts to 0.2" diameter	200		220	1.4/2.0	8:05 C	200'-202' C
		204				8:20	202'-210' RD
slst		208				9:10	
	206.5'-211.5' SILTSTONE: Medium gray and dark yellowish orange interlayers; damp; thin bedded; soft; friable; moderately cemented			140	2.0/2.0	C	210'-212' C
cgl		212				RD	212'-213.5' RD
	211.5'-213.5' CONGLOMERATE: Greenish gray with moderate brown stains; damp; soft; friable; 20% fines; 40% gravel; 40% poorly sorted sand						9:40 reached T.D. thinned fluid. No significant fluid loss this hole. Circulate with a couple thousand gallons freshwater. Set up to set piezo's. 11:00 Pull drill rods. Set 1-1" and 1-2" piezometer. Completed sand, bentonite, and grout annular backfill 2:15 pm
	Total Depth 213.5'						

Wall Construction

0'-130.0'-2" blank pvc casing
0'-130.0'-1" blank pvc casing
130.0'-210.0'-2", .020 slotted pvc
130.0'-210.0'-1", .020 slotted pvc
0'-114.6'-Cement/bentonite grout
114.6'-124.4'-3/8" bentonite pellets
124.4'-213.5'-#3 lonestar sand

Wahler Associates	GARVEY RESERVOIR	EXPLORATION BORING LOG		BORING NO.
		PROJECT NO.	SHEET:	CH-55
		MWD-266B	6 of 6	I-7

APPENDIX C

Previous Laboratory Tests

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

REPORT ON METROPOLITAN WATER DISTRICT'S PROPOSED CARVER RESERVOIR

Prepared by
BECHTEL CORPORATION
SAN FRANCISCO

JANUARY 1965

METROPOLITAN WATER DISTRICT
LIBRARY — GENERAL COUNSEL

C
D
75 029

APPENDIX B

Results of Soil Tests

SOIL MECHANICS and FOUNDATION ENGINEERS, Inc.

INTERNATIONAL SCIENCE CENTER
918 Thompson Place
Sunnyvale, California
REgent 9-7070

November 18, 1964
Project 1660 GR
Bechtel Job No.4876

Bechtel Corporation, Hydro Department
P. O. Box 3965
San Francisco, California

Attention: Mr. N. M. Nasim

Subject: Report of Laboratory Testing, Garvey Reservoir Dam Review Study, Metropolitan Water District of Southern California

Gentlemen:

I Introduction

This report presents the results of our laboratory investigation for the subject project. The work was done in accordance with your purchase order No. 4876-SF-7 dated May 1, 1964. Tests were performed as specified in letters dated July 16 and September 22, 1964, as modified by telephone conversations between our Mr. Harlan and Mr. Nasim of Bechtel Corporation. Test data was submitted in preliminary form as it became available. All of the test results are herein presented. This report includes a discussion of the laboratory testing program, test procedures, and test results, and presents the detailed laboratory test data.

II Laboratory Test Program

The laboratory testing program was initially directed toward the determination of physical properties of the soil. On the basis of these tests, samples were selected for additional testing to determine engineering properties. Table A contains a summary of laboratory tests performed and provides a convenient reference to the figure number in the report where the test data may be located.

III Laboratory Testing Procedures— Physical Properties

The initial tests included determination of natural water content and density, grain size distribution, Atterberg Limits and specific gravity. The samples were classified in accordance with the Unified Soil Classification System.

Moisture Content Moisture contents were determined by weighing the materials in their natural condition, drying them in an oven maintained at a temperature of 105°C, weighing the completely oven-dried sample, and calculating the moisture content.

Dry Density Dry density determinations were obtained by carefully measuring the volume of the sample, weighing the sample after it has been oven-dried, and calculating the unit weight. The results of the natural dry densities and the moisture content are presented upon the various figures where such data is applicable.

Grain Size Distribution These tests were performed by mechanical analysis in accordance with procedures outlined in the ASTM* Test Designation D422-61T except as noted below. Samples of materials used in sieve analyses were first washed on a number 200 mesh screen. In order to conserve material, hydrometer analyses were performed on the material passing the number 200 mesh screen. The results of the mechanical analysis tests are presented in Table B, Table C, and on Figure 1, sheets 1 and 2.

Atterberg Limits Atterberg Limits tests of the finer grained materials were performed in accordance with ASTM Test Designation D423 and D424-59. The detailed results of the Atterberg Limit tests are presented on Figure 2.

Specific Gravity Specific gravity tests were performed on specified samples in accordance with ASTM Test Designation D854-58. Results of the specific gravity tests are presented in Table D.

IV Laboratory Testing Procedures— Mechanical Properties

On the basis of physical property test results, specific samples were selected for additional tests to determine consolidation characteristics, shear strength parameters, and permeability.

One-Dimensional Consolidation Undisturbed specimens were trimmed from the Shelby tube samples and tested in the consolidometer to determine the compression characteristics of the materials. Specimens were trimmed into 2½-inch diameter by 1-inch high consolidometer rings. Vertical loads were instantaneously applied in incremental steps such that each progressive load was twice the previous load, and the rate of vertical deformation was measured for each increment. After the first load increment was applied for 24 hours, the specimen was allowed free access to water for an additional period of 24 hours and any additional compression or swell was noted. Specimens were loaded up to a maximum consolidation pressure of 32,000 psf, and then unloaded in incremental steps such that each load was one-fourth that of the previous load. All loads were applied for periods of 24 hours. The consolidation test results are presented on Figure 3. Time-compression data are presented on Figure 3A, sheets 1 through 4.

---

*American Society for Testing and Materials

Triaxial Tests Consolidated undrained triaxial tests with pore pressure measurements were performed on 2.875-inch diameter undisturbed specimens. The height to diameter ratio was equal to or greater than 2.0. The specimens extruded from the tubes were cut to the proper length, weighed and measured, and then placed in the triaxial cell and encased in a rubber membrane. Before the specimen was fully sealed, all connections were made and all lines were filled with deaired water. The cell chamber was then filled with deaired water. A controlled internal back pressure of 70 psi on the pore phase and a slightly greater chamber pressure was applied in steps. A slight gradient of water was introduced between the ends of the sample to achieve saturation, which was accomplished in 4 to 72 hours. The use of a back pressure caused a general dissolution of air into the water, thereby permitting a condition of high saturation to be obtained. The pre-selected chamber pressure was then applied. The difference between the chamber pressure and the internal back pressure was maintained equal to the desired effective consolidation pressure. The sample was allowed to reach a condition of equilibrium which required up to three days. The sample drainage lines were then closed, and the pore pressure measurement device was attached. The sample was then loaded to failure using a constant rate of strain. The rate of strain for the tests varied from 0.0133 to 0.0037 inches per minute, which resulted in times to failure of 1 to 3 hours. The maximum effective principal stress ratio was selected as the failure criterion which would best define the shear strength. The Mohr circles are presented utilizing this criterion. Mohr circles are also presented showing the total stresses acting on the specimens at failure. Triaxial shear strength results are presented on Figure 4.

Triaxial Test with K_o Consolidation Triaxial tests with K_o consolidation (no lateral strain) were performed on specified undisturbed specimens. These specimens were set up in triaxial cells and saturated according to the previously described methods. They were then consolidated under an anisotropic state of stress where K_o equals $\bar{\sigma}_3/\bar{\sigma}_1$. Sample No.GR-6 was tested first and the K_o value obtained in this test was used in subsequent consolidation on samples GR-3 and 4. The specimen area was maintained constant during the entire consolidation process by increasing the effective consolidation pressure as the vertical effective stress was increased. Pore pressures were measured at the bottom of the specimen by attaching a measurement device and shutting off bottom drainage valves. The axial strain was controlled and maintained slow enough to retain a constant internal pore water pressure equal to the back pressure. Drainage from the top of the specimen was measured and the axial strain, volume change, and chamber pressure were all maintained such that a constant average area resulted. The procedure for samples GR-3 and 4 was altered slightly in that the consolidation pressure and additional vertical load were determined using the K_o value obtained in testing sample GR-6. Since there may be some variation in K_o values of the individual samples, some lateral straining may have resulted.

After consolidation to the pre-determined effective consolidation pressure, the specimen was failed under consolidated undrained conditions with pore pressure measurements taken. The maximum effective stress ratio was defined as the point of failure and the Mohr circles presented utilized this criterion. Total stress circles for the same failure conditions are also presented. Results of the triaxial shear tests with K_o consolidation are presented on Figure 5. Graphical results of the K_o consolidation phase of sample GR-6 are presented on Figure 6.

Permeability Constant head permeability tests were performed on undisturbed specimens in the triaxial cells prior to consolidation and shear. Both saturation and testing were performed using back pressure techniques. The results of the permeability tests together with a reproduction of a grain size analysis for the individual specimens are presented in Table E.

V Discussion of Test Results

The materials tested range from fine grained clays of low to medium plasticity to medium and coarse grained gravelly clayey or silty sands with low plasticity.

The consolidation test indicates that the material tested has a high rebound capacity, possibly due to an affinity for water. Therefore, the low apparent preconsolidation pressure may be caused by sample disturbance and expansion rather than underconsolidation.

Triaxial shear strength results on the undisturbed samples are somewhat erratic. Permeability results indicate that the materials are relatively impervious.

Based on a review of the test data these samples appear to have normal physical and mechanical qualities.

No unusual characteristics were found during testing or while working with the samples.

Sincerely,

SOIL MECHANICS and
FOUNDATION ENGINEERS, Inc.

Richard C. Harlan

RCH:fer
Enclosures

TABLE A
SUMMARY OF LABORATORY TESTS PERFORMED

NOTE: The letter and/or number presented below each test type refers to the table or figure number of Appendix B on which the test data is presented.

HOLE NO.	SAMPLE DEPTH (FEET)	LABORATORY TESTS PERFORMED										
		WATER CONTENT & DRY DENSITY	FIELD DENSITY	GRADATION ANALYSIS	HYDROMETER ANALYSIS	ATTERBERG LIMIT	SPECIFIC GRAVITY	COMPACTION	CONSOLIDATION	TRIAXIAL	PERMEABILITY	DYNAMIC TESTS
J	5-6.5			B,1	C,1	2						
J	15-16.5			B,1	C,1	2						
B	15.8-17.1			B,1	C,1	2	D			5	E	
B	30.1-31.1			B,1	C,1	2	D			5		
B	65.8-66.7			B,2	C,2	2	D			5,6		
B	78.3-80.3			B,2	C,2	2	D		3	4	E	
I	18.6-19.9			B,2	C,2	2				5		
I	21.3-23.4			B,2	C,2	2						

November, 1964

Project 1660GR

TABLE B

SUMMARY OF MECHANICAL ANALYSIS TESTS
Percent Finer By Weight

Hole No.	Depth Feet	Sieve Size												
			5"	3"	1 1/2"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200
J(GR-1)	5-6.5					100	99.4	97.5	93.0	85.9	75.5	63.1	50.9	43.4
J(GR-2)	15-16.5					100	93.1	87.9	79.4	67.6	53.3	38.7	26.6	17.9
B(GR-3)	15.8-17.1					100	89.5	82.0	71.7	59.4	46.4	35.0	24.7	18.8
B(GR-4)	30.1-31.1				100	95.9	81.8	73.6	65.4	56.3	44.6	31.8	22.4	16.7
B(GR-6)	65.8-66.7				100	95.0	92.0	85.7	77.5	68.4	56.9	44.4	31.7	24.7
B(GR-7)	78.3-80.3								100	99.8	99.7	99.4	95.4	65.8
I(GR-10)	18.6-19.9					100	96.2	89.3	80.6	70.5	58.9	46.9	35.0	28.1
I(GR-12)	21.3-23.4					100	97.9	92.9	87.0	78.5	66.8	51.6	38.1	29.3

Project No. 1660GR
November, 1964

SOIL MECHANICS and FOUNDATION ENGINEERS, Inc.

TABLE C

SUMMARY OF HYDROMETER ANALYSIS TESTS

Percent Finer By Weight

		PARTICLE DIAMETER in millimeters						
Hole No.	Depth	.050	.037	.019	.009	.005	.002	.001
J (GR-1)	5-6.5	40.4	37.2	30.5	22.0	17.6	8.7	5.7
J (GR-2)	15-16.5	16.7	16.1	12.3	9.0	6.9	3.8	2.8
B (GR-3)	15.8-17.1	18.2	17.3	14.4	11.8	9.5	5.4	3.8
B (GR-4)	30.1-31.1	16.1	15.0	12.3	9.6	7.8	4.7	3.9
B (GR-6)	65.8-66.7	24.4	22.5	18.9	14.4	11.8	6.6	5.5
B (GR-7)	78.3-80.3	58.2	51.8	39.2	31.6	26.8	16.9	13.1
I (GR-10)	18.6-19.9	27.1	25.2	21.8	17.9	14.0	9.0	6.8
I (GR-12)	21.3-23.4	27.2	25.2	21.7	17.0	13.7	8.0	6.0

Project No. 1660GR

November, 1964

SOIL MECHANICS and FOUNDATION ENGINEERS, Inc.

TABLE D

SUMMARY OF SPECIFIC GRAVITY TESTS

Hole No.	Sample No.	Depth, ft.	Specific Gravity
B	GR-3	15.8 - 17.1	2.68
B	GR-4	30.1 - 31.1	2.66
B	GR-6	65.8 - 66.7	2.67
B	GR-7	78.3 - 80.3	2.74

Project No. 1660GR

November, 1964

TABLE E

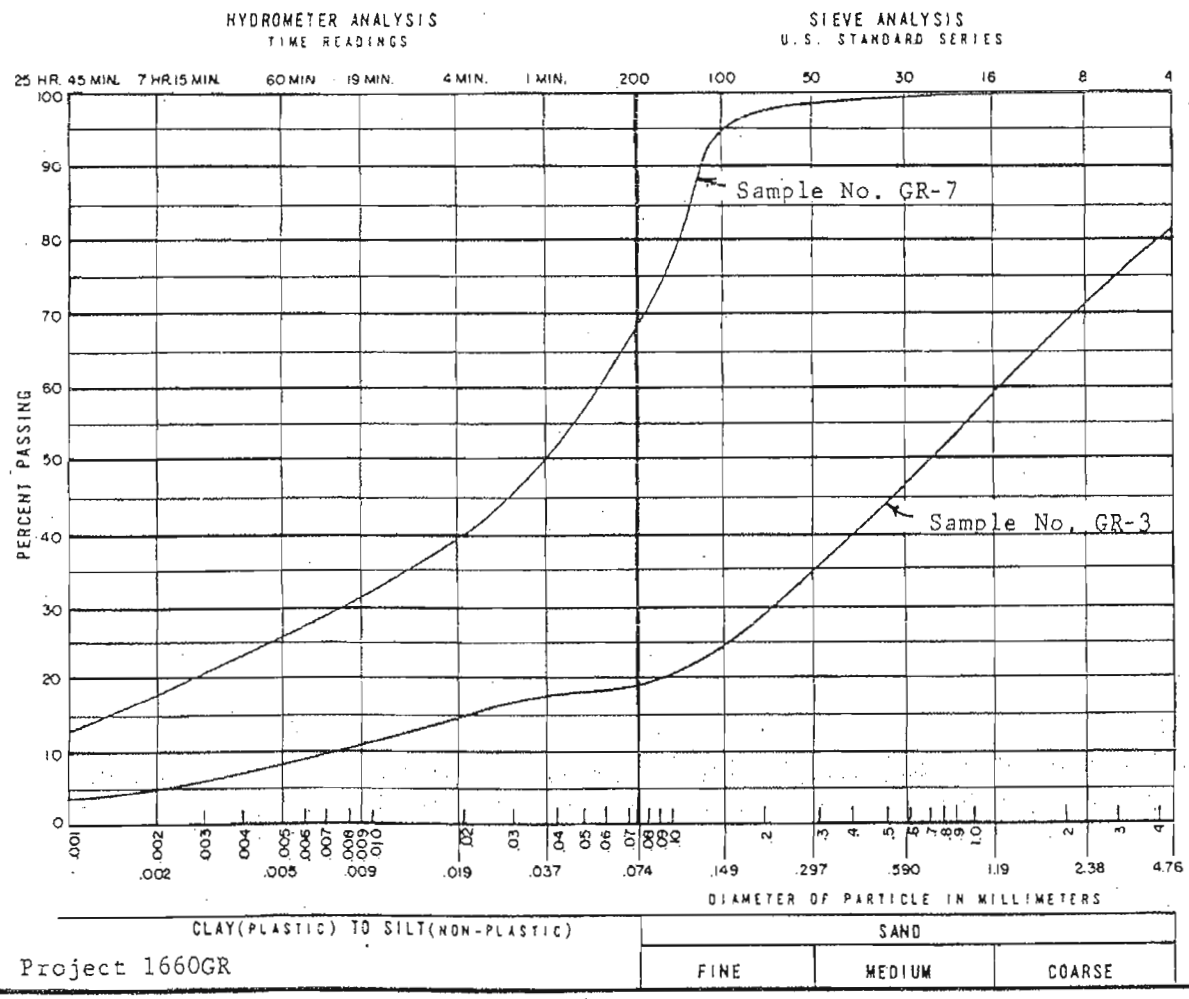
PERMEABILITY-GRAIN SIZE SUMMARY

SUMMARY OF PERMEABILITY TEST DATA

SAMPLE NO	DEPTH (ft)	SOIL TYPE *	INITIAL DRY DENSITY (pcf)	INITIAL VOID RATIO (%)	INITIAL WATER CONTENT (%)	DEGREE OF SATURATION (%)		COEFFICIENT OF PERMEABILITY (cm. sec)
						INITIAL	DURING TEST	
GR-3	15.8-17.1	SC	114.9	0.457	17.4	100	100	2.0×10^{-8}
GR-7	78.3-80.3	CL	106.3	0.609	21.9	99	100	1.8×10^{-9}

* Unified Soil Classification Symbol

GRAIN SIZE CURVES



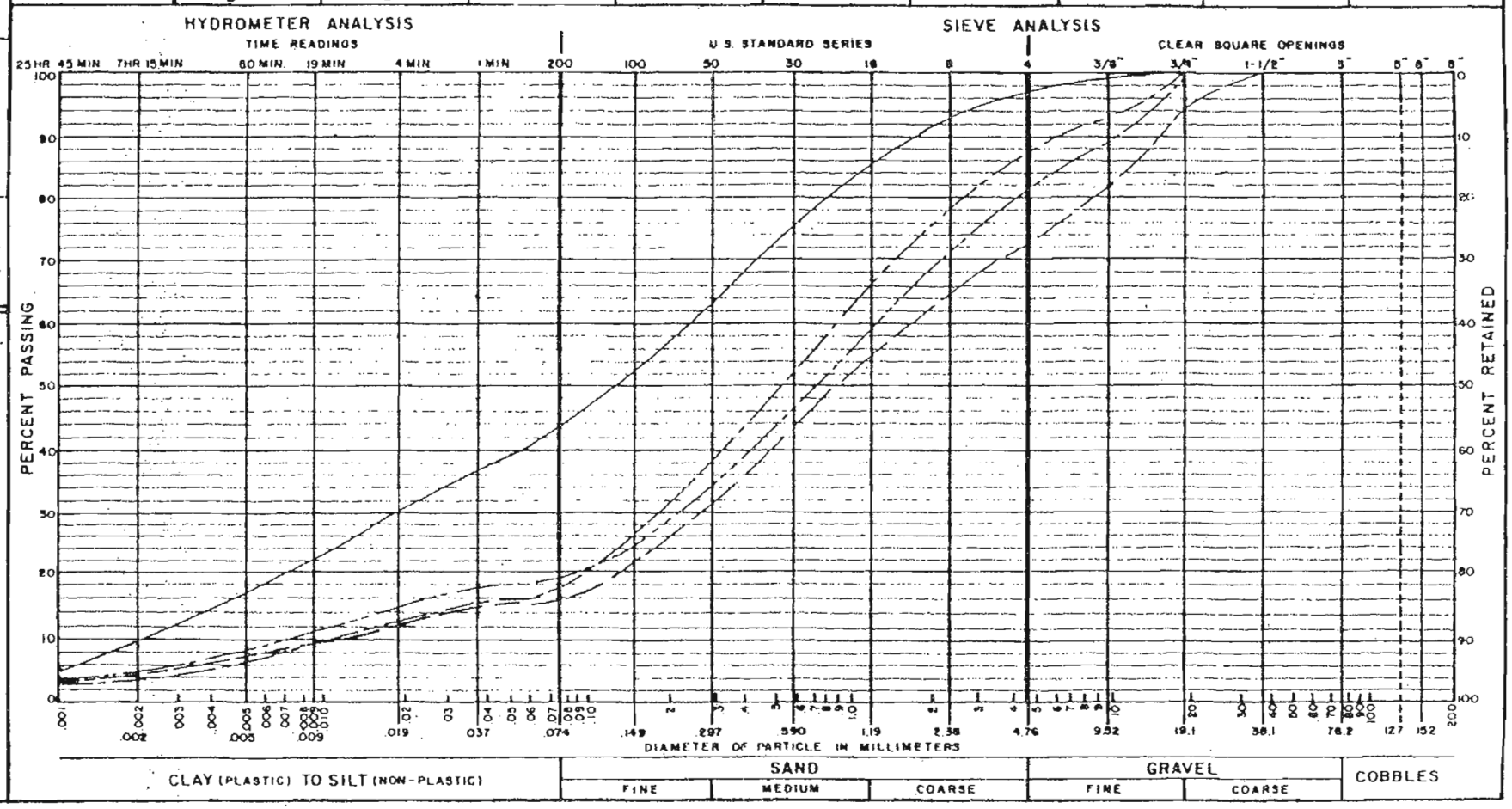
Project 1660GR

885

SOIL MECHANICS and FOUNDATION ENGINEERS, Inc.

Legend

LL	21		23	23					
PL	17		16	18					
PI	4	Non-Plastic	7	5					
NAT. W/C	11.9	12.0	10.0	9.4					
CLASSIF. SYMB.	SM-SC	SM	SC	SM-SC					
SAMPLE NO.	GR-1	GR-2	GR-3	GR-4					
DEPTH FT	5-6.5	15-16.5	15.8-17.1	30.1-31.1					
HOLE NO.	J	J	B	B					



Hole No.

Tested By EW

Date 7-64

Area

Appr. By

Job No. 1660-GR

File No.

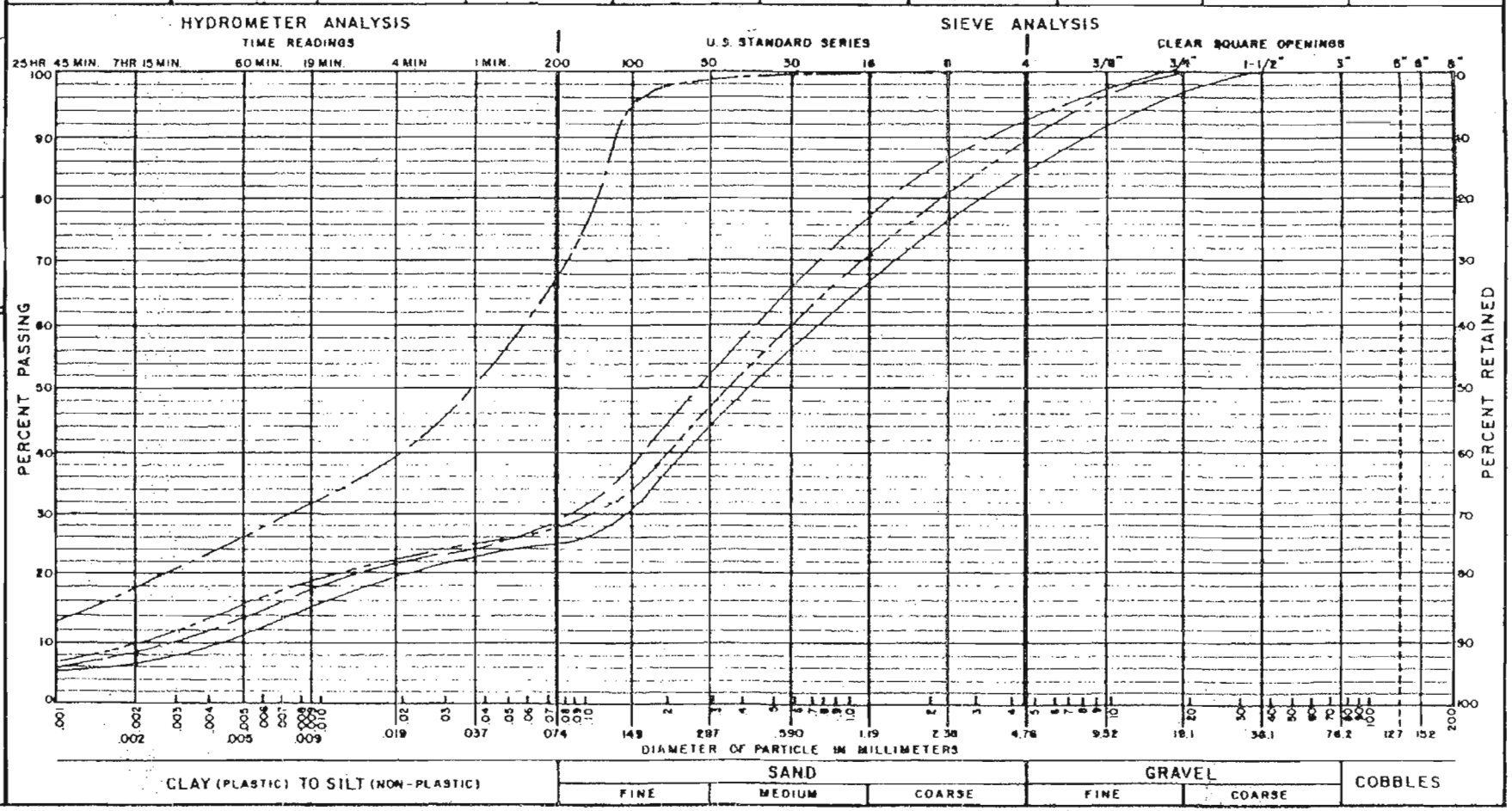
Fig. No. 1:1

GRADATION TEST RESULTS

GARVEY RESERVOIR

Legend

LL	24	41	23	25					
PL	17	19	17	15					
PI	7	22	6	10					
NAT. W/C	13.6	21.8	9.7	10.3					
CLASSIF. SYMB.	SC	CL	SM-SC	SC					
SAMPLE NO.	GR-6	GR-7	GR-10	GR-12					
DEPTH FT.	65.8-66.7	78.3-80.3	18.6-19.9	21.3-23.4					
HOLE NO.	B	B	I	I					



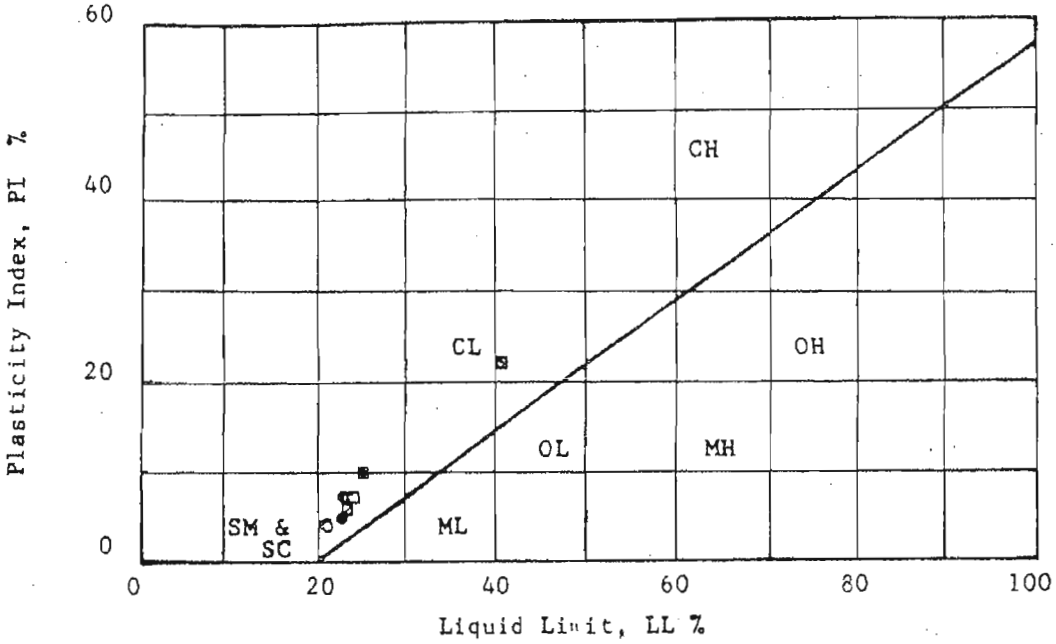
Hole No.
Tested By EW
Area
Appr. By
Date 7-64
Job No. 1660-GR
File No.
Fig. No. 1:2

GRADATION TEST RESULTS

GARVEY RESERVOIR

PLASTICITY CHART

GARVEY RESERVOIR



PLASTICITY DATA

Key Symbol	Sample No.	Depth Ft.	LL %	PI %	Classi-fication
○	GR-1	5-6.5	21	4	SM-SC
	GR-2	15-16.5	-	Non Plastic	SM
●	GR-3	15.8-17.	23	7	SC
●	GR-4	30.1-31.1	23	5	SM-SC
□	GR-6	65.8-66.7	24	7	SC
⊠	GR-7	78.3-80.3	41	22	CL
⊠	GR-10	18.6-19.9	23	6	SM-SC
■	GR-12	21.3-23.4	25	10	SC

Project No. 1660-GR
November, 1964

740-

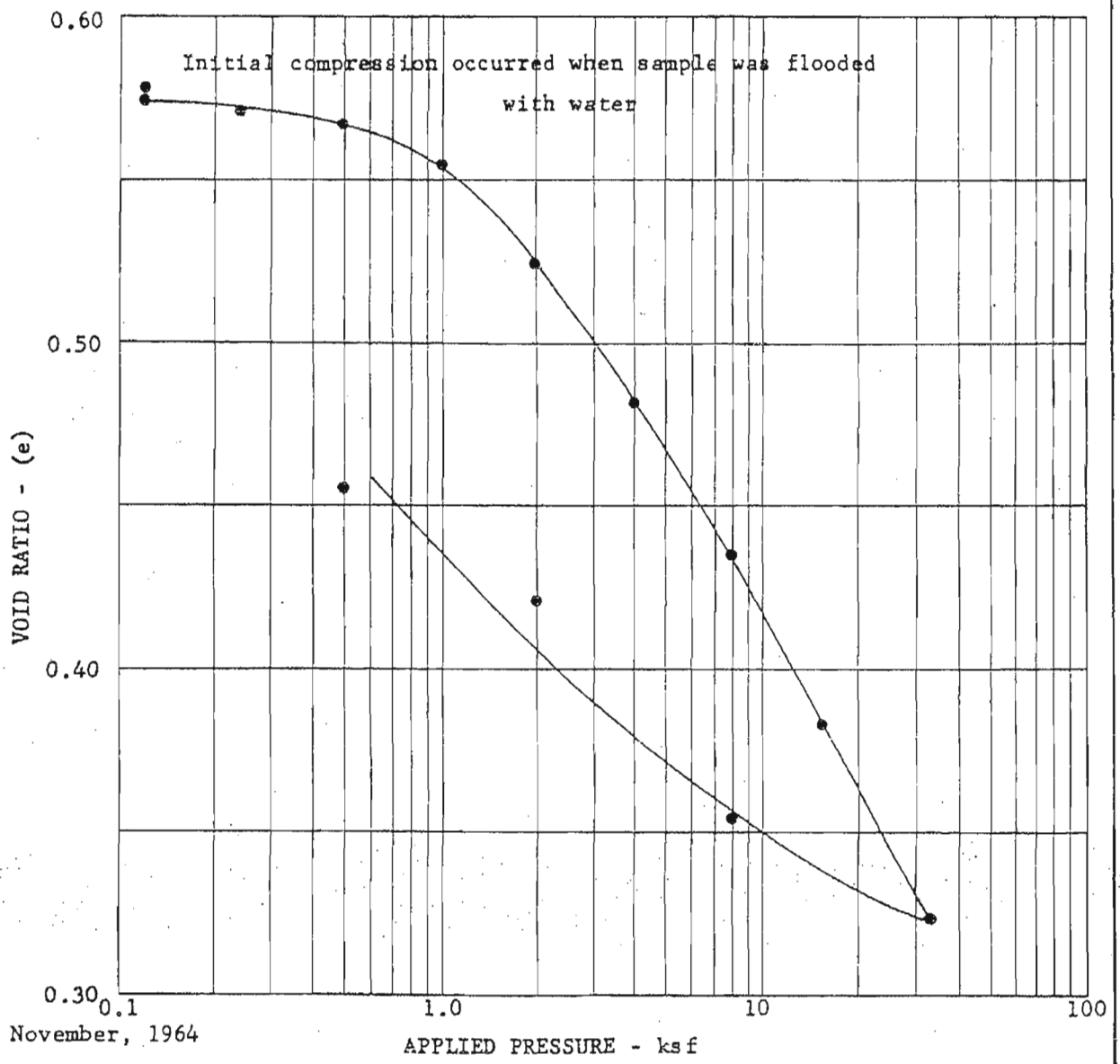
SOIL MECHANICS and FOUNDATION ENGINEERS, Inc.

Figure 2

CONSOLIDATION TEST

HOLE NO. B DEPTH, FT 78.3 - 80.3

SPEC NO.	INITIAL SPECIMEN DATA			FINAL SPECIMEN DATA		
	DRY DENSITY (PCF)	WATER CONTENT %	DEGREE OF SATURATION, %	DRY DENSITY (PCF)	WATER CONTENT %	DEGREE OF SATURATION %
GR-7	108.1	16.5	100	114.8	21.2	100



November, 1964

Project 1660GR

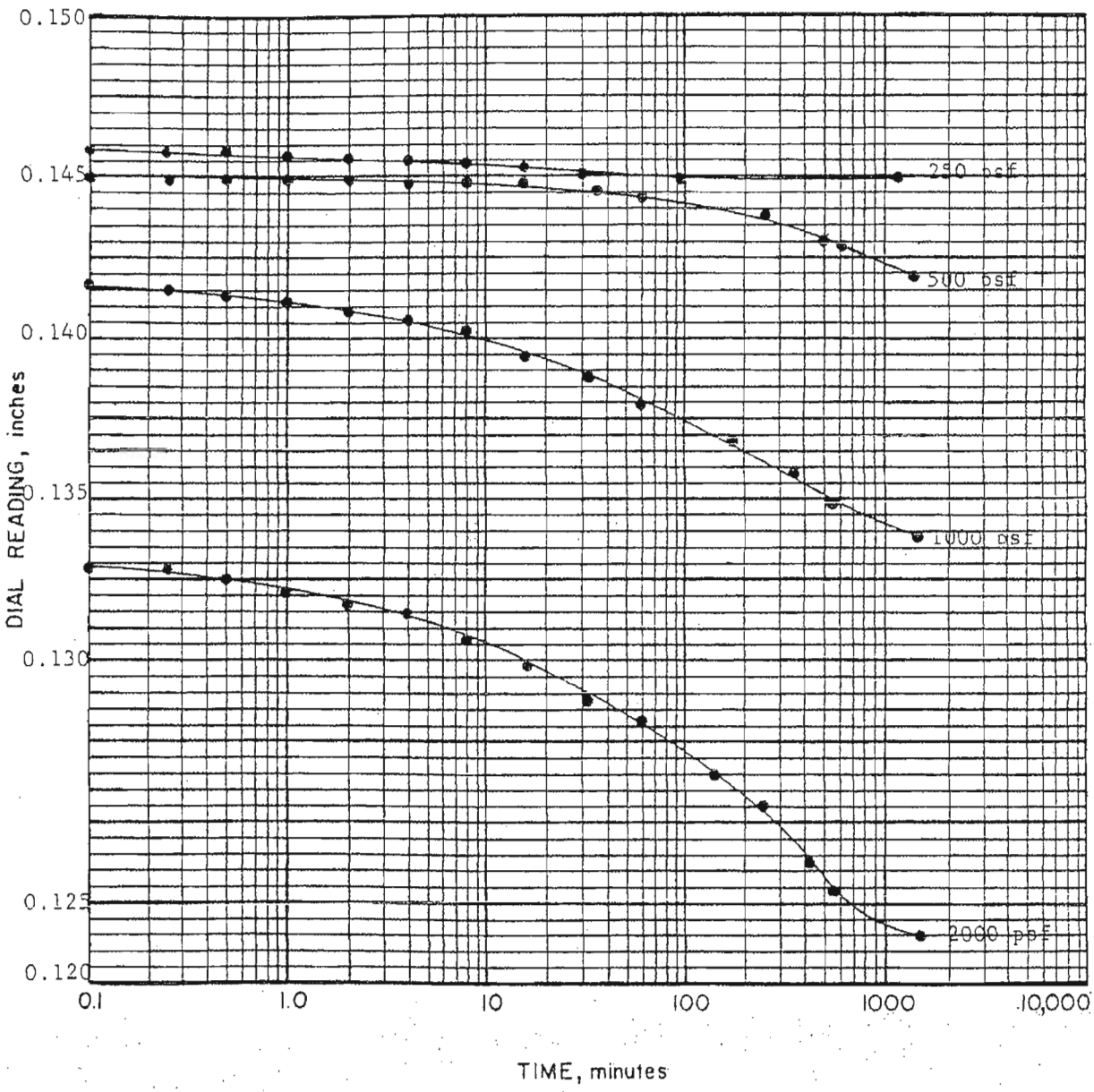
852A

Figure 3

CONSOLIDATION TEST

TIME - COMPRESSION CURVES

HOLE NO. B(GR-7) DEPTH, ft. 78.3-80.3



853

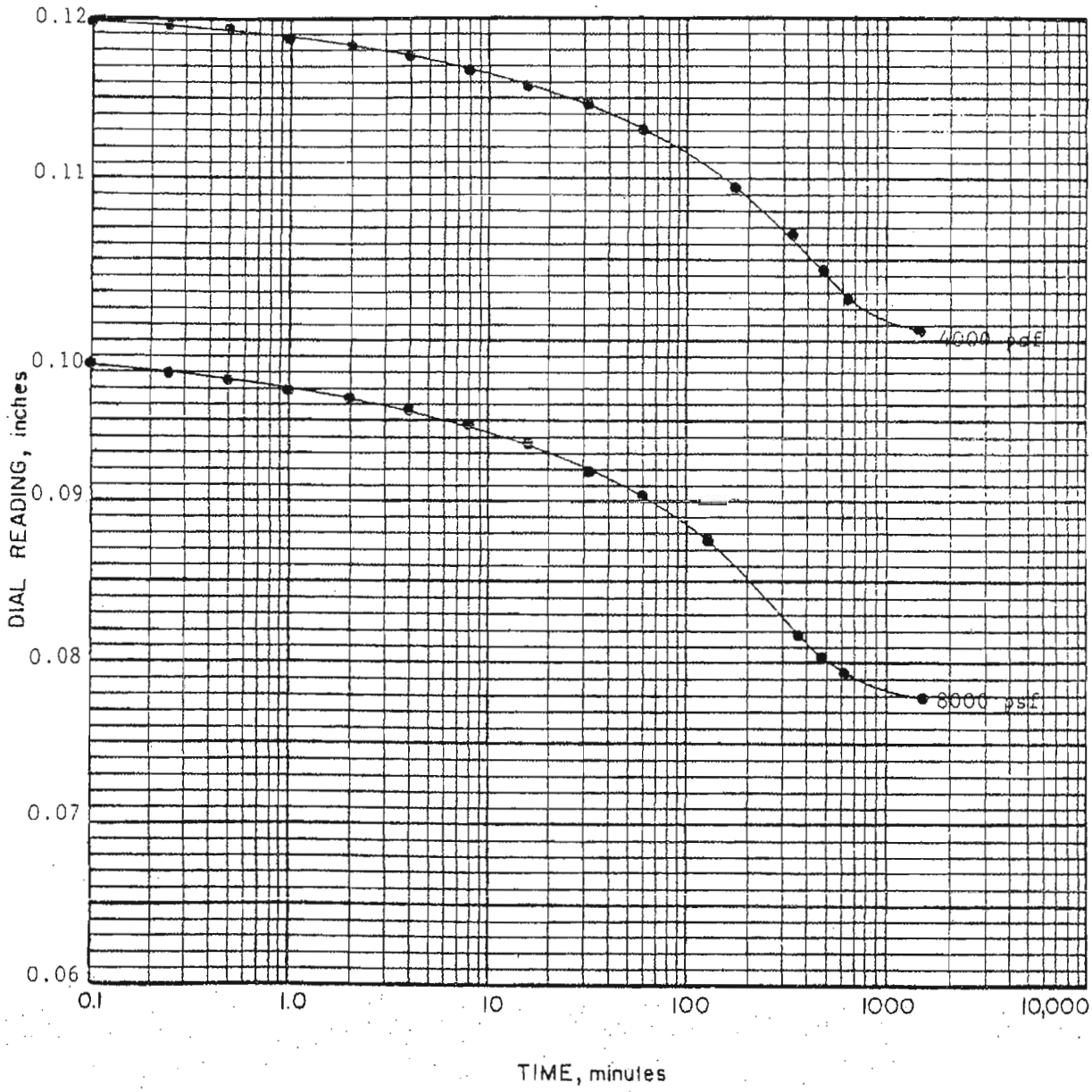
PROJECT NO 1660 GR

SOIL MECHANICS and FOUNDATION ENGINEERS, Inc. FIGURE 3A Sheet 1

CONSOLIDATION TEST

TIME - COMPRESSION CURVES

HOLE NO. B (GR-7) DEPTH, ft. 78.3-80.3



853

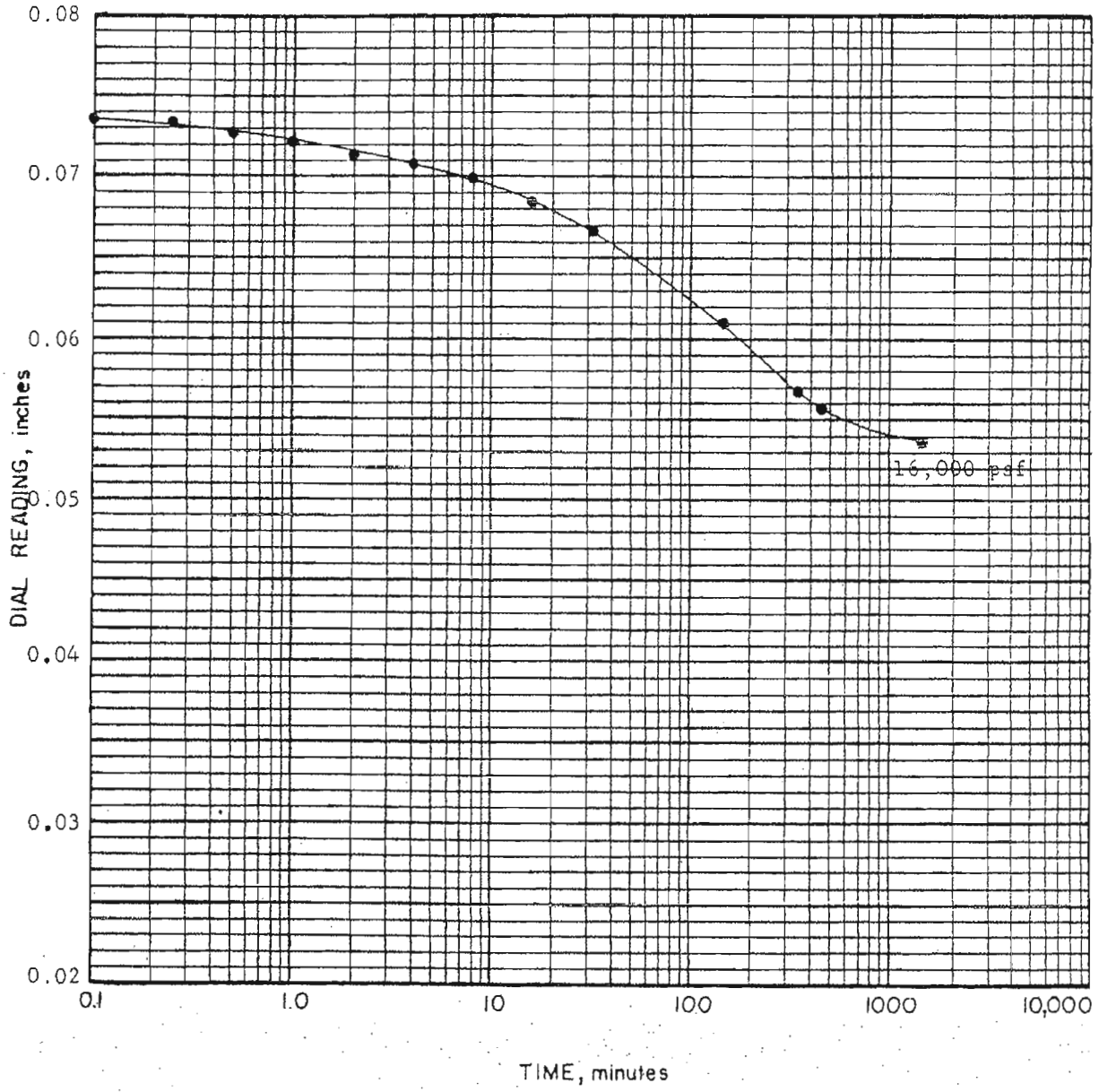
PROJECT NO 1660 GR

SOIL MECHANICS and FOUNDATION ENGINEERS, Inc. FIGURE 3A Sheet 2

CONSOLIDATION TEST

TIME - COMPRESSION CURVES

HOLE NO. B (GR-7) DEPTH, ft. 78.3-80.3



853

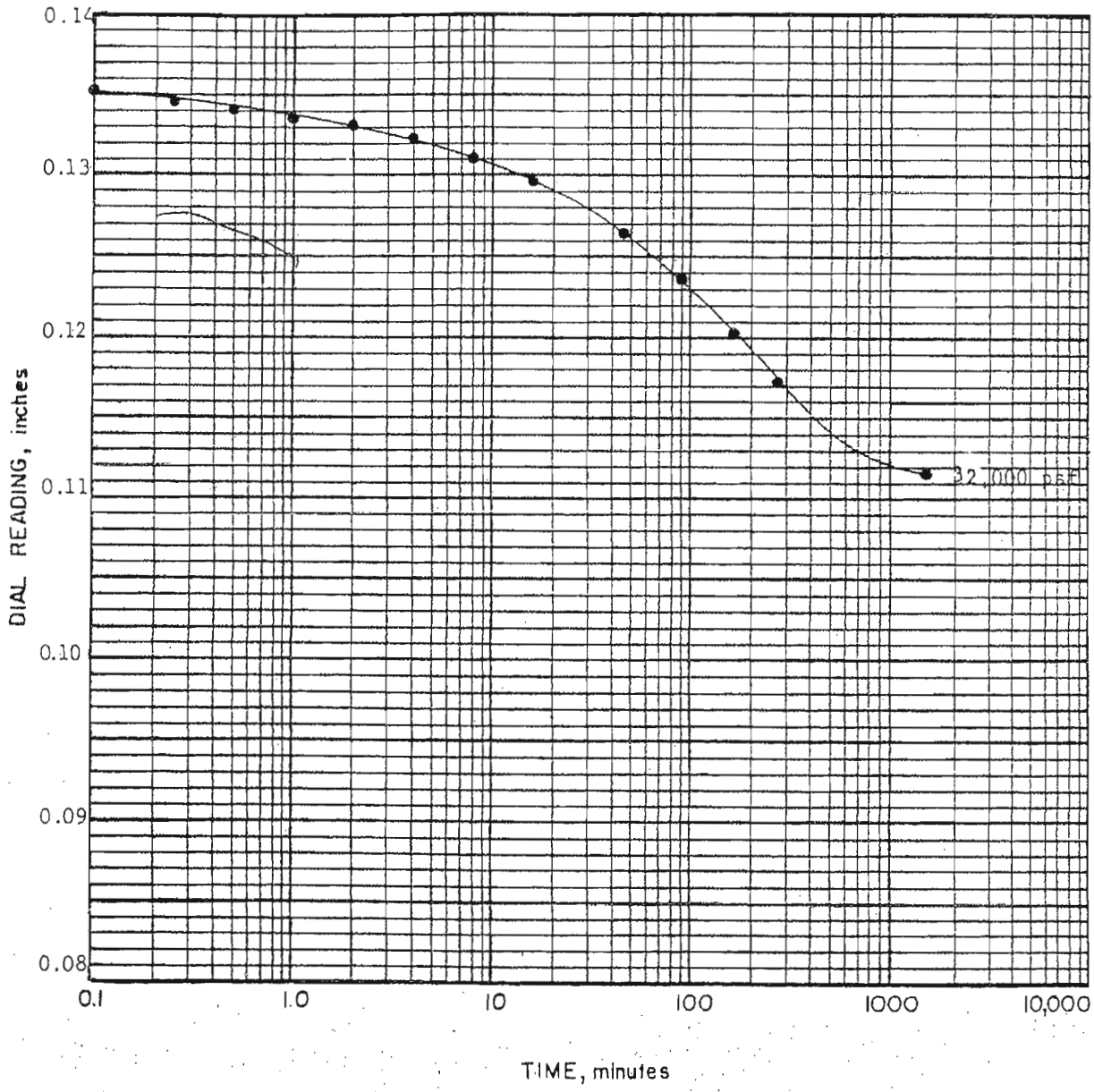
PROJECT NO 1660 GR

SOIL MECHANICS and FOUNDATION ENGINEERS, Inc. FIGURE 3A Sheet 3

CONSOLIDATION TEST

TIME - COMPRESSION CURVES

HOLE NO. B (GR-7) DEPTH, ft. 78.3-80.3



853

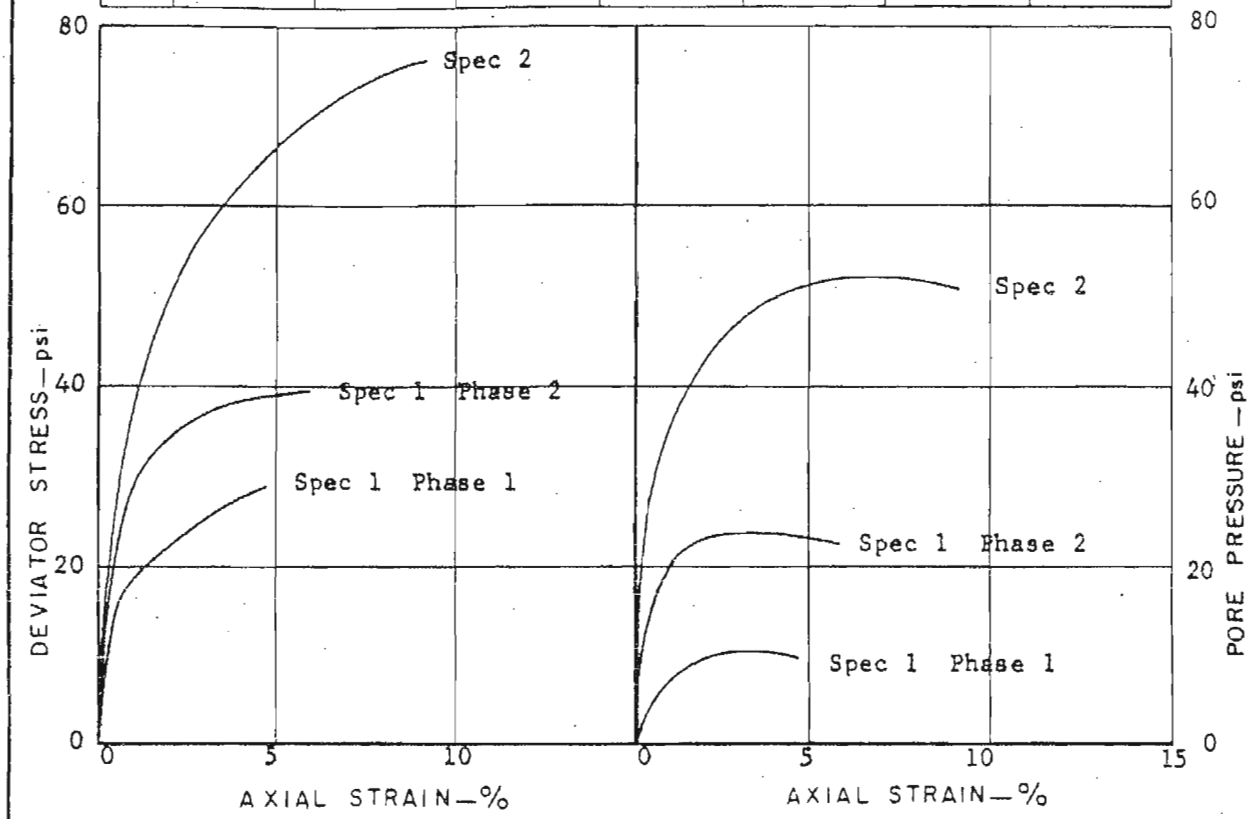
PROJECT NO 1660 GR

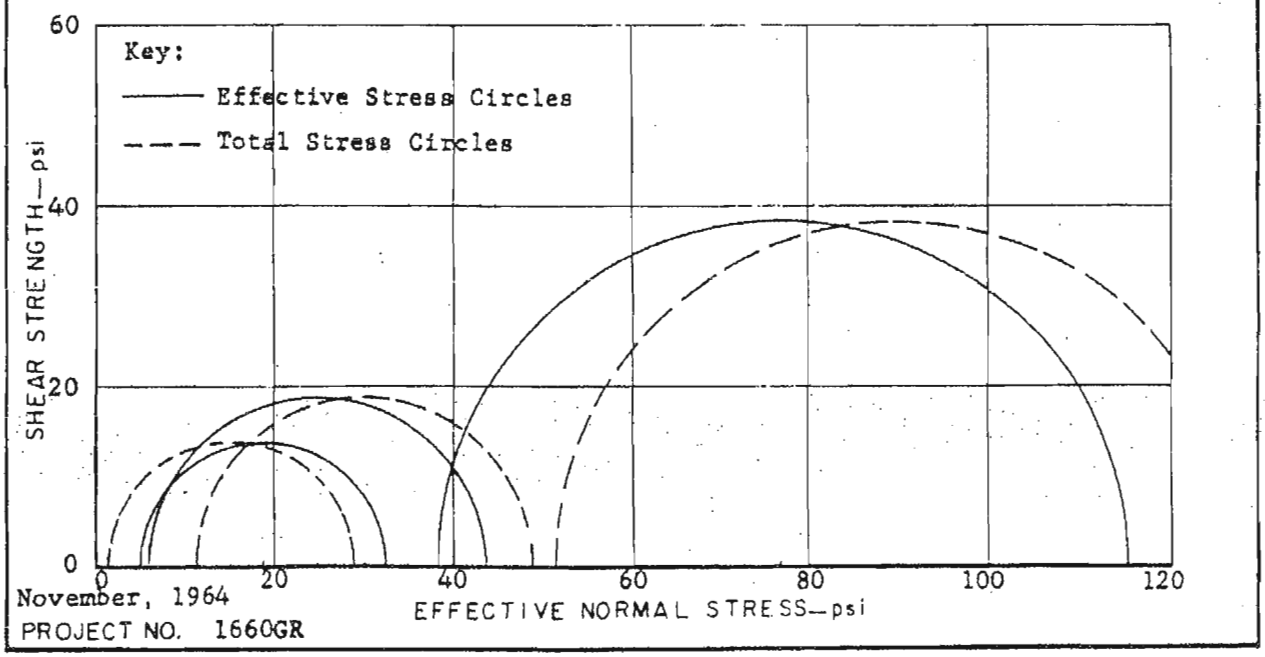
SOIL MECHANICS and FOUNDATION ENGINEERS, Inc. FIGURE 3A Sheet 4

TRIAXIAL TEST, UNDRAINED

HOLE NO. B (GR-7)
DEPTH, FT: 78.3-80.3

SPEC. NO.	INITIAL SPEC. DATA			FINAL SPEC. DATA		EFFECTIVE CONSOL. PRESSURE (psi)	FAILURE CRITERIA
	DRY DENSITY (pcf)	WATER CONTENT %	DEGREE OF SATURATION %	DRY DENSITY (pcf)	WATER CONTENT %		
1	108.2	21.7	100	--	--	15.3	Max
	(Two Phase Test)		---	108.0	21.3	30.0	$\bar{\sigma}_1/\bar{\sigma}_3$
2	106.3	21.9	99	107.8	21.4	90.0	





November, 1964
PROJECT NO. 1660GR

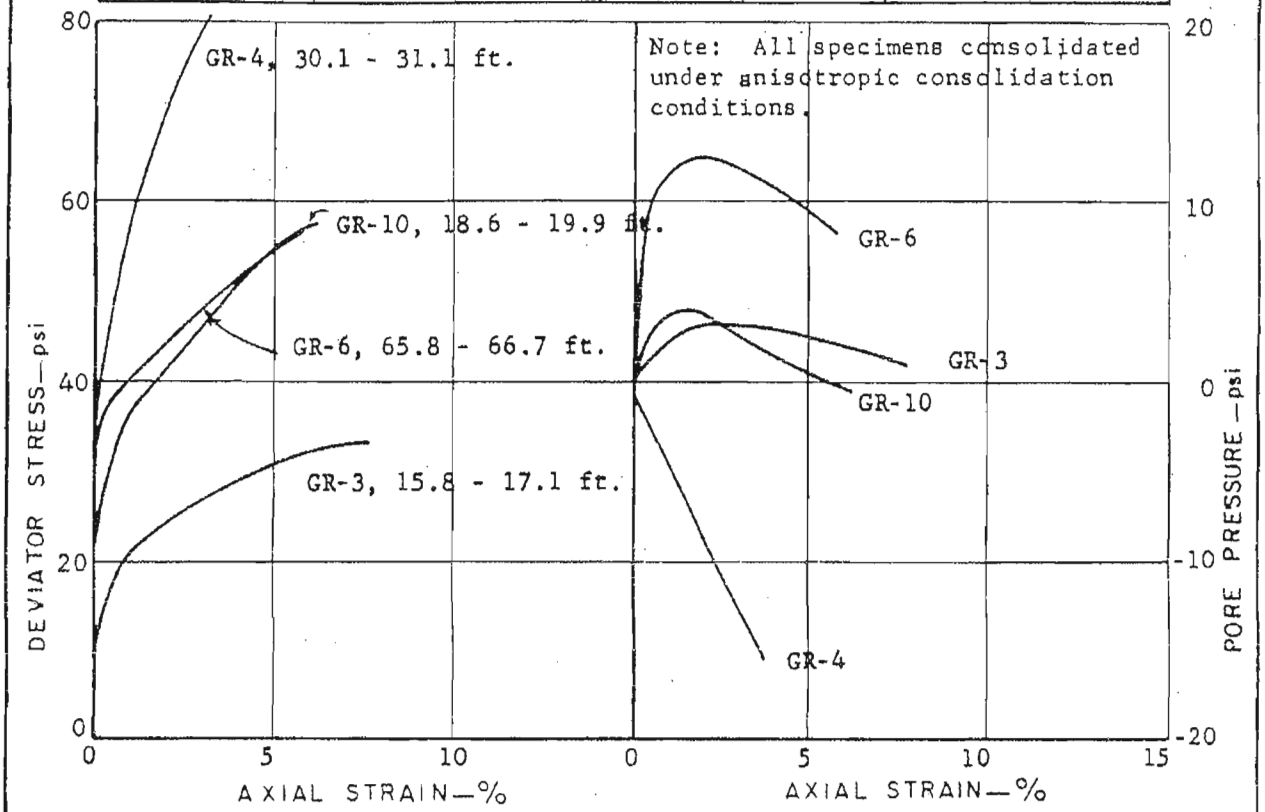
SOIL MECHANICS and FOUNDATION ENGINEERS, Inc.

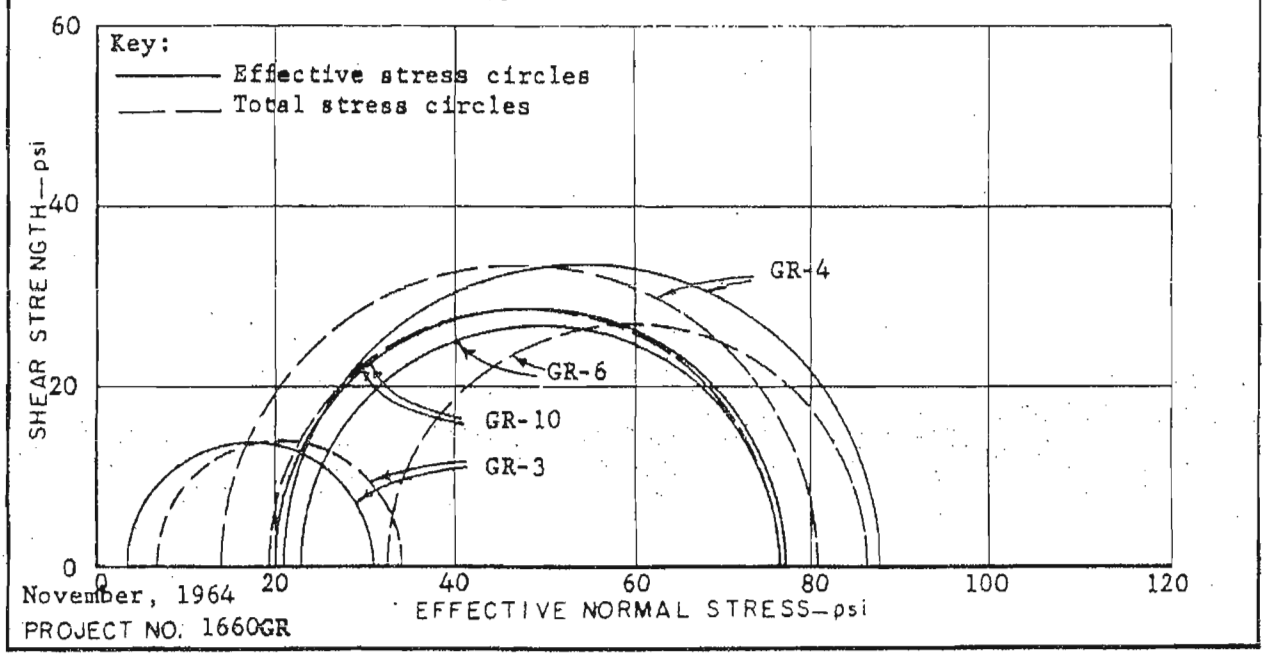
FIGURE 4

TRIAXIAL TEST, UNDRAINED

HOLE NO: B and I
DEPTH, FT: (see below)

SPEC. NO.	INITIAL SPEC. DATA			FINAL SPEC. DATA		EFFECTIVE CONSOL. PRESSURE (psi)	FAILURE CRITERIA
	DRY DENSITY (pcf)	WATER CONTENT %	DEGREE OF SATURATION %	DRY DENSITY (pcf)	WATER CONTENT %		
GR-3	114.9	17.4	100	112.0	18.4	7.0	Max.
GR-4	115.3	9.3	57	124.3	12.6	14.1	
GR-6	118.9	12.9	86	126.8	11.8	33.0	$\bar{\sigma}_1/\bar{\sigma}_3$
GR-10	120.3	11.6	81	127.4	11.6	19.0	





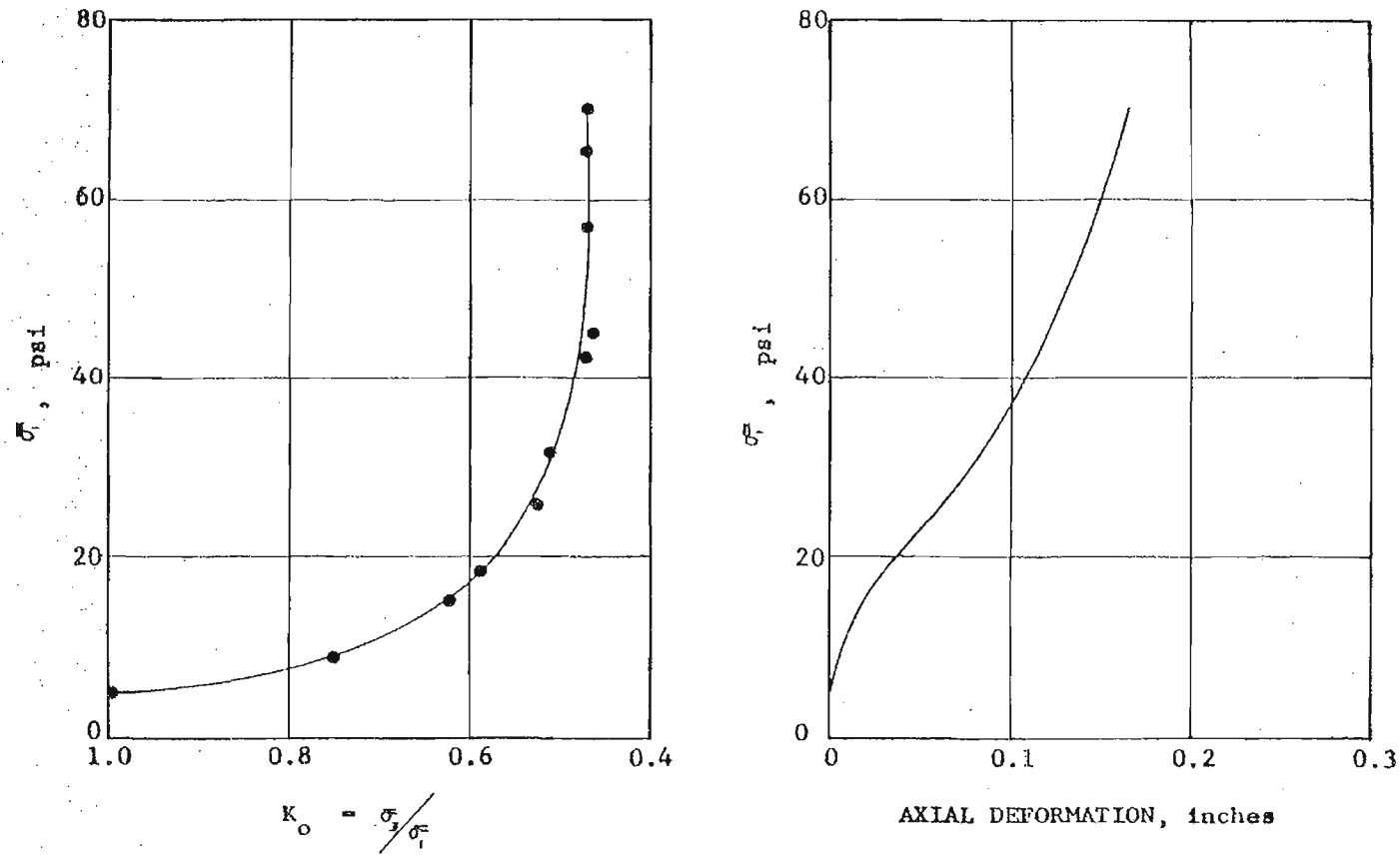
November, 1964
PROJECT NO. 1660GR

SOIL MECHANICS and FOUNDATION ENGINEERS, Inc.

FIGURE 5

SUMMARY OF ANISOTROPIC CONSOLIDATION DATA

HOLE B, SAMPLE GR-6 at 65.8 - 66.7 feet



November, 1964

Project No. 1660GR

SOIL MECHANICS and FOUNDATION ENGINEERS, Inc.

Figure 6

BECHTEL CORPORATION

SOIL STRENGTH TESTS SUMMARY

Tests were performed by Soil Mechanics and Foundation Engineers, Inc., Sunnyvale, California

JOB NO. 4876

PROJECT REVIEW OF DAMS FEATURE GARVEY RESERVOIR DATE 10/22/64

KEY	HOLE OR TRENCH NO.	DEPTH, FEET FROM	DEPTH, FEET TO	CLASSIFICATION
GR-3	B	15.8	17.1	SM-SC
GR-4	B	30.1	31.1	SM-SC
GR-6	B	65.8	66.7	SM-SC
GR-10	I	18.6	19.9	SM-SC
GR-7-1	B	78.3	80.3	CL
GR-7-2	B	78.3	80.3	CL
	Note:	A two-stage test was		
	performed on GR-7-1			

SAMPLE TYPE: Undisturbed - 2.8" diameter.

TEST CONDITIONS: Triaxial compression: GR-3, 4, 6, 10 - Anisotropically consolidated - Undrained with pore pressure measurements. GR-7-1a,1b,2 - Isotropically consolidated - Undrained with pore pressure measurements

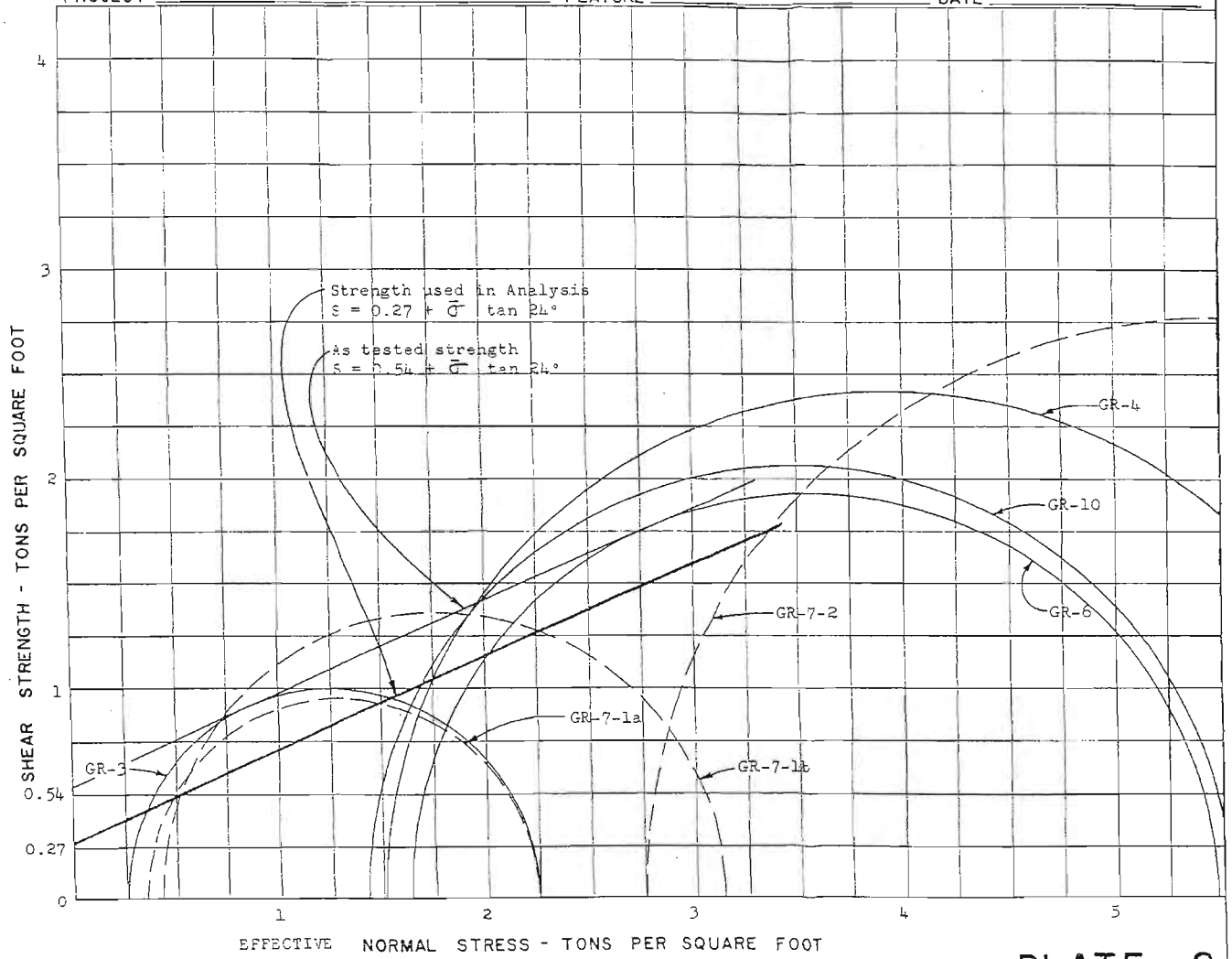
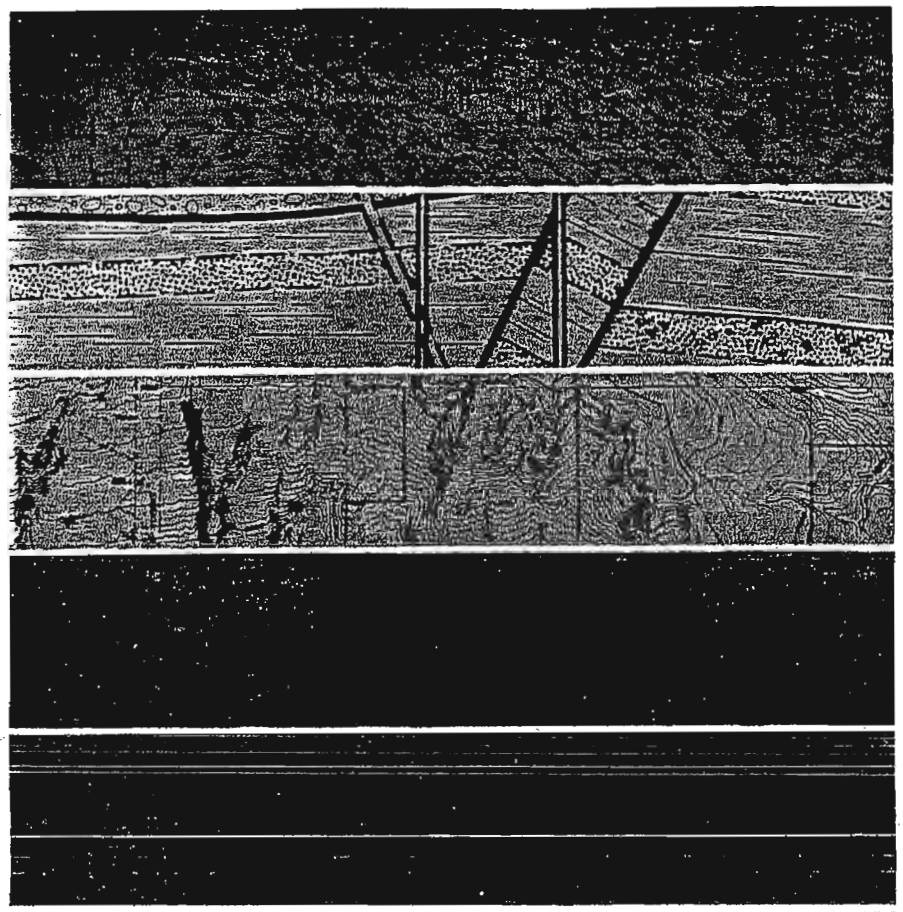


PLATE 2



REPORT - PHASE II
SEISMIC STABILITY INVESTIGATION
GARVEY RESERVOIR
MONTEREY PARK, CALIFORNIA
FOR THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

JOB NO. 02269-011-02
DECEMBER 28, 1981

CR
D&M
82-0031

Dames & Moore

SAMPLES

DISTURBED SAMPLE

■ INDICATES UNDISTURBED D & M SAMPLE
BLOWS/FT. INDICATES NO. OF BLOWS OF SLIP JARS FALLING 18-INCHES TO DRIVE SAMPLER 12-INCHES.

BORINGS 1-5: 530-LB.
BORING 6: 320-LB.

◪ STANDARD PENETRATION TESTS (SPT) BLOWS/FT. (N VALUES) INDICATES NO. OF BLOWS TO DRIVE SPT SAMPLER 12-INCHES USING 140-LB. WEIGHT FALLING 30-INCHES

LABORATORY TESTS

SA:	SIEVE ANALYSIS, WASH SIEVE
MA:	COMBINED SIEVE AND HYDROMETER
-200:	PERCENT FINES (PASSING #200 SIEVE)
Gs:	SPECIFIC GRAVITY
AL:	ATTERBERG LIMITS
DS/CD:	SLOW DIRECT SHEAR TESTS ON SAMPLES AT FIELD MOISTURE
TX/CD:	SLOW TRIAXIAL COMPRESSION TESTS ON SAMPLES AT FIELD MOISTURE
TX/ICU/LIQ:	STRESS-CONTROLLED CYCLIC TRIAXIAL COMPRESSION TESTS
TX/ICU/CY:	STRAIN-CONTROLLED CYCLIC TRIAXIAL COMPRESSION TESTS
RC:	RESONANT COLUMN TESTS

SOIL CLASSIFICATION CHART

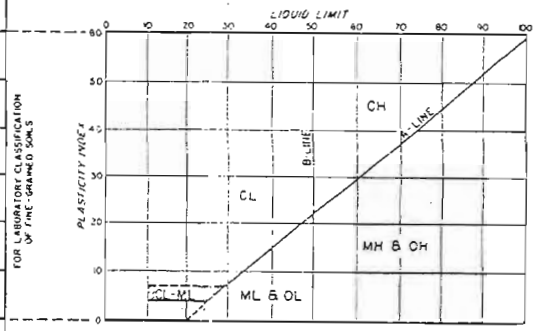
MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50 % OF MATERIAL IS LARGER THAN NO 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50 % OF COARSE FRACTION RETAINED ON NO 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO 4 SIEVE)	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50 % OF MATERIAL IS SMALLER THAN NO 200 SIEVE SIZE)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

GRADATION CHART

MATERIAL SIZE	PARTICLE SIZE			
	LOWER LIMIT		UPPER LIMIT	
	MILLIMETERS	SIEVE SIZE*	MILLIMETERS	SIEVE SIZE*
SAND				
FINE	0.074	#200*	0.42	#40*
MEDIUM	0.42	#40*	2.00	#10*
COARSE	2.00	#10*	4.76	#4*
GRAVEL				
FINE	4.76	#4*	19+	3/4"+
COARSE	19+	3/4"+	76.2	3"+
COBBLES	76.2	3"+	304.8	12"+
BOULDERS	304.8	12"+	914.4	36"

* U.S. STANDARD + CLEAR SQUARE OPENINGS

PLASTICITY CHART



NOTES:

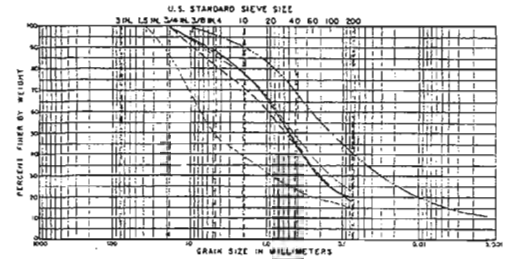
1. DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE CLASSIFICATIONS
2. WHEN SHOWN ON THE BORING LOGS, THE FOLLOWING TERMS ARE USED TO DESCRIBE THE CONSISTENCY OF COHESIVE SOILS AND THE RELATIVE COMPACTNESS OF COHESIONLESS SOILS

COHESIVE SOILS	(APPROXIMATE SHEAR STRENGTH IN KSF)	COHESIONLESS SOILS	"N" VALUE	RELATIVE DENSITY
VERY SOFT	LESS THAN .25	VERY LOOSE	0 TO 4	0 TO 15
SOFT	0.25 TO 0.5	LOOSE	4 TO 10	15 TO 35
MEDIUM STIFF	0.5 TO 1.0	MEDIUM DENSE	10 TO 30	35 TO 65
STIFF	1.0 TO 2.0	DENSE	30 TO 50	65 TO 85
VERY STIFF	2.0 TO 4.0	VERY DENSE	OVER 50	85 TO 100
HARD	GREATER THAN 4.0			

UNIFIED SOIL CLASSIFICATION SYSTEM

DAMES & MOO

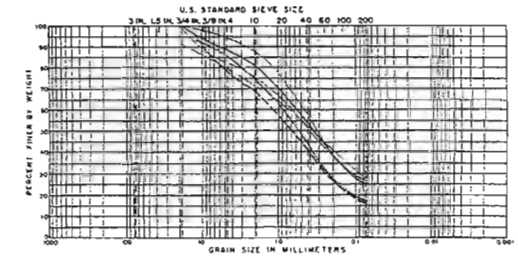
BORING	DEPTH		CLASSIFICATION	SYMBOL
1	8.5'	SM	GRAVELLY SILTY SAND	
1	24.5'	SM	GRAVELLY SILTY SAND	
1	40.5'	SM	GRAVELLY SILTY SAND	
1	56.5'	SM	GRAVELLY SILTY SAND	
1	68.7'	SM	GRAVELLY SILTY SAND	
1	72.5'	SM	GRAVELLY SILTY SAND	



BORING	DEPTH		CLASSIFICATION	SYMBOL
4	56.3'	SM	GRAVELLY SILTY SAND	
4	72.5'	SM	GRAVELLY SILTY SAND	
4	92.7'	SM	VERY SILTY FINE TO COARSE SAND	
4	96'	SM	GRAVELLY SILTY SAND	
4	112.5'	SM	GRAVELLY SILTY SAND	
5	16.5'	SM	GRAVELLY SILTY SAND	

BORING	DEPTH		CLASSIFICATION	SYMBOL
1	88.5'	SM	GRAVELLY SILTY SAND	
1	92.3'	SM	GRAVELLY SILTY SAND	
1	104.3'	SM	SILTY FINE SAND	
3	12.3'	SM	GRAVELLY SILTY SAND	
3	15.5'	SM	GRAVELLY SILTY SAND	
3	16.3'	SM/ML	SILTY SAND/SANDY SILT	

BORING	DEPTH		CLASSIFICATION	SYMBOL
5	32.5'	SM	GRAVELLY SILTY SAND	
5	38'	SM	SILTY FINE TO COARSE SAND	
5	44.6'	CL	SANDY SILTY CLAY	
5	56.5'	SM	GRAVELLY SILTY SAND	
5	60.2'	SM	SILTY FINE TO MEDIUM SAND	
6	8'	SM	SILTY SAND	



BORING	DEPTH		CLASSIFICATION	SYMBOL
4	3.5'	SM	GRAVELLY SILTY SAND	
4	12.7'	SM	GRAVELLY SILTY SAND	
4	20.7'	SM	GRAVELLY SILTY SAND	
4	24.5'	SM	GRAVELLY SILTY SAND	
4	40.5'	SM	GRAVELLY SILTY SAND	
4	52.3'	SM	GRAVELLY SILTY SAND	

BORING	DEPTH		CLASSIFICATION	SYMBOL
6	16'	SM	GRAVELLY SILTY SAND	
6	24'	SM	GRAVELLY SILTY SAND	
6	32'	SM	GRAVELLY SILTY SAND	
6	48'	SM	SILTY SAND	
7	4.2'	SM	GRAVELLY SILTY SAND	
7	12.2'	SM	SILTY SAND	

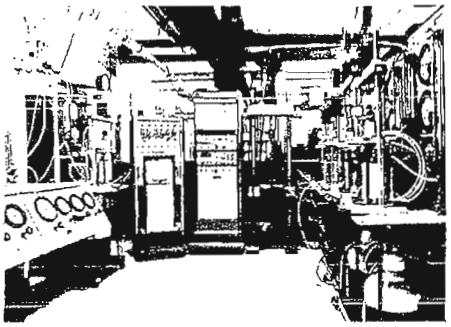
GRADATION CURVES

GARVEY RESERVOIR

DAMES & MOORE

PLATE 2-5

METHODS OF PERFORMING CYCLIC TRIAXIAL TESTS



CYCLIC TRIAXIAL TESTS ARE PERFORMED TO EVALUATE THE BEHAVIOR OF SOILS UNDER CYCLIC LOADS SUCH AS THOSE PRODUCED BY THE STRONG MOTION OF EARTHQUAKES. THE DAMES & MOORE CYCLIC TRIAXIAL EQUIPMENT IS BASED ON AN MTS CLOSED LOOP ELECTRO-HYDRAULIC TESTING SYSTEM. THIS SYSTEM COMPRISES A HYDRAULIC POWER SUPPLY, A CONTROLLER AND FUNCTION GENERATOR, AND A LOAD FRAME AND 10-KIP ACTUATOR. THIS SYSTEM PERMITS THE CONDUCT OF BOTH STRESS AND STRAIN-CONTROLLED TESTS OVER A RANGE OF AMPLITUDES AND FREQUENCIES. THE AXIAL LOAD AND DEFORMATION ARE MONITORED BY A LOAD CELL AND LVDT, RESPECTIVELY, AND THE PORE PRESSURE IS MONITORED BY A TRANSDUCER MOUNTED IN THE BASE OF THE TRIAXIAL CHAMBER. SAMPLES MAY BE CONSOLIDATED UNDER ISOTROPIC OR ANISOTROPIC CONFINING STRESSES AND MAY BE FULLY SATURATED UNDER BACK PRESSURE.

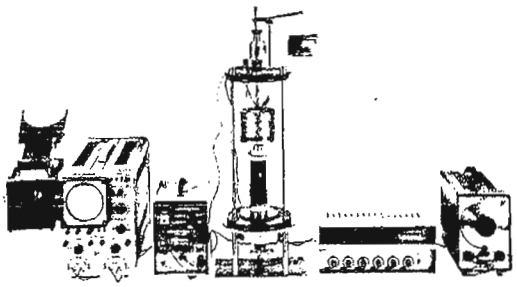
DYNAMIC PROPERTIES TESTS

THE MODULI AND DAMPING RATIOS OF SOILS ARE STRAIN DEPENDENT AND ARE USUALLY DETERMINED IN TESTS CONDUCTED WITH UNIFORM CYCLIC STRAINS. THE HYSTERETIC STRESS-STRAIN RELATIONSHIP IS DISPLAYED BY PLOTTING THE OUTPUTS OF THE LOAD CELL AND LVDT ON AN X-Y RECORDER.

LIQUEFACTION TESTS

THE BEHAVIOR OF SOILS WHICH ARE SUSCEPTIBLE TO LIQUEFACTION OR LOSS OF STRENGTH AS A RESULT OF CYCLIC LOADING IS EVALUATED IN TESTS CONDUCTED WITH UNIFORM CYCLIC STRESSES. THE INCREASES IN PORE PRESSURES AND CYCLIC STRAINS ARE OBSERVED ON A STRIP CHART RECORDER. THE STRENGTH OF THE SAMPLE FOLLOWING CYCLIC LOADING MAY BE DETERMINED BY APPLYING A MONOTONICALLY INCREASING AXIAL STRESS OR STRAIN.

METHODS OF PERFORMING RESONANT COLUMN TESTS



RESONANT COLUMN TESTS ARE PERFORMED TO EVALUATE THE DYNAMIC PROPERTIES OF THE SOIL OR ROCK SAMPLES, UTILIZING THE RESONANT COLUMN APPARATUS. A CYLINDRICAL COLUMN OF SOIL OR ROCK IS SUBJECTED TO A STEADY STATE SINUSOIDAL FORCING FUNCTION, WHICH STRESSES THE SAMPLE IN TORSION. THE FREQUENCY OF THE APPLIED FORCE IS VARIED UNTIL THE RESONANT FREQUENCY OF THE SOIL APPARATUS SYSTEM IS OBTAINED. THE RESONANT FREQUENCY IS THAT WHICH PRODUCES THE MAXIMUM AMPLITUDE OF OUTPUT RECORDED. THE RESONANT FREQUENCY THUS OBTAINED IS RELATED TO THE TORSIONAL SHEAR MODULUS OF THE MATERIAL TESTED.

RESONANT COLUMN TESTS ARE PERFORMED ON UNDISTURBED OR RECONSTITUTED CYLINDRICAL SAMPLES OF SOIL APPROXIMATELY 6 INCHES IN LENGTH AND 2½ INCHES IN DIAMETER. THE SAMPLES ARE ENCASED IN A RUBBER MEMBRANE AND PLACED IN A TEST CHAMBER. THE TESTS MAY BE PERFORMED CONFINED OR UNCONFINED ON SOILS AT FIELD MOISTURE OR ON ARTIFICIALLY SATURATED SAMPLES. THE APPARATUS EMPLOYS A VIBRATION EXCITATION DEVICE, POWERED BY A VARIABLE FREQUENCY SINE WAVE GENERATOR WHICH APPLIES A FORCING TORQUE TO THE FREE END OF THE SPECIMEN. THE RESULTING VIBRATIONS ARE MEASURED BY AN ACCELEROMETER WHICH PRODUCES A CALIBRATED OUTPUT THAT IS A MEASURE OF THE ANGULAR ACCELERATION OF THE FREE END OF THE SPECIMEN. THE SINUSOIDAL VOLTAGE USED TO PRODUCE THE FORCING TORQUE AND THE OUTPUT OF THE ACCELEROMETER ARE DISPLAYED ON THE X-Y AXES OF THE OSCILLOSCOPE RESULTING IN ELLIPTICAL CONFIGURATIONS FOR ASSOCIATED FREQUENCIES. THESE ELLIPTICAL LOOPS ARE PHOTOGRAPHED AND EVALUATED TO DETERMINE THE DAMPING CHARACTERISTICS OF THE SAMPLES TESTED.

DYNAMIC TEST METHODS

DAMES & MOORE

PLATE 2-6

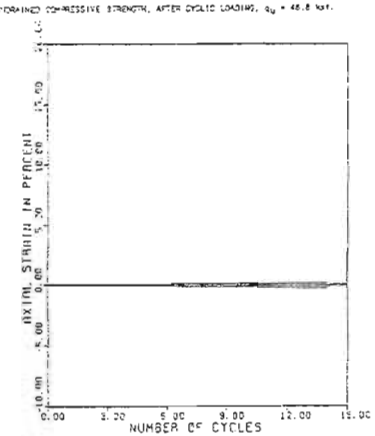
05/06/80

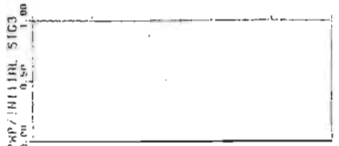
GARVEY RESERVOIR 02269-011-02 B-1, S-1AB AT 48.7FT
BROWN SILTY SAND WITH SOME GRAVEL, SATURATED

SAMPLE HEIGHT	=	5.97	IN
SAMPLE DIAMETER	=	2.41	IN
INITIAL DRY DENSITY	=	125.3	PCF
MOISTURE CONTENT	=	11.3	PERCENT
SATURATED	=		YES
DRY DENSITY AFTER CONSOL	=	127.7	PCF
MOISTURE CONTENT	=	14.8	PERCENT
SIG1	=	9214.	PSF
SIG3	=	9214.	PSF
KC	=	1.00	
SIGMEAN	=	9216.	PSF

CYCLE NO.	PORE PRESS (PSF)	PWP/ SIG3	CYCLIC SHEAR STRESS COMP	TENS	CUM AVE	TAU/ SIGMEAN	AXIAL STRAIN P-P (PERCENT)	MEAN
1	25.	.00	2377.	-2346.	2362.	.26	.26	0.00
3	24.	.00	2377.	-2346.	2362.	.26	.14	0.00
5	25.	.00	2377.	-2346.	2362.	.26	.14	0.00
7	24.	.00	2377.	-2346.	2362.	.26	.27	0.00
9	24.	.00	2377.	-2346.	2362.	.26	.27	0.00
11	24.	.00	2377.	-2346.	2362.	.26	.27	0.00
13	24.	.00	2377.	-2346.	2362.	.26	.41	0.00
14	24.	.00	2377.	-2346.	2362.	.26	.41	0.00

UNDRAINED COMPRESSIVE STRENGTH, AFTER CYCLIC LOADING, q_u = 48.8 PSF.





CONTROLLED-STRESS CYCLIC TRIAXIAL TEST

02269-011-02 B-1, S-1AB AT 48.7FT

05/06/80

BORING	DEPTH	CLASSIFICATION	
1	48.7'	SM	GRAVELLY SILTY SAND

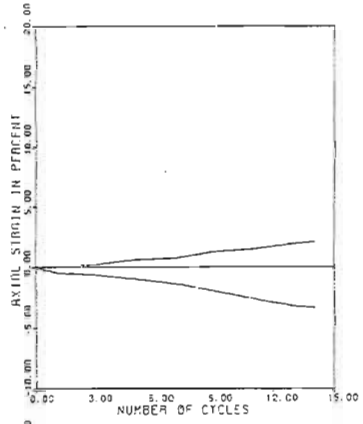
05/06/80

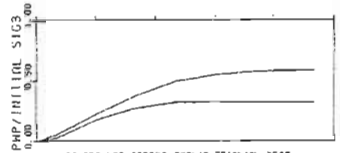
GARVEY RESERVOIR 02269-011-02 B-1, S-24A AT 92.3FT
BROWN GRAVELLY SAND WITH SOME SILT, SATURATED

SAMPLE HEIGHT	=	6.33	IN
SAMPLE DIAMETER	=	2.42	IN
INITIAL DRY DENSITY	=	126.4	PCF
MOISTURE CONTENT	=	10.5	PERCENT
SATURATED	=		YES
DRY DENSITY AFTER CONSOL	=	130.6	PCF
MOISTURE CONTENT	=	10.1	PERCENT
SIG1	=	10512.	PSF
SIG3	=	10512.	PSF
KC	=	1.00	
SIGMEAN	=	10512.	PSF

CYCLE NO.	PORE PRESS (PSF)	PWP/ SIG3	CYCLIC SHEAR STRESS COMP	TENS	CUM AVE	TAU/ SIGMEAN	AXIAL STRAIN P-P (PERCENT)	MEAN
1	576.	.05	3314.	-3314.	3314.	.32	.53	-.20
3	2364.	.22	3314.	-3314.	3314.	.32	.67	-.23
5	3946.	.38	3314.	-3314.	3314.	.32	1.60	-.29
7	5242.	.50	3314.	-3314.	3314.	.32	2.14	-.33
9	5766.	.55	3314.	-3314.	3314.	.32	3.27	-.37
11	6046.	.58	3330.	-3314.	3315.	.32	4.08	-.57
13	6134.	.58	3345.	-3314.	3317.	.32	5.15	-.63
14	6192.	.59	3345.	-3339.	3319.	.32	5.41	-.63

UNDRAINED COMPRESSIVE STRENGTH, AFTER CYCLIC LOADING, q_u = 35.1 PSF.





CONTROLLED-STRESS CYCLIC TRIAXIAL TEST

02269-011-02 B-1, S-24A AT 92.3FT

05/06/80

BORING	DEPTH	CLASSIFICATION	
1	92.3'	SM	GRAVELLY SILTY SAND

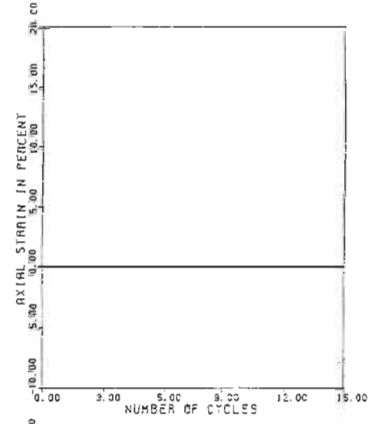
05/06/80

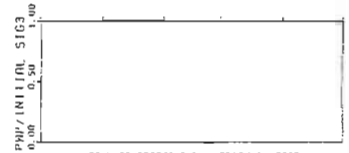
GARVEY RESERVOIR 02269-011-02 B-3, S-3 AT 12.3FT
LIGHT BROWN SILTY SAND WITH SOME GRAVEL, UNSATURATED

SAMPLE HEIGHT	=	5.98	IN
SAMPLE DIAMETER	=	2.42	IN
INITIAL DRY DENSITY	=	123.4	PCF
MOISTURE CONTENT	=	11.2	PERCENT
SATURATED	=		NO
DRY DENSITY AFTER CONSOL	=	123.7	PCF
MOISTURE CONTENT	=	10.6	PERCENT
SIG1	=	1724.	PSF
SIG3	=	1724.	PSF
KC	=	1.00	
SIGMEAN	=	1724.	PSF

CYCLE NO.	PORE PRESS (PSF)	PWP/ SIG3	CYCLIC SHEAR STRESS COMP	TENS	CUM AVE	TAU/ SIGMEAN	AXIAL STRAIN P-P (PERCENT)	MEAN
1	0.	0.00	574.	-562.	569.	.33	.13	0.00
3	0.	0.00	574.	-569.	569.	.33	.13	0.00
5	0.	0.00	577.	-565.	570.	.33	.13	0.00
7	0.	0.00	580.	-565.	571.	.33	.13	0.00
9	0.	0.00	584.	-566.	572.	.33	.13	0.00
11	0.	0.00	584.	-568.	572.	.33	.13	0.00
13	0.	0.00	584.	-565.	573.	.33	.13	0.00
14	0.	0.00	584.	-565.	573.	.33	.13	0.00

UNDRAINED COMPRESSIVE STRENGTH, AFTER CYCLIC LOADING, q_u = 11.9 PSI.

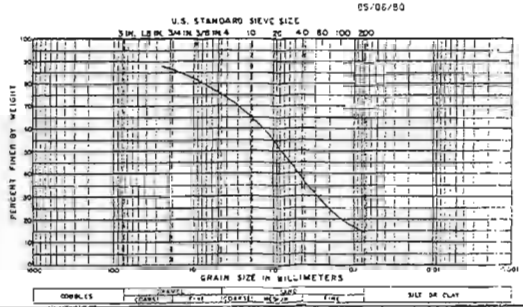




CONTROLLED-STRESS CYCLIC TRIAXIAL TEST

02269-011-02 B-3, S-3 AT 12.3FT

05/06/80



BORING	DEPTH	CLASSIFICATION	
3	12.3'	SM	GRAVELLY SILTY SAND

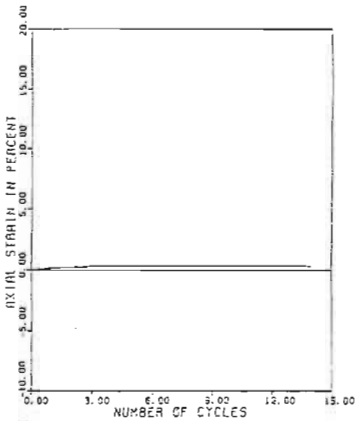
05/06/80

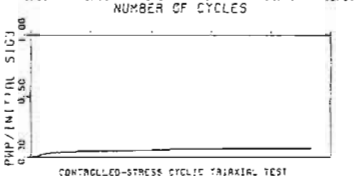
GARVEY RESERVOIR 02269-011-02 B-3, S-11 AT 44.3FT
LIGHT BROWN SILTY SAND, SLIGHTLY CEMENTED, SATURATED

SAMPLE HEIGHT	=	6.00 IN
SAMPLE DIAMETER	=	2.42 IN
INITIAL DRY DENSITY	=	101.8 PCF
MOISTURE CONTENT	=	22.9 PERCENT
SATURATED	=	YES
DRY DENSITY AFTER CONSOL	=	103.4 PCF
MOISTURE CONTENT	=	23.0 PERCENT
SIG1	=	6044. PSF
SIG3	=	6049. PSF
KC	=	1.00
SIGMEAN	=	6044. PSF

CYCLE NO.	PORE PRESS (PSF)	PWP/ SIG3	CYCLIC SHEAR STRESS COMP	TENS (PSF)	CUM AVE	TAU/ SIGMEAN	AXIAL STRAIN P-P	MEAN (PERCENT)
1	216.	.04	1581.	-1558.	1569.	.26	.20	.10
3	302.	.05	1581.	-1558.	1569.	.26	.27	.13
5	331.	.05	1581.	-1558.	1569.	.26	.34	.17
7	374.	.06	1589.	-1555.	1570.	.26	.34	.17
9	418.	.07	1589.	-1558.	1571.	.26	.34	.17
11	432.	.07	1589.	-1558.	1571.	.26	.34	.17
13	432.	.07	1589.	-1558.	1572.	.26	.34	.17
14	446.	.07	1589.	-1558.	1572.	.26	.34	.17

UNDRAINED COMPRESSIVE STRENGTH, AFTER CYCLIC LOADING, q_u = 27.2 ksf.

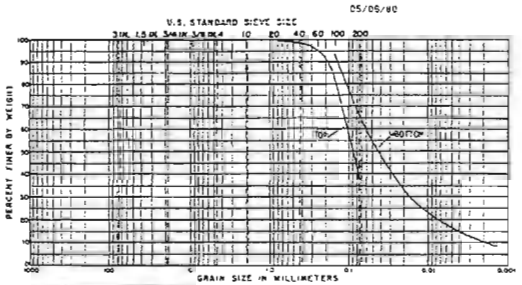




CONTROLLED-STRESS CYCLIC TRIAXIAL TEST

02269-011-02 B-3, S-11 AT 44.3FT

05/06/80



BORING	DEPTH	CLASSIFICATION
3	44.3'	SM/ML SILTY SAND/SANDY SILT

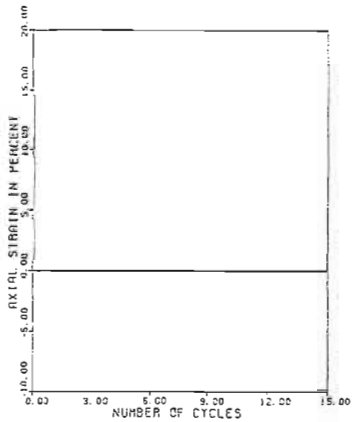
05/06/80

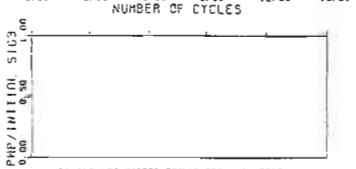
GARVEY RESERVOIR 02269-011-02 B-4, S-13 AT 52.3FT
LIGHT BROWN SILTY SAND WITH SOME CLAY AND GRAVEL, UNSATURATED

SAMPLE HEIGHT	=	6.00 IN
SAMPLE DIAMETER	=	2.42 IN
INITIAL DRY DENSITY	=	125.3 PCF
MOISTURE CONTENT	=	11.1 PERCENT
SATURATED	=	NO
DRY DENSITY AFTER CONSOL	=	126.2 PCF
MOISTURE CONTENT	=	10.4 PERCENT
SIG1	=	7205. PSF
SIG3	=	7204. PSF
KC	=	1.00
SIGMEAN	=	7205. PSF

CYCLE NO.	PORE PRESS (PSF)	PWP/ SIG3	CYCLIC SHEAR STRESS COMP	TENS (PSF)	CUM AVE	TAU/ SIGMEAN	AXIAL STRAIN P-P	MEAN (PERCENT)
1	0.	0.00	1819.	-1819.	1819.	.25	.13	0.00
3	0.	0.00	1819.	-1819.	1819.	.25	.13	0.00
5	0.	0.00	1819.	-1819.	1819.	.25	.13	0.00
7	0.	0.00	1819.	-1819.	1819.	.25	.13	0.00
9	0.	0.00	1819.	-1819.	1819.	.25	.13	0.00
11	0.	0.00	1819.	-1819.	1819.	.25	.13	0.00
13	0.	0.00	1819.	-1819.	1819.	.25	.13	0.00
14	0.	0.00	1819.	-1819.	1819.	.25	.13	0.00

UNDRAINED COMPRESSIVE STRENGTH, AFTER CYCLIC LOADING, q_u = 25.2 ksf.

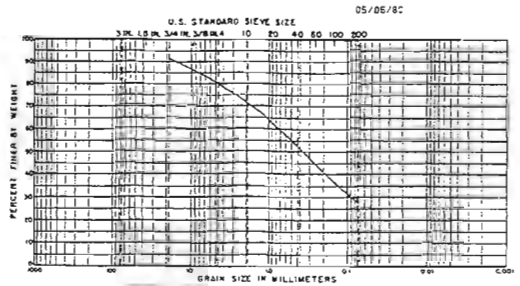




CONTROLLED-STRESS CYCLIC TRIAXIAL TEST

02269-011-02 B-4, S-13 AT 52.3FT

05/06/80



BORING	DEPTH	CLASSIFICATION
4	52.3'	SM GRAVELLY SILTY SAND

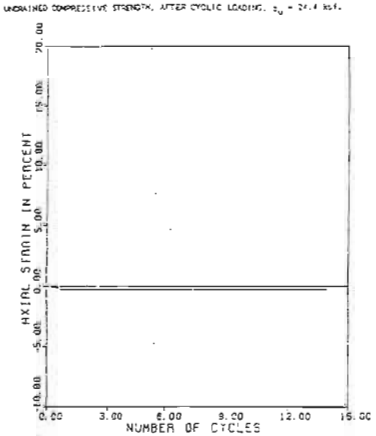
05/06/80

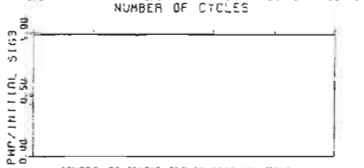
GARVEY RESERVOIR 02269-011-02 B-5, S-9A AT 36.0FT
LIGHT BROWN SILTY SAND WITH SOME GRAVEL, UNSATURATED

SAMPLE HEIGHT	=	6.00 IN
SAMPLE DIAMETER	=	2.42 IN
INITIAL DRY DENSITY	=	123.6 PCF
MOISTURE CONTENT	=	11.2 PERCENT
SATURATED	=	NO
DRY DENSITY AFTER CONSOL	=	123.8 PCF
MOISTURE CONTENT	=	9.6 PERCENT
SIG1	=	4320. PSF
SIG3	=	4320. PSF
KC	=	1.00
SIGMEAN	=	4320. PSF

CYCLE NO.	PORE PRESS (PSF)	PWP/ SIG3	CYCLIC SHEAR STRESS COMP	TENS (PSF)	CUM AVE	TAU/ SIGMEAN	AXIAL STRAIN P-P	MEAN (PERCENT)
1	0.	0.00	1326.	-1326.	1326.	.31	.27	-.13
3	0.	0.00	1326.	-1326.	1326.	.31	.27	-.13
5	0.	0.00	1326.	-1326.	1326.	.31	.27	-.13
7	0.	0.00	1326.	-1326.	1326.	.31	.27	-.13
9	0.	0.00	1326.	-1326.	1326.	.31	.27	-.13
11	0.	0.00	1326.	-1326.	1326.	.31	.27	-.13
13	0.	0.00	1326.	-1326.	1326.	.31	.27	-.13
14	0.	0.00	1326.	-1326.	1326.	.31	.27	-.13

UNDRAINED COMPRESSIVE STRENGTH, AFTER CYCLIC LOADING, q_u = 24.4 ksf.

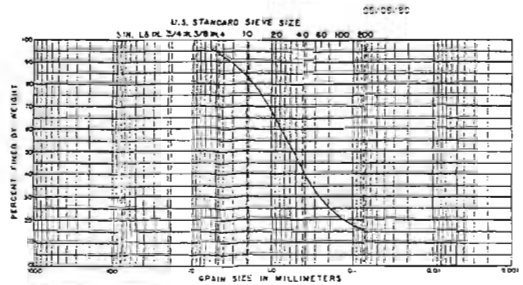




CONTROLLED-STRESS CYCLIC TRIAXIAL TEST

02269-011-02 B-5, S-9A AT 36.0FT

05/06/80



BORING	DEPTH	CLASSIFICATION
5	36.0'	SM SILTY FINE TO COARSE SAND

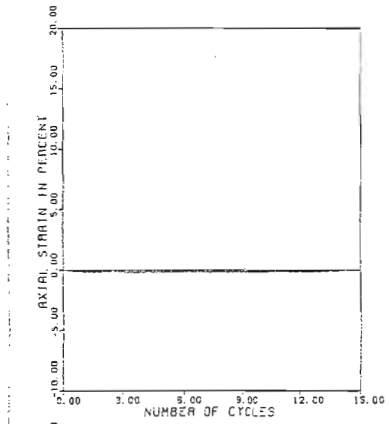
05/06/80

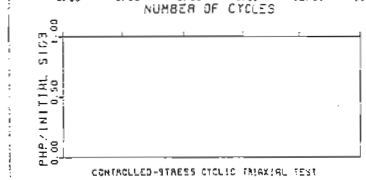
GARVEY RESERVOIR 02269-011-02 B-5, S-118 AT 44.6FT
BROWN CLAYEY SILT WITH SOME SAND, UNSATURATED

SAMPLE HEIGHT	=	5.95	IN
SAMPLE DIAMETER	=	2.41	IN
INITIAL DRY DENSITY	=	114.1	PCF
MOISTURE CONTENT	=	17.5	PERCENT
SATURATED	=		NO
DRY DENSITY AFTER CONSOL	=	114.2	PCF
MOISTURE CONTENT	=	17.2	PERCENT
SIGI	=	6044.	PSF
SIG3	=	6048.	PSF
KC	=	1.00	
SIGMEAN	=	6046.	PSF

CYCLE NO.	PORE PRESS (PSF)	PWP/ SIG3	CYCLIC COMP	SHEAR STRESS TENS (PSF)	SHEAR STRESS CYM AVE	TAU/ SIGMEAN	AXIAL STRAIN AMP (PERCENT)	AXIAL STRAIN MEAN (PERCENT)
1	0.	0.00	1550.	-1510.	1530.	.25	.13	-.07
3	0.	0.00	1550.	-1510.	1530.	.25	.13	-.07
5	0.	0.00	1550.	-1510.	1530.	.25	.13	-.07
7	0.	0.00	1550.	-1510.	1530.	.25	.13	-.07
9	0.	0.00	1550.	-1510.	1530.	.25	.13	-.07
11	0.	0.00	1550.	-1510.	1530.	.25	.13	-.07
13	0.	0.00	1550.	-1510.	1530.	.25	.13	-.07
14	0.	0.00	1550.	-1510.	1530.	.25	.13	-.07

UNDRAINED COMPRESSIVE STRENGTH, AFTER CYCLIC LOADING. q_u = 17.5 ksf.

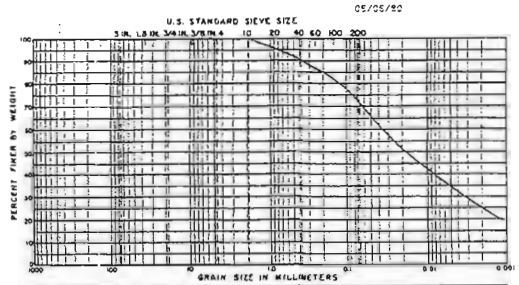




CONTROLLED-STRESS CYCLIC TRIAXIAL TEST

02259-011-02 B-5, S-118 AT 44.5FT

05/05/80

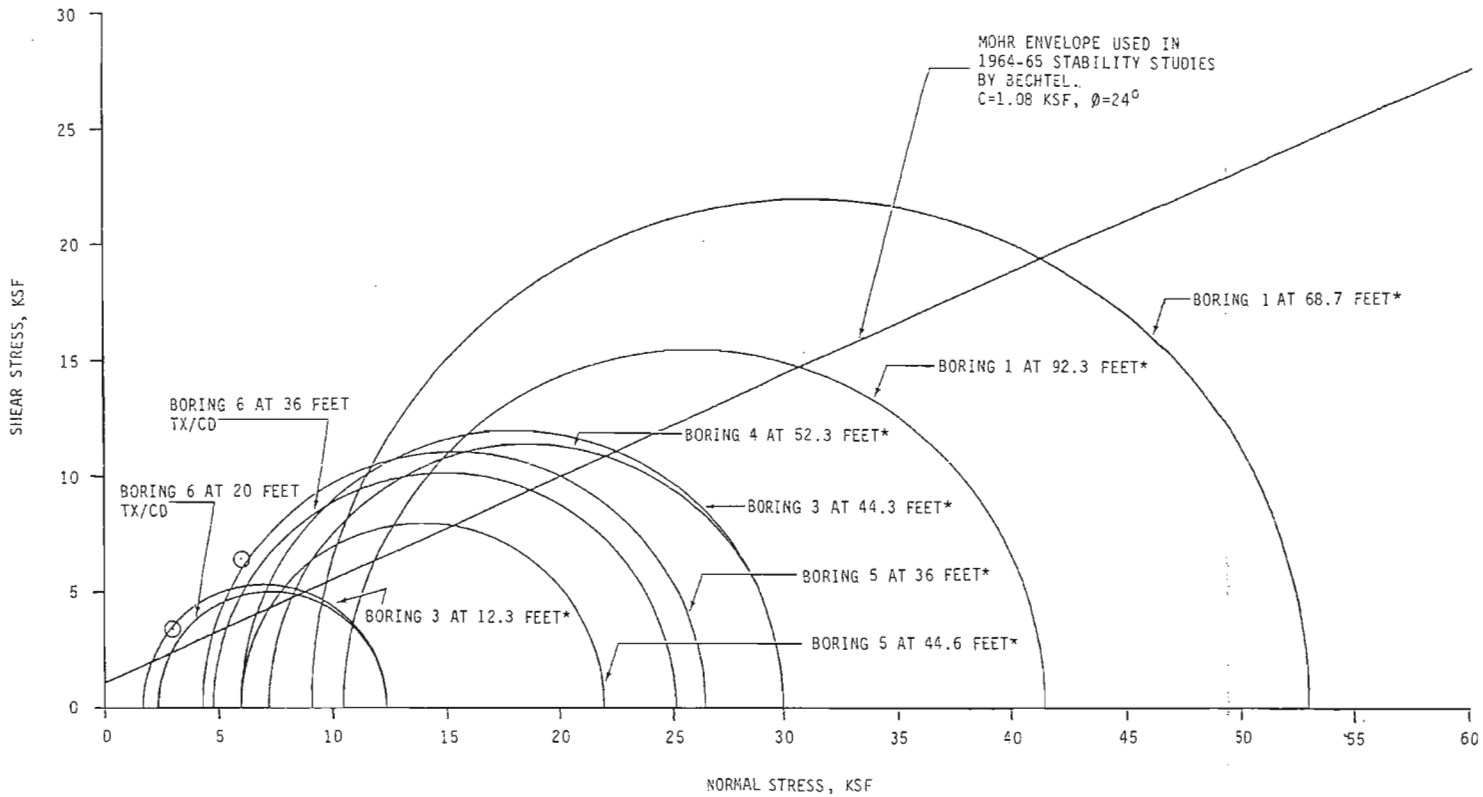


BORING	DEPTH	CLASSIFICATION	
5	44.5'	CL	SANDY SILTY CLAY

RESULTS OF STRESS - CONTROLLED CYCLIC TRIAXIAL TESTS

GARVEY RESERVOIR

DAMES & MOORE



STATIC STRENGTH RESULTS

GARVEY RESERVOIR

*STATIC UNDRAINED SHEAR STRENGTH AFTER CYCLIC LOADING
⊙"DS/CD" TESTS, BORING 6 AT 44 FEET, FIELD MOISTURE

DAMES & MOORE

PLATE 2.8

MWD CENTRAL LIBRARY
RP004850

Investigation and Evaluation of Cracking

Garvey Reservoir

Monterey Park, California

Volume II - Appendices A, B, and C

2/5/91

Prepared for

METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

CR-91
000003

January 1991

WAHLER ASSOCIATES
Consulting Geotechnical Engineers

Project MWD-266A

APPENDIX C

LABORATORY INVESTIGATION

A. INTRODUCTION

This appendix includes a discussion of test procedures and results of the laboratory investigation performed by Wahler Associates for Garvey Reservoir. The investigation program was carried out employing, in most cases, currently accepted test procedures of the American Society of Testing and Materials (ASTM).

Undisturbed thin wall tube samples used in the laboratory investigation were obtained during the course of the field investigation as described in Appendix A of this report. Identification of each sample is by hole number, sample number, and depth. In addition, three large composite samples for compaction and permeability testing were made in the laboratory by combining a number of similar tube samples. These are identified as DH-2 Composite, DH-4 Composite and DH-5 Composite. The components of these composite samples are as follows:

DH-2 Composite:	S-11,S-12,S-13,S-15,S-16 and S-18
DH-4 Composite:	S-5,S-6,S-7,S-8,S-9,S-11,S-12,S-13, S-14,S-15 and S-16
DH-5 Composite:	S-4,S-5,S-6,S-7,S-8,S-10,S-11,S-12 S-13,S-14,S-15,S-16 and S-17

Following the Wahler test results are the results of laboratory testing performed by MWD on bag samples obtained from the bucket auger holes and trenches excavated during the initial part of the field investigation. Results of mineralogical testing performed by Asbestos TEM Laboratories, Inc. and results of tests performed on the asphalt concrete liner by LeRoy Crandall and Associates also follow.

B. INDEX PROPERTIES TESTING

In the field of soil mechanics and earth dam design, it is advantageous to have a standard method of identifying soils and classifying them into categories or groups that have similar or distinct engineering properties. The most commonly used method of identifying and classifying soils according to their engineering properties is the Unified Soil Classification System (USCS), as described by ASTM D2487-83. The USCS is based on a recognition of the various types and significant distribution of soil characteristics, and plasticity of materials.

The index properties tests discussed in this report include the determination of natural water content and in-place dry density, grain-size distribution, Atterberg limits and specific gravity.

1. Natural Water Content and Dry Density

Natural water content and dry density were determined, often in conjunction with other tests, on selected undisturbed tube samples. The samples were extruded and visually classified, trimmed to obtain a smooth flat face, and accurately measured to obtain volume and wet weight. The samples were then dried, in accordance with ASTM D2216-80, for a period of 24 hours in an oven maintained at a temperature of 110°C. After drying, the weight of each sample was determined and the moisture content and dry density calculated. Some of the samples were too disturbed to obtain an accurate volume measurement or were sieve analysis tests only and thus were tested for water content only. All the water content and dry density results are summarized in Tables C-1 and C-2, and are also shown with the various other index and engineering properties test results.

2. Grain-Size Distribution

The gradation characteristics of selected samples were determined in accordance with ASTM D422-63 and USBR E-6, except as modified below. Representative samples were obtained and soaked in water until individual soil particles were separated and then washed on the No. 200 mesh sieve. That

portion of the material retained on the No. 200 mesh sieve was oven-dried and then mechanically sieved. A hydrometer analysis was performed on a representative portion of the minus No. 200 mesh material of those samples with significant fines. The hydrometer test was run in a constant-temperature hydrometer bath using sodium hexametaphosphate as a dispersing agent. The grain-size distribution tests are presented on Figures C-1 through C-21. In addition, selected samples were tested for percent passing the No. 200 sieve. These results appear on Table C-3.

3. Atterberg Limits

Liquid and plastic limits were determined on selected samples in accordance with ASTM Designation D4318-84, except as modified below. Some of the samples were too silty to make a groove without tearing. In those cases, the old ASTM groove tool was used with care taken that the groove height did not exceed 1 cm. Results of the Atterberg limits tests are summarized on Figure C-22 through C-24.

4. Specific Gravity

Specific gravity determinations were made on selected samples in accordance with ASTM D854-83 and Soil Testing for Engineers by T. William Lambe. The specific gravity test results are shown in Table C-4.

C. ENGINEERING PROPERTIES TESTING

The engineering properties testing consisted of compaction, consolidation/saturation tests, permeability testing and pinhole dispersion.

1. Compaction Testing

Compaction tests were performed to determine the moisture-density relationship of selected materials. The tests were performed in accordance with ASTM Designation D1557-78, Method A (4-inch mold), modified to minus 3/4-inch sieve size material and to yield 20,000 foot-pounds per cubic foot

(ft-lb/ft^3) by reducing the number of layers to three and the number of blows per layer to 15. The compaction results are presented on Figure C-25.

2. Consolidation/Saturation Tests

Consolidation/saturation tests were performed on selected undisturbed samples. The samples were trimmed into consolidation rings, placed in consolidometers, and incrementally loaded to 8,000 or 16,000 psf. After they had consolidated, they were flooded with water and observed. Sample deformation was measured to 0.0001-inch. Results of the consolidation/saturation tests are presented in Table C-5.

3. Permeability Testing

Permeability coefficients were determined on selected samples in accordance with the Corps of Engineers Test Method EM110-2-1906.

a. Sample Preparation - The testing was performed on either samples fabricated in the laboratory or undisturbed samples.

1. Laboratory Fabricated Samples - The samples were moisture conditioned to approximately optimum plus one percent moisture content and allowed to cure. Sample fabrication was performed in a 2.8-inch-diameter mold, using the rounded end of a 1/2-inch-diameter tamper which was used to knead the sample until a given weight of soil occupied a known volume. The samples were compacted to approximately 95 percent compaction in three equal layers with care being taken to scarify each compacted surface in order to preclude preferential bonding or laminae developing between layers.

2. Undisturbed Samples - Samples selected for testing were extruded from the tubes using a hydraulically operated ram capable of exerting the minimum force necessary to free the sample from the tube. The ends of the samples were then trimmed with the aid of a special trimming device which completely supported the sample.

After the initial weight and volume measurements were determined, each specimen was placed in a permeability cell, encased in a latex membrane and sealed to the bottom pedestal and top cap with rubber "O" rings. After securing the chamber, the cell was filled with water and transported to the saturation bay.

b. Sample Saturation and Consolidation - The laboratory is equipped with a panel of nine bays, with individual pressure control to each bay, such that nine samples can be simultaneously saturated and/or consolidated at different individual pressures. Bleeding air regulators capable of delivering air pressure up to 135 psi are used to control the top, bottom, and chamber lines leading to the permeability cells. Each saturation bay is also equipped with constant diameter Pyrex sight tubes, each with a cross-sectional area of 0.075 square inch, which connect with the base of the cell, and thus to the sample. The sight tubes are easily read to the nearest 0.01 cubic inch.

The samples were saturated using a combination vacuum-back pressure technique. A small vacuum was applied to increase the initial saturation without a change in void ratio. A back pressure of 50 psi was then incrementally applied to obtain a sufficient degree of saturation prior to the consolidation phase of the test. In order to determine whether the back pressure applied was causing complete saturation, Skempton's "B" parameter was measured for all samples. A value in excess of 0.95 was considered to represent a fully saturated condition. After achieving complete saturation, the chamber pressure was increased above the back pressure to the designated consolidation pressure. The top and bottom drainage lines were then simultaneously opened, and the total volume of water expelled from each sample was monitored.

c. Permeability - Permeability coefficients were determined on the specimens by applying a constant head hydraulic gradient and monitoring the flow of water from bottom to top of the samples through calibrated constant diameter sight tubes as a function of time. The permeability test results are presented in Tables C-6 and C-7.

4. Pinhole Dispersion Testing

The dispersion characteristics of selected samples were determined in accordance with ASTM D4647-87, Method B and The Pinhole Test For Identifying Dispersive Soils by James L. Sherard. In addition, because of the amount of sand contained in the materials, the tests on two samples were repeated using minus No. 40 sieve size instead of the standard minus No. 10 sieve size. The results of the pinhole dispersion tests are presented in Table C-8.

With the exception of one sample (DH-5, S-11), materials tested did not meet the overall gradation and plasticity requirements for performing the pinhole test according to the standard test procedures and as noted in Table C-8. Because of the characteristic sandy and low plasticity properties of the materials, many difficulties were experienced in running the pinhole dispersion tests according to the standard test methods. Observations made during performance of the pinhole tests that show abnormal behavior of the sample or test characteristics, as related to typical results expected when testing a clay for dispersivity are listed below:

- Relatively high permeability and flow through the sample itself.
- Significant erosion of the downstream side of the sample.
- A much larger hole diameter at completion of the test than is typical for a highly dispersive clay (up to three times the original hole diameter as opposed to more typically 1.5 to 2 times), suggesting significant mechanical erosion of sand particles.
- Plugging of the pinhole during the test, and liquefaction and collapse of the sample.

Most of these atypical events occurred during testing of most of the samples, including the siltstone sample (DH-5, S-11).

TABLE C-1

NATURAL WATER CONTENT AND DRY DENSITY DATA
FOUNDATION MATERIALS

Hole No.	Sample No.	Depth (feet)	Water Content (%)	Dry Density (pcf)
DH-1	S-4	10.5-12.8	15.3	112.1
	S-6	30.0-32.5	11.7	--
	S-8	50.0-50.8	9.6	120.1
	S-11	65.5-66.7	8.9	122.1
	S-14	68.5-69.5	6.7	129.7
	S-17	80.0-81.3	22.4	101.1
	S-18	90.0-90.7	8.0	123.1
	S-23	120.0-121.1	11.3	123.5
DH-2	S-2	8.5-11.0	17.0	106.9
	S-7	50.0-51.8	10.4	125.2
	S-9	70.0-71.1	12.4	114.0
	S-11	81.6-83.6	10.5	118.9
	S-12	86.5-88.0	10.7	114.3
	S-13	92.0-93.5	13.5	120.2
	S-14	97.0-98.5	9.3	--
	S-15	102.0-103.0	11.4	113.8
	S-16	105.0-107.5	13.2	--
	S-17	107.5-110.0	10.2	--
	S-18	110.0-112.5	13.2	113.2
DH-3	S-3	10.5-12.0	11.0	121.6
	S-6	30.0-31.9	15.8	104.5
	S-8	50.0-51.3	12.0	109.4
	S-11	70.0-71.6	13.6	109.9
	S-16	95.0-96.5	8.6	116.2
DH-4	S-2	20.0-22.5	16.9	111.3
	S-5	44.0-46.5	15.4	110.6
	S-6	50.0-52.5	14.5	112.5
	S-8	62.0-63.0	10.3	114.0
	S-11	65.9-67.1	10.9	118.4
	S-16	80.0-82.0	11.5	120.9
	S-18	90.0-91.6	21.2	103.6
DH-5	S-2	16.5-19.0	11.5	115.9
	S-4	34.0-35.5	10.3	123.2
	S-7	43.5-46.0	15.4	107.7
	S-9	47.5-50.0	21.7	101.9
	S-11	60.0-62.5	22.1	90.8
	S-14	75.0-77.5	14.5	110.9
	S-17	90.0-92.5	11.9	115.7

TABLE C-1 (Continued)

NATURAL WATER CONTENT AND DRY DENSITY DATA
FOUNDATION MATERIALS

Hole No.	Sample No.	Depth (feet)	Water Content (%)	Dry Density (pcf)
DH-6	S-2	20.9-22.5	20.2	96.3
	S-4	40.0-41.4	18.0	98.5
	S-7	70.0-71.7	13.2	111.4
	S-10	100.0-102.5	10.7	123.8
	S-12	120.0-121.7	17.5	106.0
	S-14	139.0-141.0	6.8	125.0
DH-7	S-7	60.0-62.2	15.1	106.3
	S-9	72.0-74.5	26.6	92.4
	S-10	80.0-80.9	10.4	122.6
	S-13	110.0-112.5	10.4	122.8
	S-14	120.0-122.5	9.2	121.4
	S-17	140.0-140.9	7.6	127.0
DH-8	S-2	20.0-22.5	24.8	96.1
	S-5	50.0-51.1	12.7	119.0
	S-7	75.0-77.0	22.7	104.1
	S-10	100.0-102.5	9.5	128.4
DH-9	S-3	21.0-22.9	10.9	122.6
	S-6	37.2-39.7	16.2	109.1
	S-10	65.0-67.0	19.0	108.2
	S-15	100.0-101.0	11.1	118.6
	S-18	119.0-120.9	9.1	124.7
DH-10	S-1	7.0-9.1	12.2	103.1
	S-6	42.0-44.0	10.6	117.3
	S-11	77.0-79.5	11.2	124.1
	S-15	110.0-111.6	12.7	129.5
DH-11	S-1	7.0-9.7	9.1	124.9
	S-4	28.0-30.5	11.7	123.1
	S-5	35.0-37.5	21.1	105.7
	S-8	62.0-64.5	19.4	110.0
	S-8	62.0-64.5	21.4	--
	S-11	94.0-96.5	21.4	105.3
T-11	B-2	11.0-14.0	8.7	--
T-13	B-3	10.0-12.0	5.3	--

TABLE C-2

NATURAL WATER CONTENT AND DRY DENSITY DATA
SOIL LINER MATERIALS

Hole No.	Sample No.	Depth (feet)	Water Content (%)	Dry Density (pcf)
DH-1	S-1	4.0-6.5	10.8	122.6
	S-1	4.0-6.5	9.9	--
	S-3	8.0-10.5	10.2	127.4
DH-3	S-1	4.0-6.5	12.1	118.3
DH-4	S-1	4.0-6.5	11.6	122.8
DH-5	S-1	6.0-8.5	11.4	119.8
DH-12	S-1	7.0-9.6	9.6	125.9
T-11	B-1	8.0-11.0	13.2	--
	B-3	0.0-8.0	16.8	--
T-13	B-1	0.0-9.0	16.1	--
	B-2	9.0-10.0	8.5	--

TABLE C-3

PERCENT PASSING THE NUMBER 200 SIEVE
FOUNDATION MATERIALS

Hole No.	Sample No.	Depth (ft)	Percent Passing No. 200 Sieve
DH-8	S-5	50.0-51.1	6.0
	S-7	75.0-77.0	66.8
DH-9	S-6	37.2-39.7	4.6
	S-10	65.0-67.0	8.8
	S-15	100.0-101.0	5.7
	S-18	119.0-120.9	5.1
DH-10	S-6	42.0-44.0	6.0
DH-11	S-5	35.0-37.5	60.9
	S-11	94.0-96.5	79.8

TABLE C-4

SPECIFIC GRAVITY DATA

Hole No.	Sample No.	Depth (ft)	Specific Gravity
DH-1	S-1	4.0-6.5	2.69
	S-3	8.0-10.5	2.67
DH-3	S-1	4.0-6.5	2.69
DH-2	Composite		2.68
DH-4	Composite		2.67
DH-5	Composite		2.68

TABLE C-5

CONSOLIDATION/SATURATION TEST RESULTS
FOUNDATION MATERIALS

Hole No.	Sample No.	Depth (feet)	Consolidation Pressure (psf)	Consolidation Due to Loading (%)	Additional Consolidation Due to Saturation (%)
DH-6	S-4	40.0-41.4	16,000	5.28	0.04
	S-7	70.0-71.7	16,000	5.11	0.05
DH-10	S-1	7.1-9.1	8,000	5.95	0.16
DH-11	S-8	62.0-64.5	16,000	5.46	0.03

TABLE C-6

PERMEABILITY TEST RESULTS
FOUNDATION MATERIALS

Hole No.	Sample No.	Depth (feet)	Natural Water Content (%)	Natural Dry Density (pcf)	As-Tested* Water Content (%)	As-Tested* Dry Density (pcf)	Consolidation Pressure (psi)	Coefficient of Permeability (cm/sec)
DH-1	S-4	10.5-12.8	15.3	112.1	17.9	113.0	10	1.2×10^{-4}
	S-11	65.5-66.7	8.9	122.1	11.6	127.5	75	8.5×10^{-5}
	S-17	80.0-81.3	22.4	101.1	22.7	103.9	90	4.2×10^{-4}
DH-2	S-9	70.0-71.1	12.4	114.0	15.7	117.6	80	2.2×10^{-4}
DH-3	S-6	30.0-31.0	15.8	104.5	21.3	106.4	25	1.4×10^{-4}
	S-11	70.0-71.6	13.6	109.9	17.9	113.0	80	7.7×10^{-4}
DH-4	S-6	50.0-52.4	14.5	112.5	16.7	115.6	60	2.0×10^{-4}
	S-16	80.0-82.0	11.5	120.9	12.3	125.7	90	2.0×10^{-5}
DH-5	S-9	47.5-50.0	21.7	101.9	22.1	105.0	40	3.5×10^{-4}
	S-14	75.0-77.5	14.5	110.0	17.4	114.0	85	2.6×10^{-4}
DH-6	S-10	100.0-102.5	10.7	123.8	11.2	128.6	80	9.4×10^{-6}

Sample	Set-Up** Water Content (%)	Set-Up** Dry Density (pcf)	As-Tested* Water Content (%)	As-Tested* Dry Density (pcf)	Consolidation Pressure (psi)	Coefficient of Permeability (cm/sec)
DH-2 Composite	10.4	118.7	13.8	122.0	90	1.2×10^{-4}
DH-4 Composite	11.5	118.9	13.7	122.0	70	5.4×10^{-5}
DH-5 Composite	12.3	116.8	14.7	120.0	70	6.5×10^{-5}

*After back-pressure saturation and consolidation

**Laboratory compacted to 95 percent at optimum + 1 percent

TABLE C-7

PERMEABILITY TEST RESULTS
SOIL LINER MATERIALS

Hole No.	Sample No.	Depth (feet)	Natural Water Content (%)	Natural Dry Density (pcf)	As-Tested* Water Content (%)	As-Tested* Dry Density (pcf)	Consolidation Pressure (psi)	Coefficient of Permeability (cm/sec)
DH-1	S-1	4.0-6.5	10.8	122.6	13.3	123.6	5	3.7×10^{-5}
	S-3	8.0-10.5	10.2	127.4	11.3	128.4	5	8.8×10^{-7}
DH-3	S-1	4.0-6.5	12.1	118.3	15.3	119.0	5	8.7×10^{-6}
DH-4	S-1	4.0-6.5	11.6	122.8	13.2	123.9	5	2.7×10^{-6}
DH-5	S-1	6.0-8.5	11.4	119.8	14.7	120.4	5	4.6×10^{-5}
DH-12	S-1	7.0-9.6	9.6	125.9	12.1	126.4	5	3.0×10^{-7}

*After back-pressure saturation and consolidation

TABLE C-8

PINHOLE DISPERSION TEST RESULTS[1]

Hole Number	Sample Number	Depth (feet)	Plasticity Index	Percent Finer than 0.005mm	Dispersive Designation[2]
DH-1	S-1	4.0-6.5	4	ND (< 10)	N/A
DH-1	S-1*	4.0-6.5	8	ND (< 10)	N/A
DH-1	S-3	8.0-10.5	4	18	N/A
DH-1	S-4**	10.5-12.8	Non-Plastic	ND (< 5)	N/A
DH-3	S-1	4.0-6.5	4	ND (< 10)	N/A
DH-3	S-1*	4.0-6.5	2	ND (< 10)	N/A
DH-3	S-3**	10.0-12.5	Non-Plastic	ND (< 10)	N/A
DH-5	S-11**	60.0-62.5	6	16	D

NOTES:

ND Not determined by grain size distribution (performed sieve only - no hydrometer).

( ) Estimated by extrapolation.

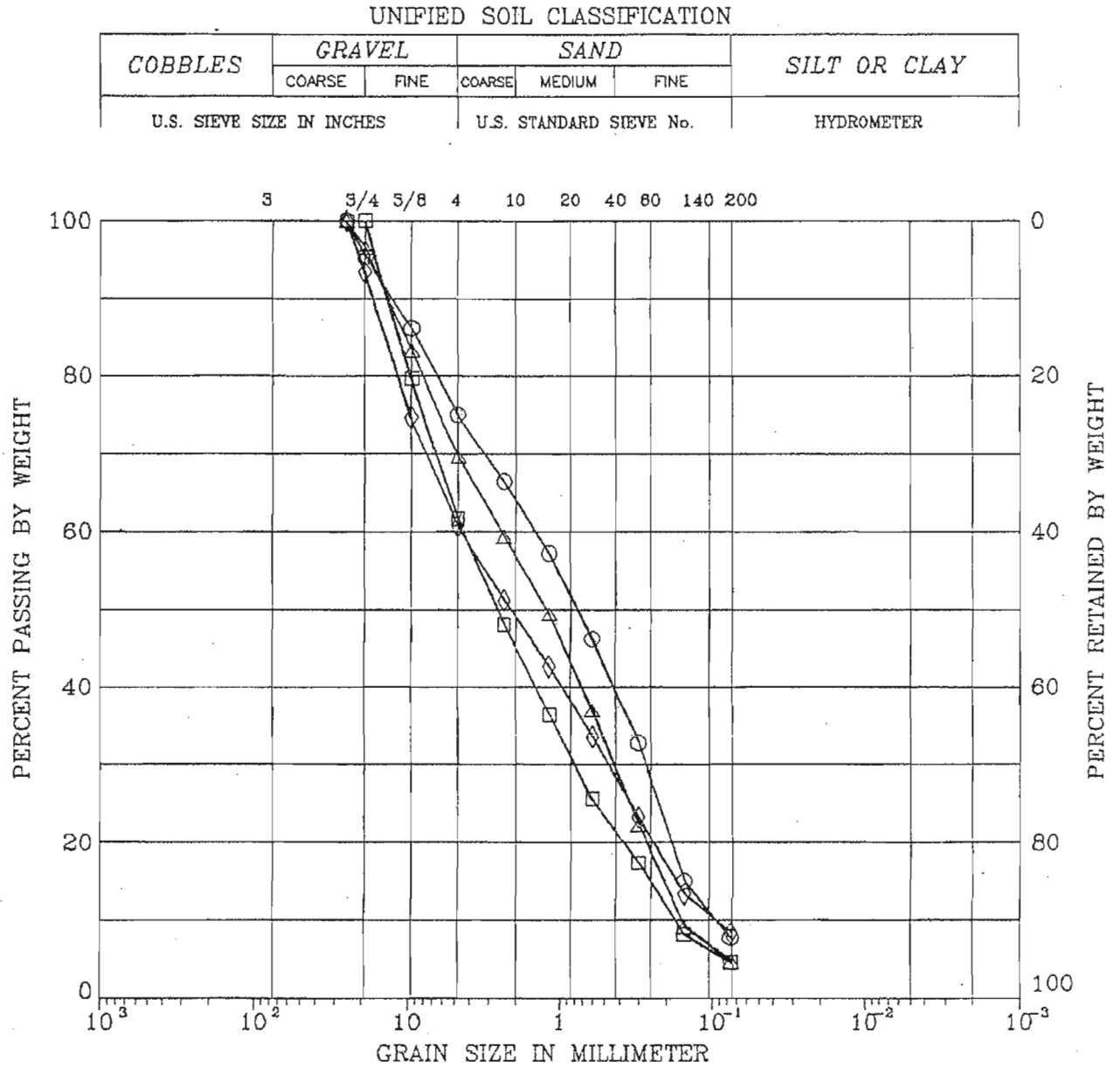
* Tested on minus No. 40 material.

** Foundation material samples. All others are soil liner material samples.

[1]Difficulty was experienced in running tests according to standard methods. Plugging of the pinhole occurred during most of the tests. All samples tested, except DH-5, S-11, do not strictly meet standard gradation and plasticity criteria for ASTM D4647-87 test method applicability (requires soil with greater than or equal to 12 percent fraction finer than 0.005 mm and with a plasticity index greater than 4).

[2]N/A - not applicable - not classified since material tested does not meet standard gradation or plasticity criteria for test method applicability.

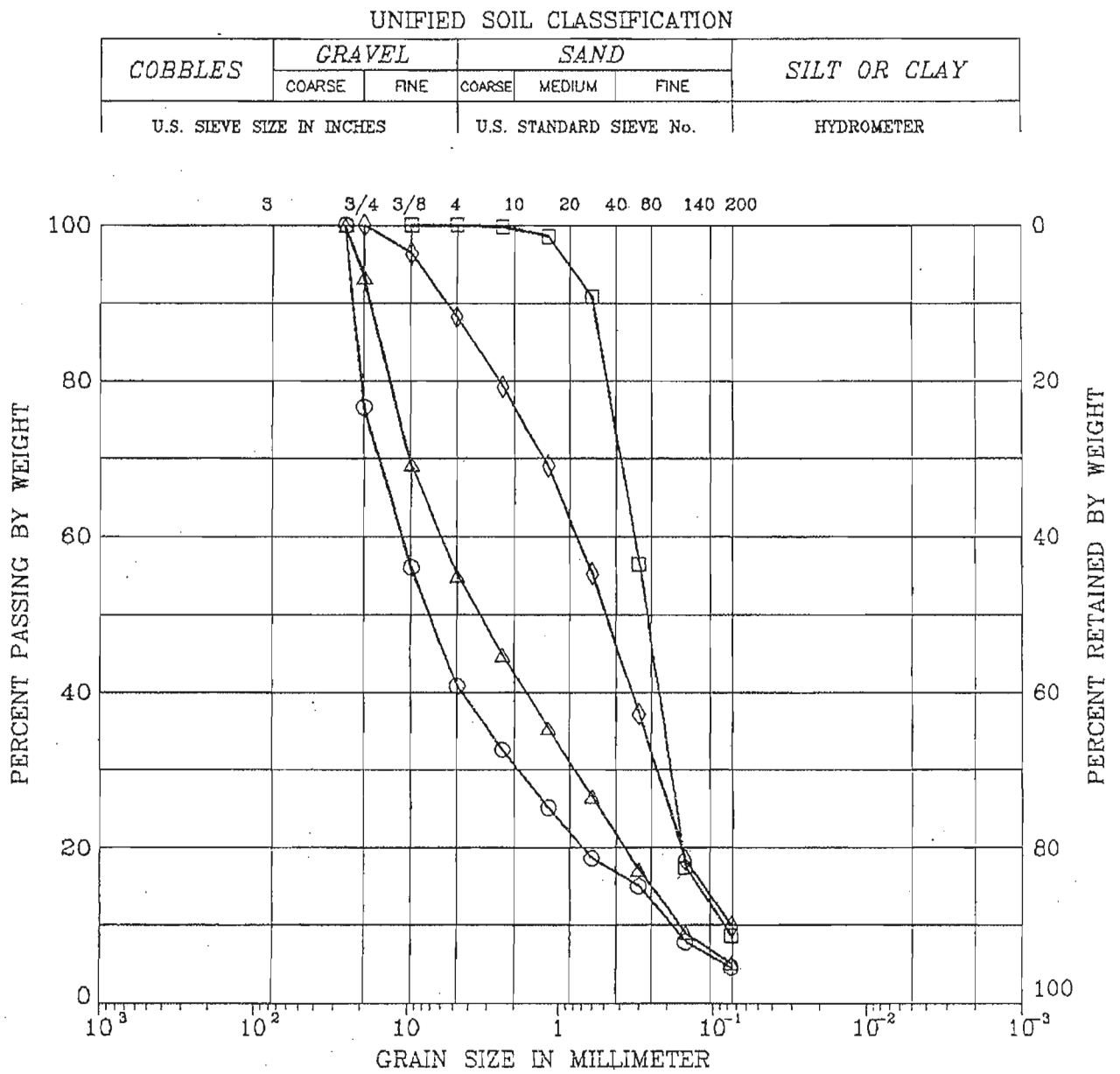
D - dispersive
SD - slightly dispersive
ND - non-dispersive



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-1 S-4	11-12.8			silty gravelly SAND, yellow brown (SP-SM)
□	DH-1 S-6	30-32.5			slightly silty gravelly SAND, yellow brown (SP)
△	DH-1 S-8	50-50.8			slightly silty gravelly SAND, yellow brown (SP)
◇	DH-1 S11	65-66.7			silty gravelly SAND, yellow brown (SP-SM)

Remark : May 1990

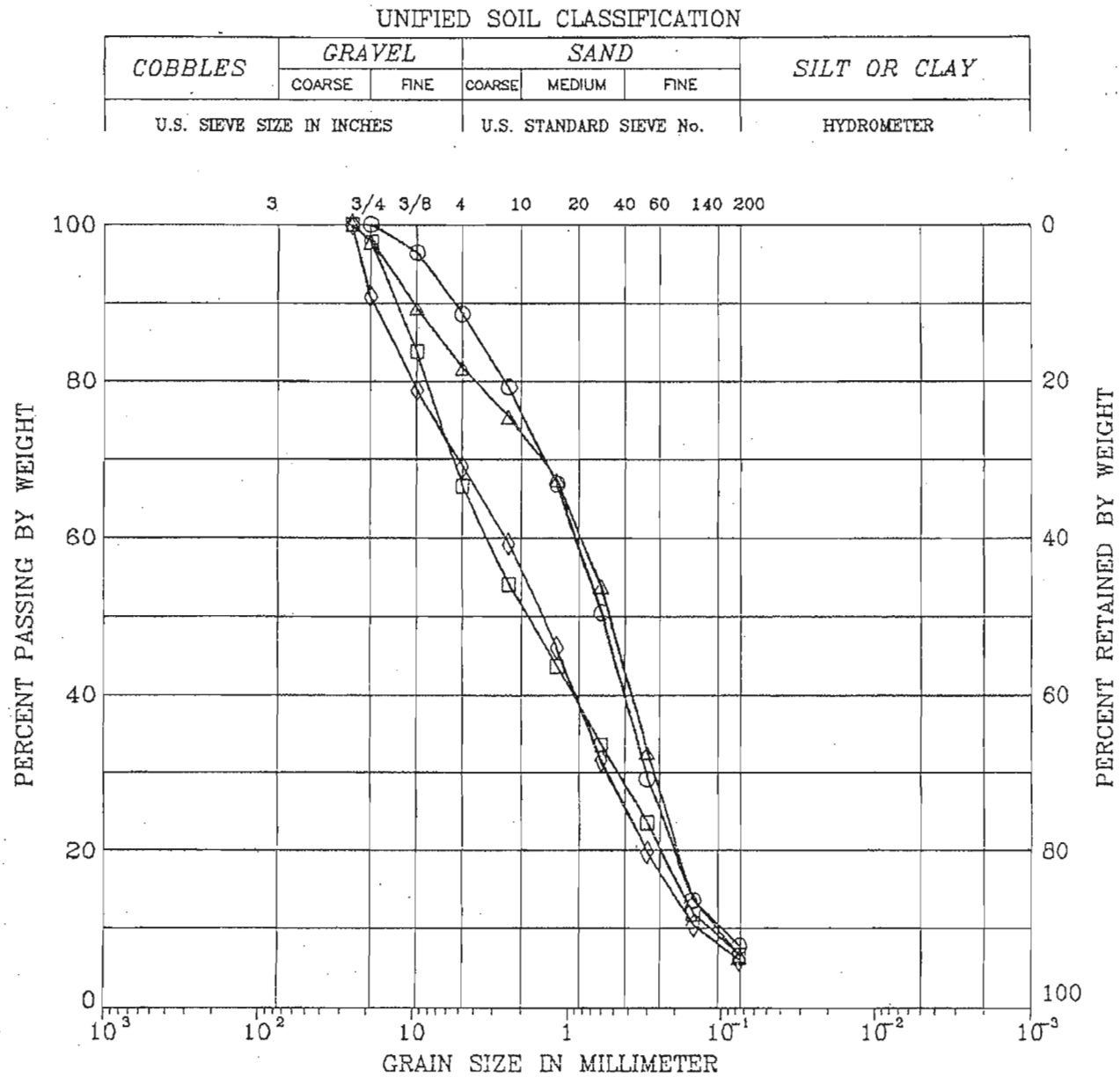
Project MWD-266A	Garvey Reservoir – Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-1



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-1 S14	68-69.5			slightly silty sandy GRAVEL, yellow brown (GW)
□	DH-1 S17	80-81.3			silty SAND, yellow brown (SP-SM)
△	DH-1 S18	90-90.7			silty gravelly SAND, yellow brown (SP-SM)
◇	DH-1 S23	120-121			silty gravelly SAND, light yellow brown (SP-SM)

Remark : May 1990

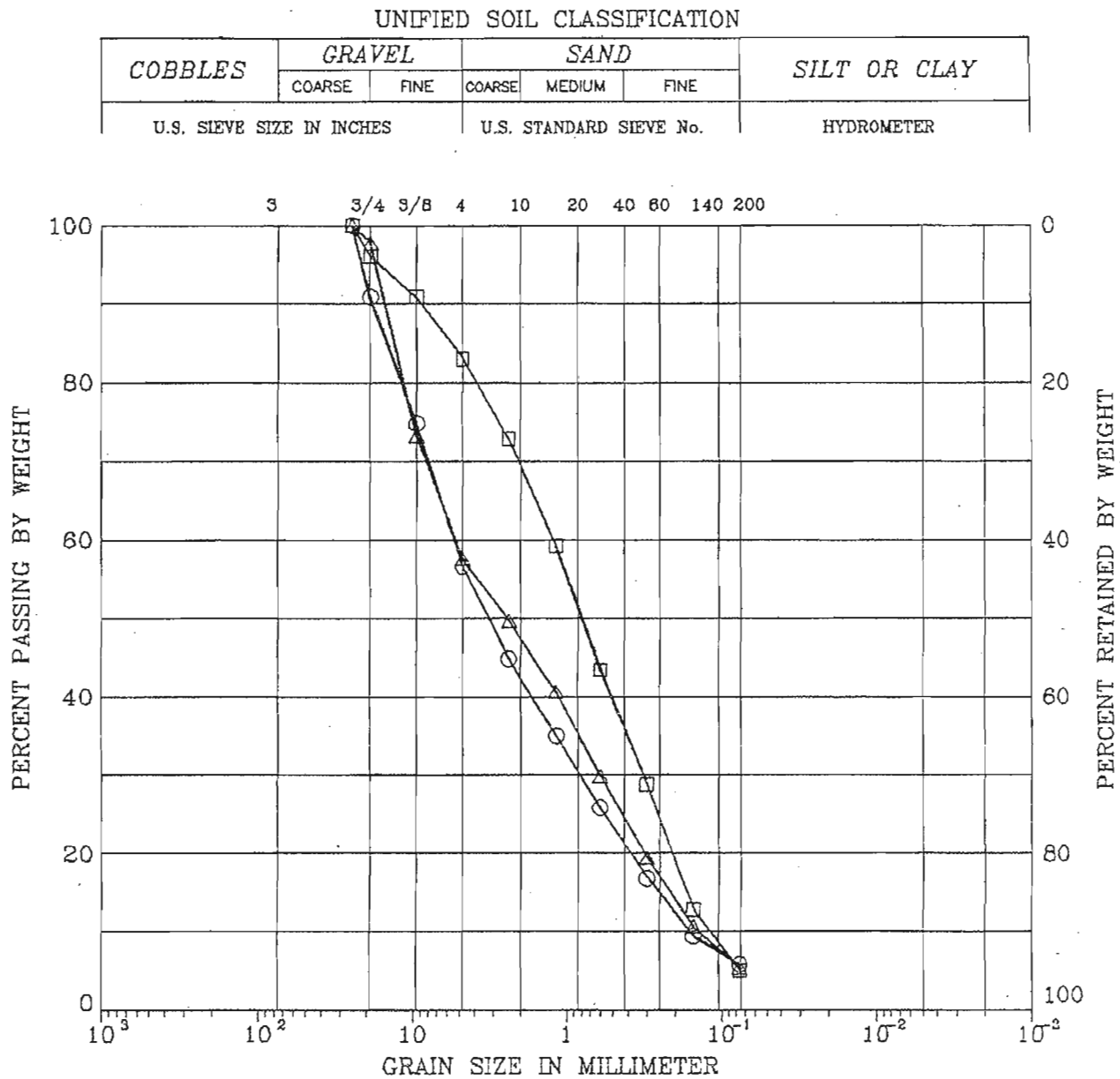
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-2



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-2 S-2	8.5-11			silty gravelly SAND, light yellow brown (SW-SM)
□	DH-2 S-7	50-51.8			silty gravelly SAND, orange yellow brown (SP-SM)
△	DH-2 S-9	70-71.1			silty gravely SAND, yellow brown (SP-SM)
◇	DH-2 S12	86.5-88			silty gravelly SAND, yellow brown (SP-SM)

Remark : May 1990

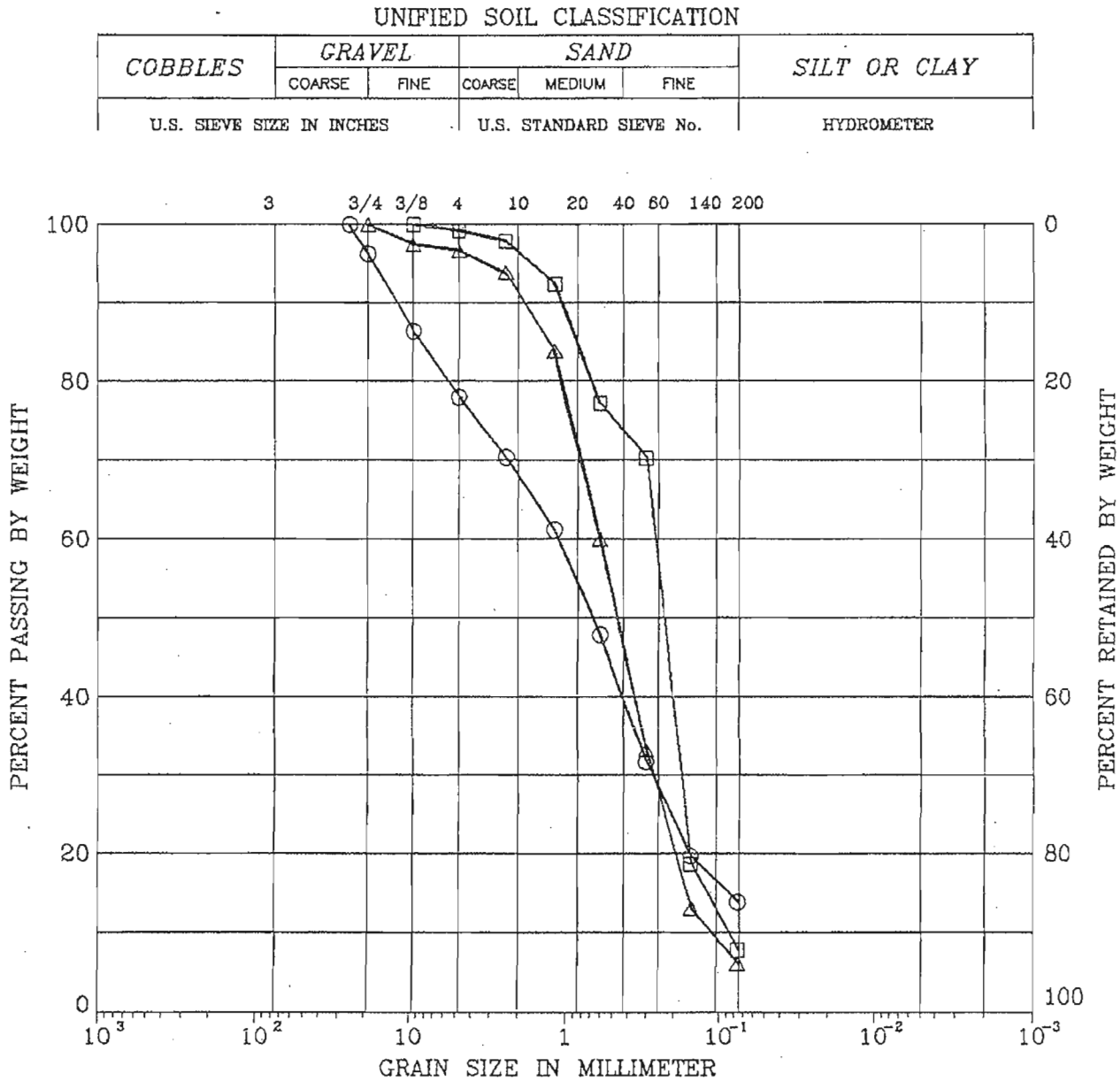
Project MWD-266A	Garvey Reservoir – Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-3



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-2 S14	97-98.5			silty gravelly SAND, yellow brown (SP-SM)
□	DH-2 S16	105-107			silty gravelly SAND, yellow brown (SP-SM)
△	DH-2 S17	108-110			silty gravelly SAND, orange yellow brown (SP-SM)

Remark : May 1988

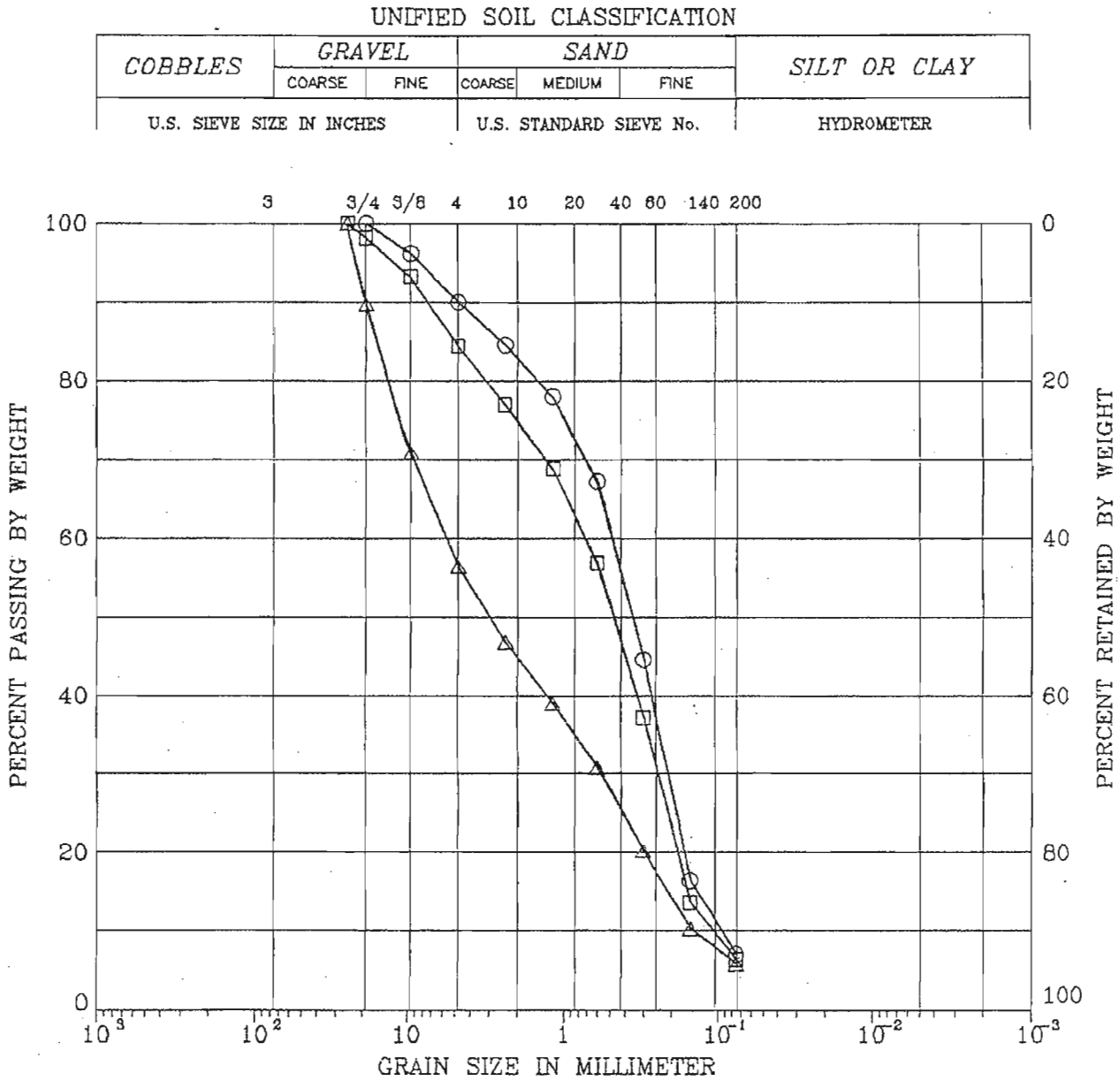
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-4



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-3 S-3	10.5-12			silty gravelly SAND, yellow brown (SM)
□	DH-3 S-6	30-31.9			silty SAND, yellow brown (SP-SM)
△	DH-3 S11	70-71.6			silty SAND, yellow brown (SP-SM)

Remark : May 1990

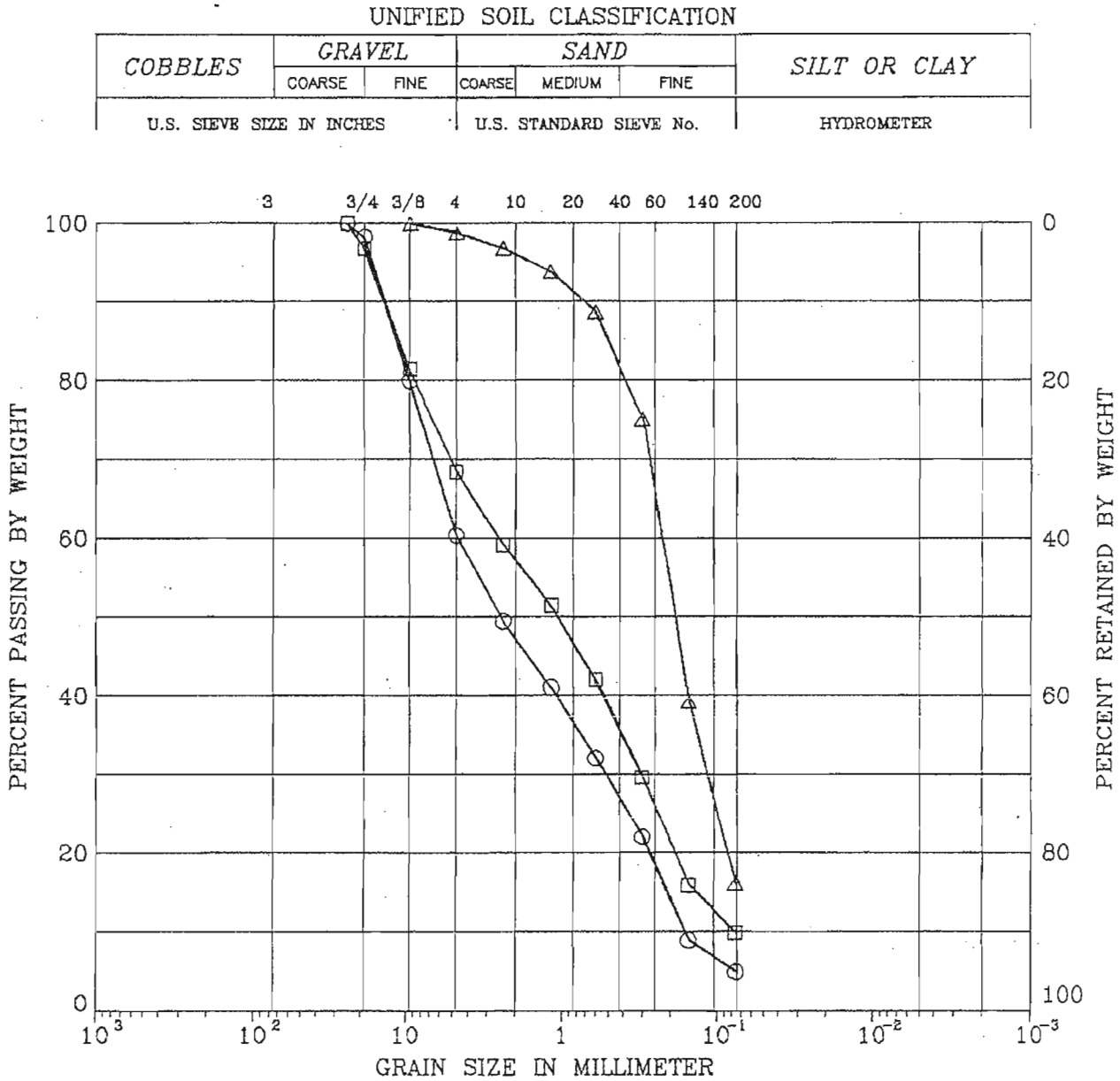
Project MWD-266A	Garvey Reservoir – Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-5



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-4 S-2	20-22.5			silty gravelly SAND, yellow brown (SP-SM)
□	DH-4 S-6	50-52.5			silty gravelly SAND, yellow brown (SP-SM)
△	DH-4 S-8	62-63			silty gravelly SAND, yellow brown (SP-SM)

Remark : May 1990

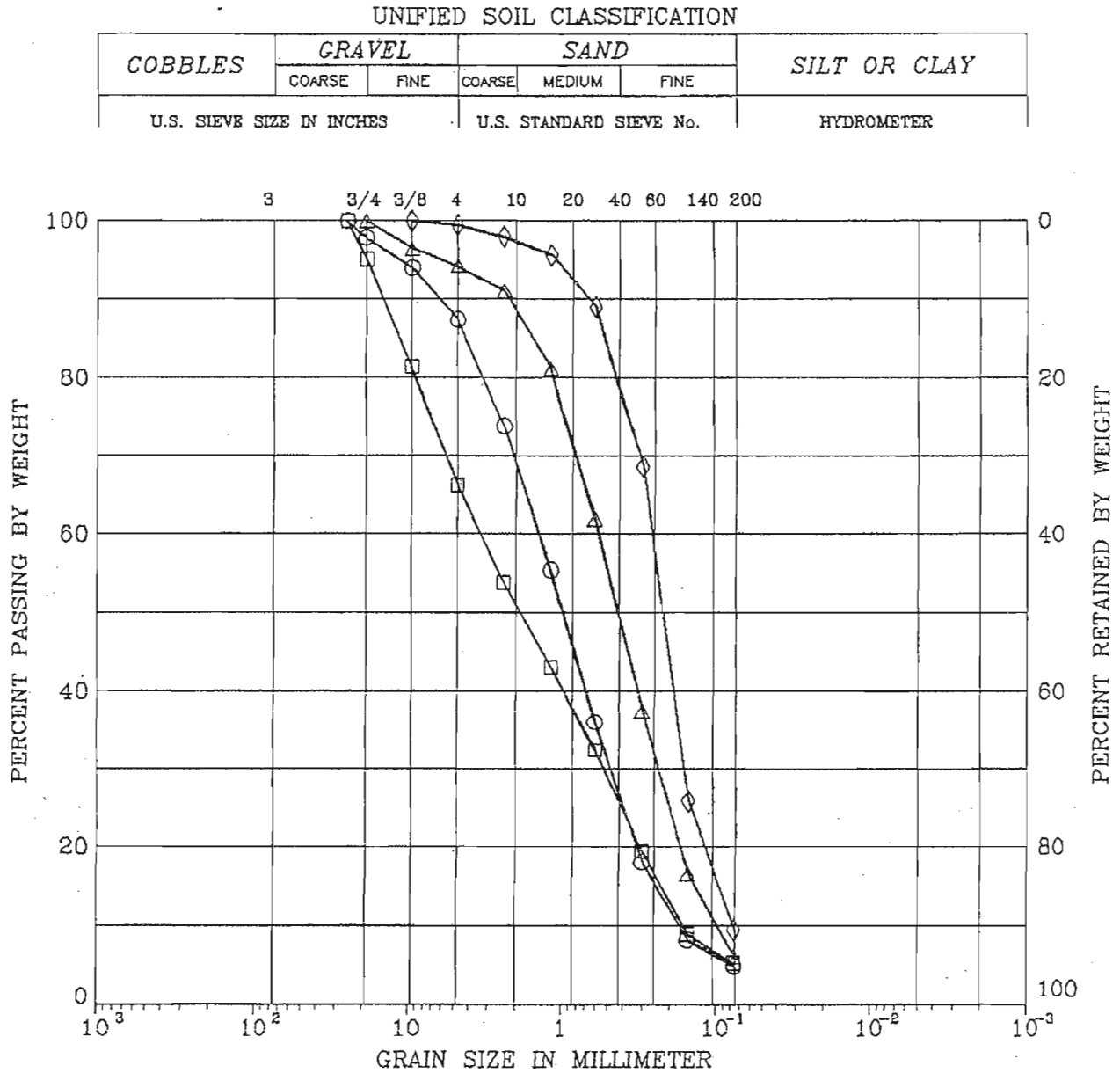
Project MWD-266A	Garvey Reservoir – Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-6



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-4 S11	66-67.1			slightly silty gravelly SAND, yellow brown (SP)
□	DH-4 S16	80-82			silty gravelly SAND, yellow brown (SP-SM)
△	DH-4 S18	90-91.6			silty SAND, yellow brown (SM)

Remark : May 1990

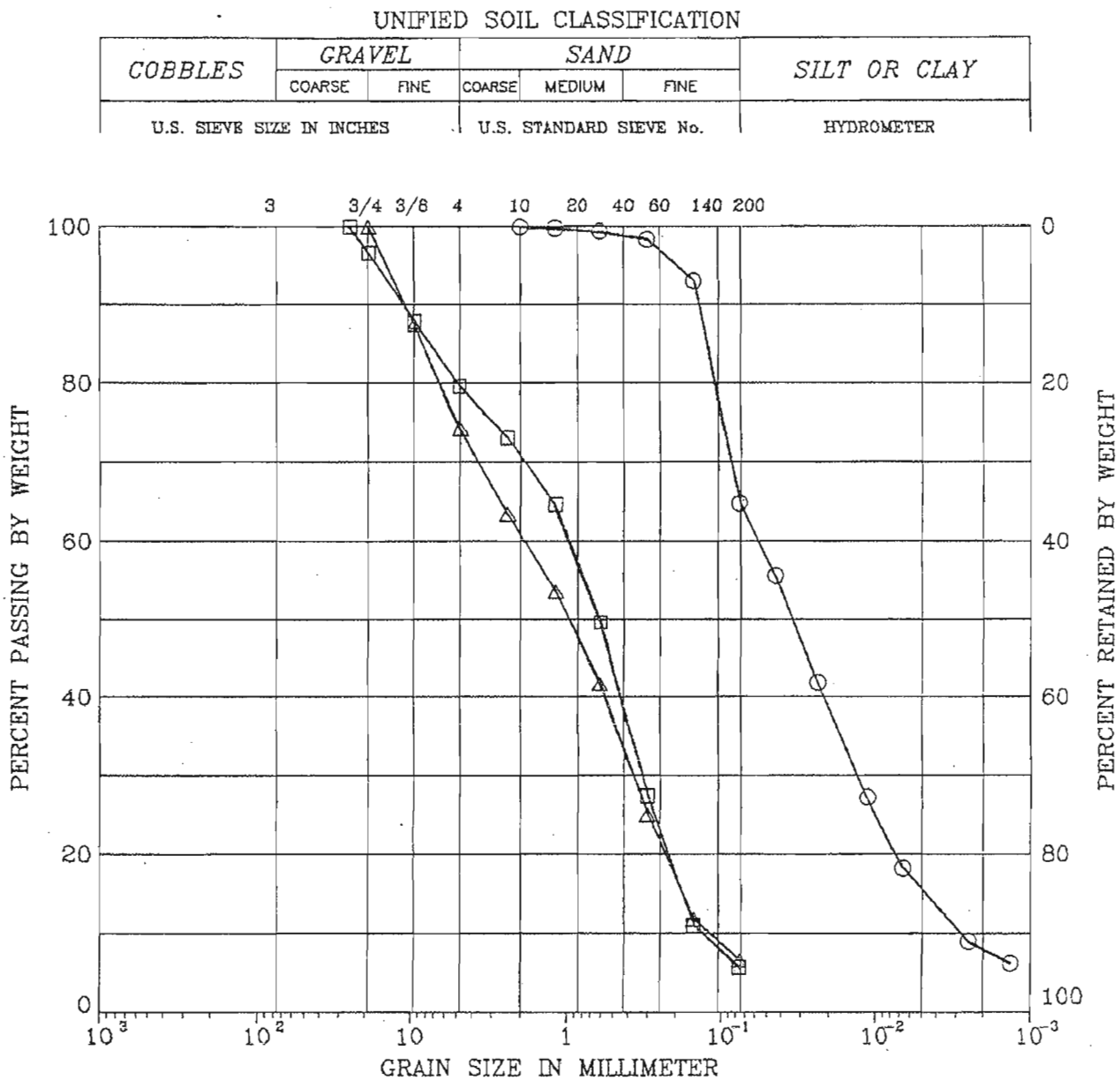
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-7



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-5 S-2	16.5-19			slightly silty gravelly SAND, yellow brown (SP)
□	DH-5 S-4	34-35.5			silty gravelly SAND, yellow brown (SP-SM)
△	DH-5 S-7	43.5-46			silty gravelly SAND, yellow brown (SP-SM)
◊	DH-5 S-9	47.5-50			silty SAND, orange yellow brown (SP-SM)

Remark : May 1990

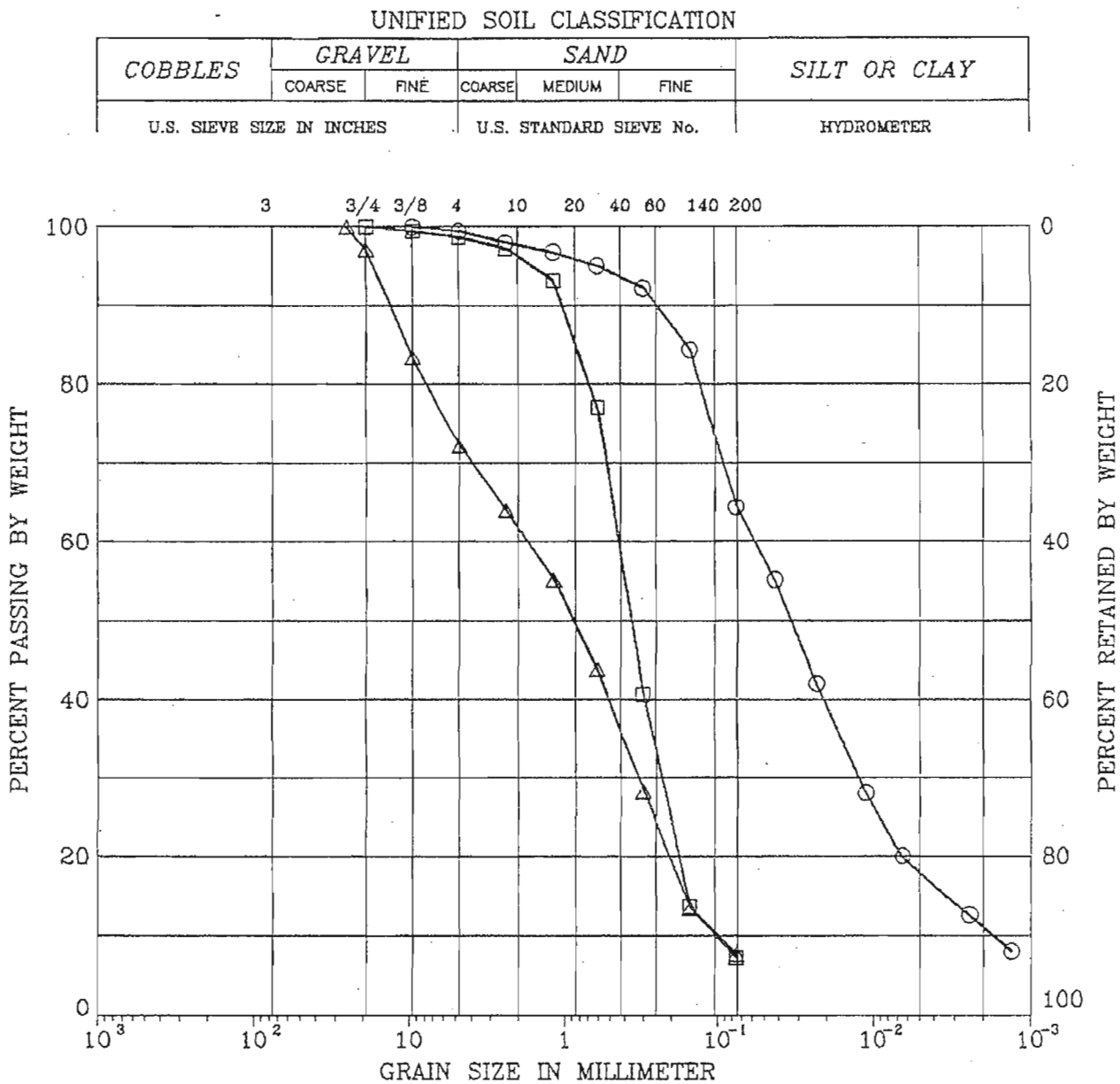
Project MWD-266A	Garvey Reservoir - Foudation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-8



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-5 S11	60-62.5	35	6	sandy SILT, yellow brown (ML)
□	DH-5 S14	75-77.5			silty gravelly SAND, yellow brown (SP-SM)
△	DH-5 S17	90-92.5			silty gravelly SAND, yellow brown (SP-SM)

Remark : May 1990

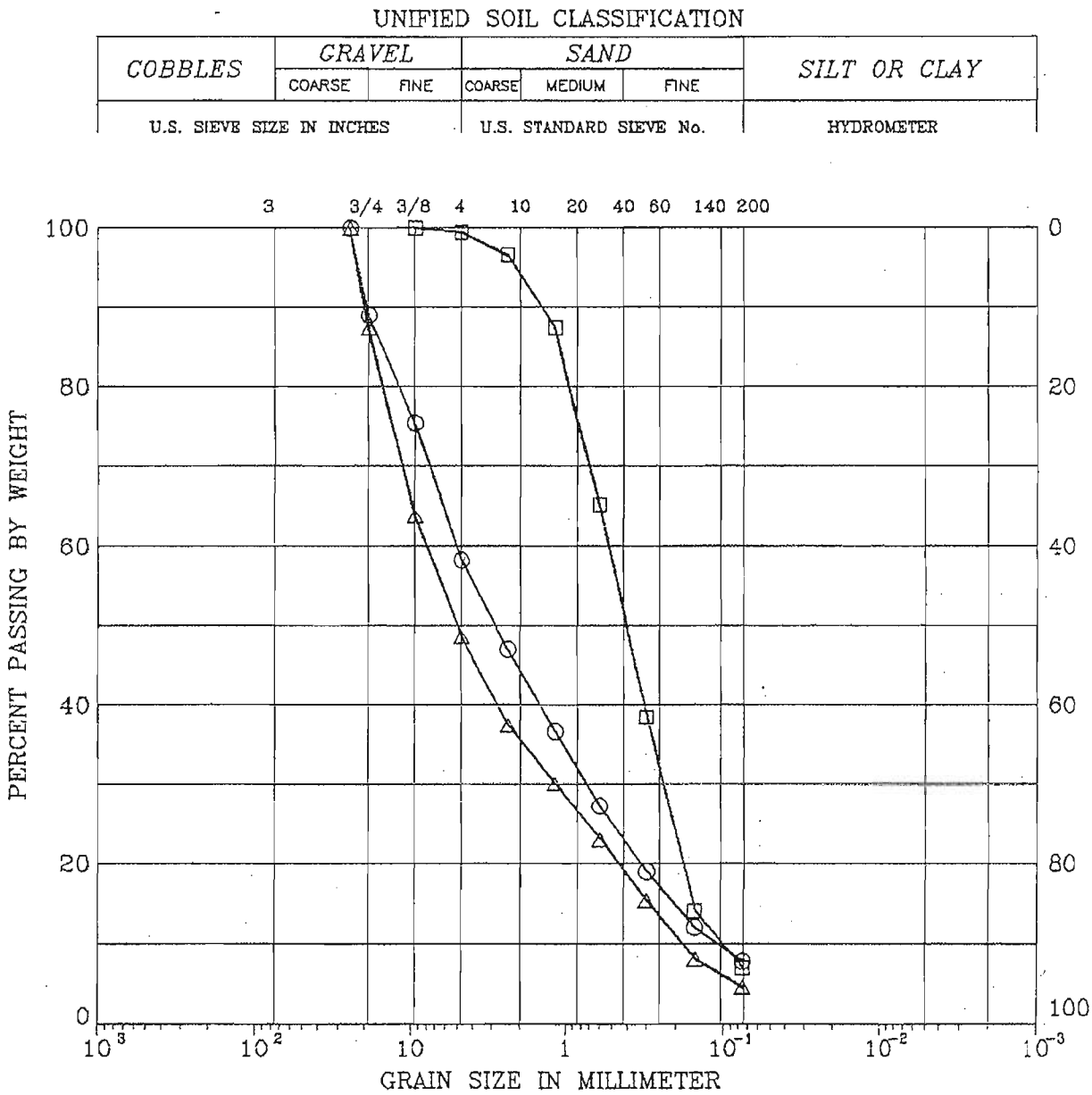
Project MWD-266A	Garvey Reservoir - Foudation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-9



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-6 S-2	20-22.5	34	5	sandy SILT, orange yellow brown (ML)
□	DH-6 S-4	40-41.4			silty SAND, yellow brown (SP-SM)
△	DH-6 S-7	70-71.7			silty gravelly SAND, yellow brown (SP-SM)

Remark : May 1990

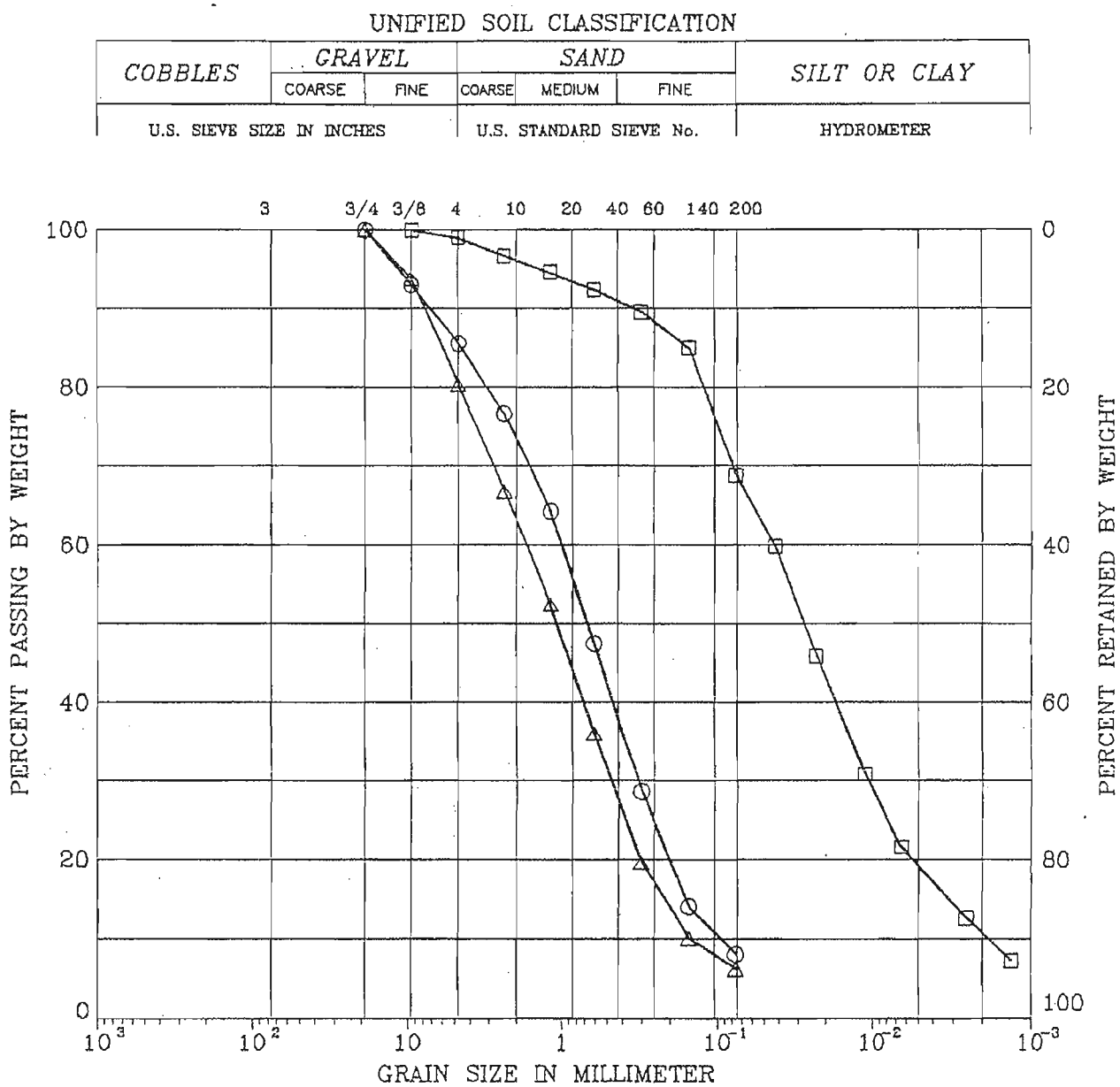
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-10



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-6 S10	100-102			silty gravelly SAND, yellow brown (SW-SM)
□	DH-6 S12	120-122			silty SAND, yellow brown (SP-SM)
△	DH-6 S14	139-141			slightly silty sandy GRAVEL (GW)

Remark : May 1990

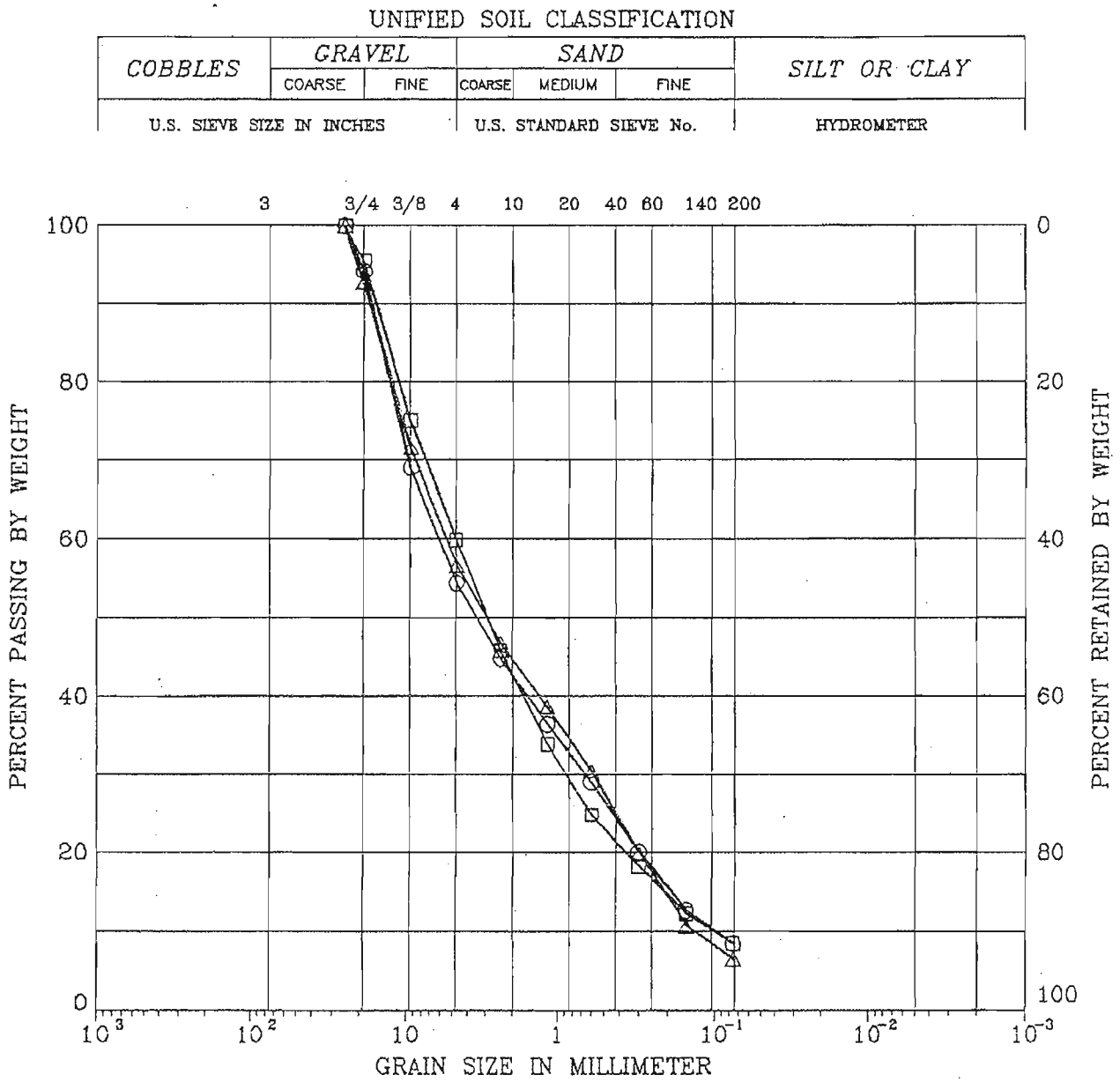
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-11



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-7 S-7	60-62.2			silty gravelly SAND, yellow brown (SW-SM)
□	DH-7 S-9	72-74.5	38	9	sandy SILT, gray (ML)
△	DH-7 S10	80-80.9			silty gravelly SAND, yellow brown (SP-SM)

Remark : May 1990

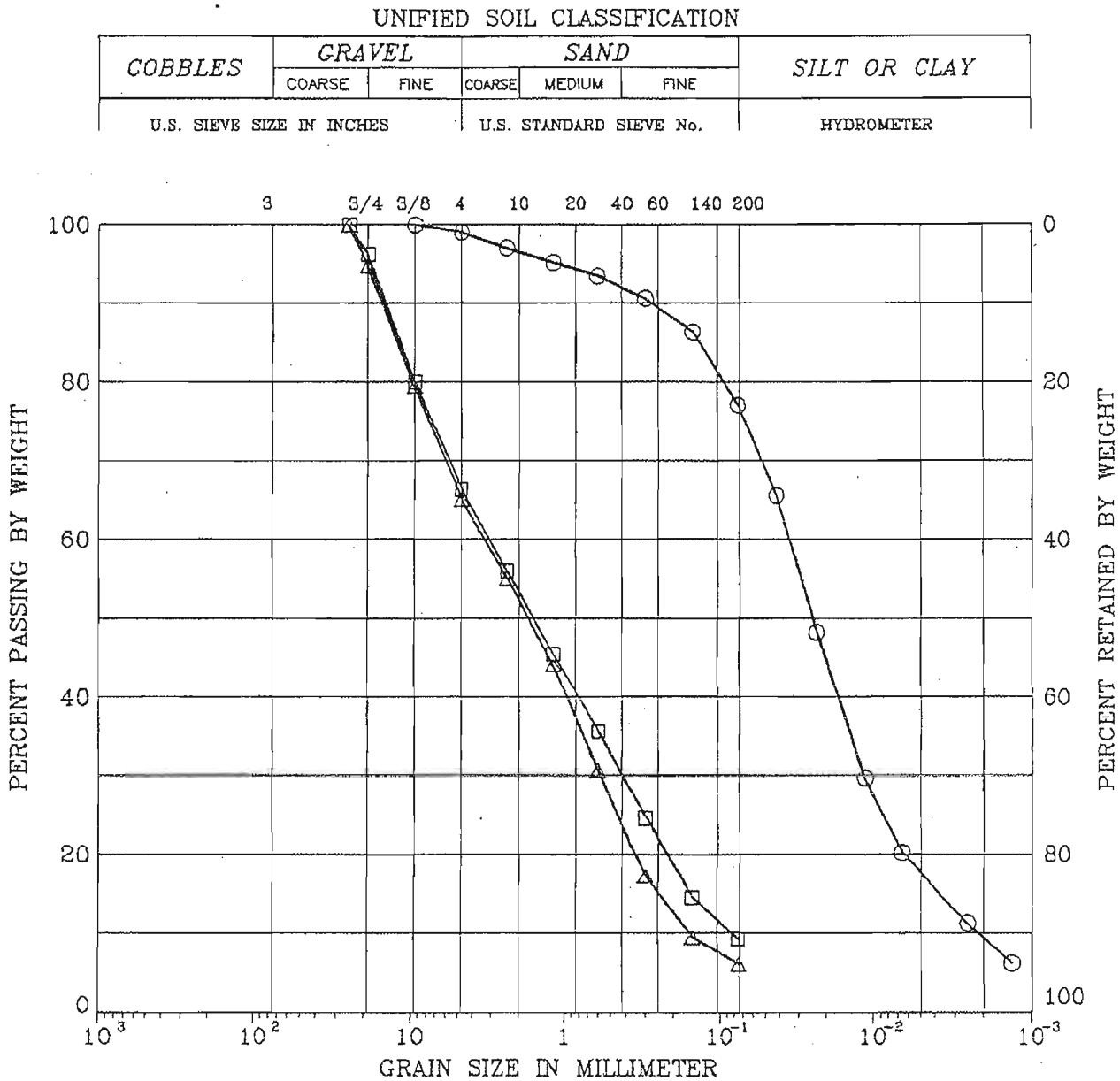
Project MWD-266A	Garvey Reservoir – Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-12



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-7 S13	110-112			silty gravelly SAND, yellow brown (SP-SM)
□	DH-7 S14	120-122			silty gravelly SAND, orange yellow brown (SW-SM)
△	DH-7 S17	140-141			silty gravelly SAND, orange yellow brown (SP-SM)

Remark : May 1990

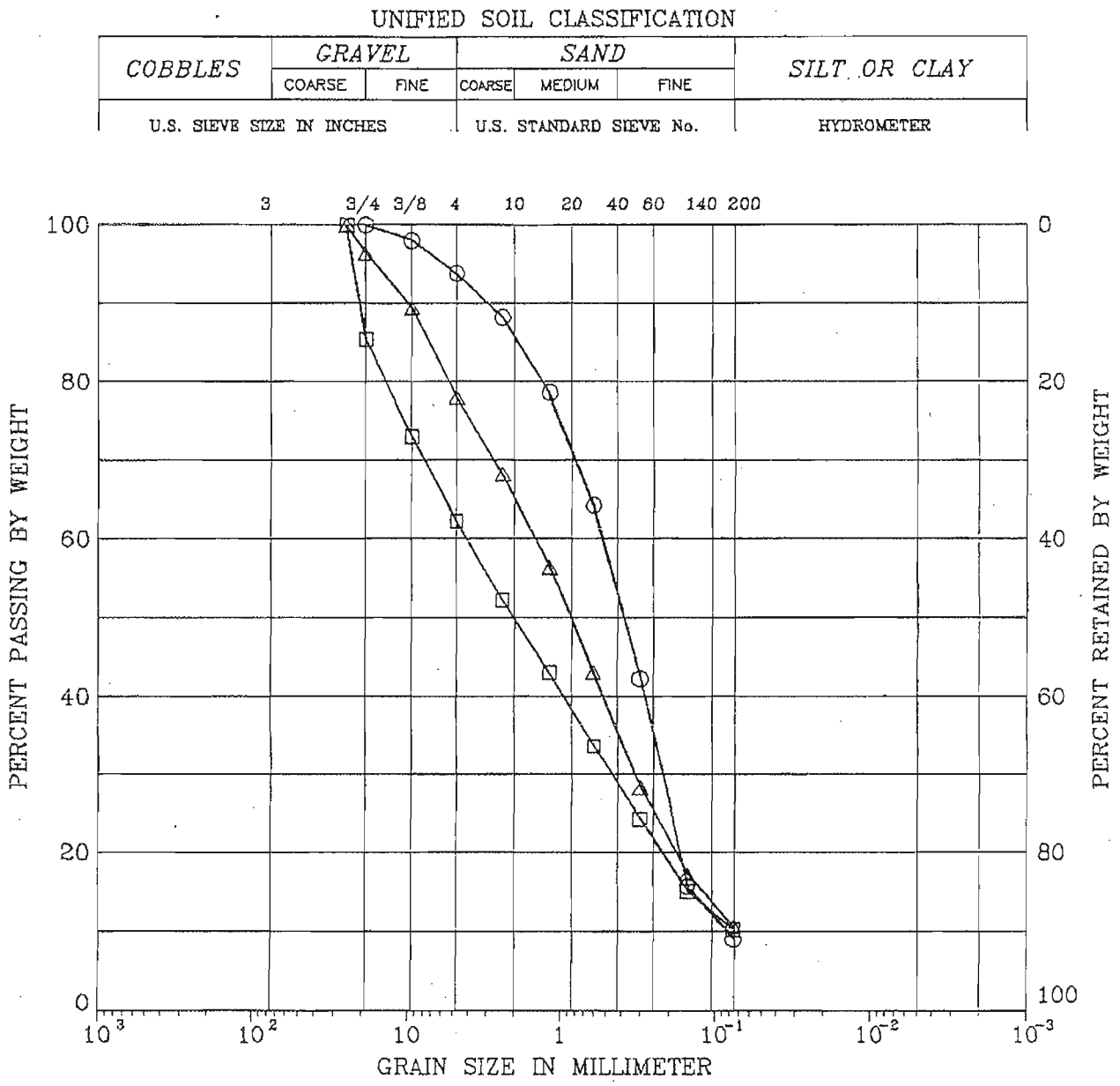
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-13



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-8 S-2	20-22.5	61	29	sandy SILT, orange yellow gray (MH)
□	DH-8 S10	100-102			silty gravelly SAND, yellow brown (SP-SM)
△	DH-9 S-3	21-22.9			silty gravelly SAND, orange yellow brown (SP-SM)

Remark : May 1990

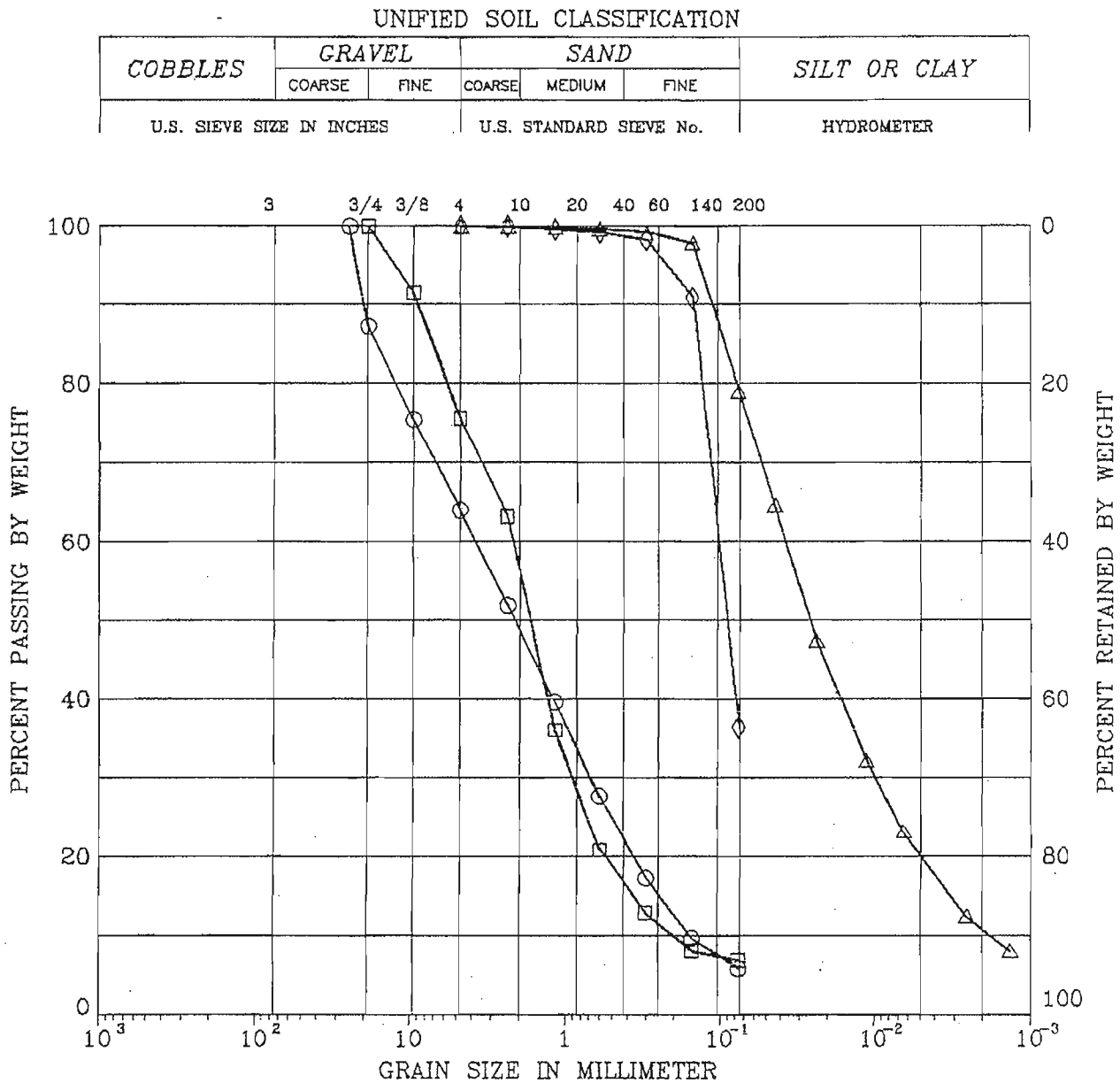
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-14



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-10 S1	7-9.1			gravelly silty SAND, yellow brown (SW-SM)
□	DH10 S11	77-79.5			silty gravelly SAND, orange yellow brown (SP-SM)
△	DH10 S15	110-112			silty gravelly SAND, orange yellow brown (SW-SM)

Remark : May 1990

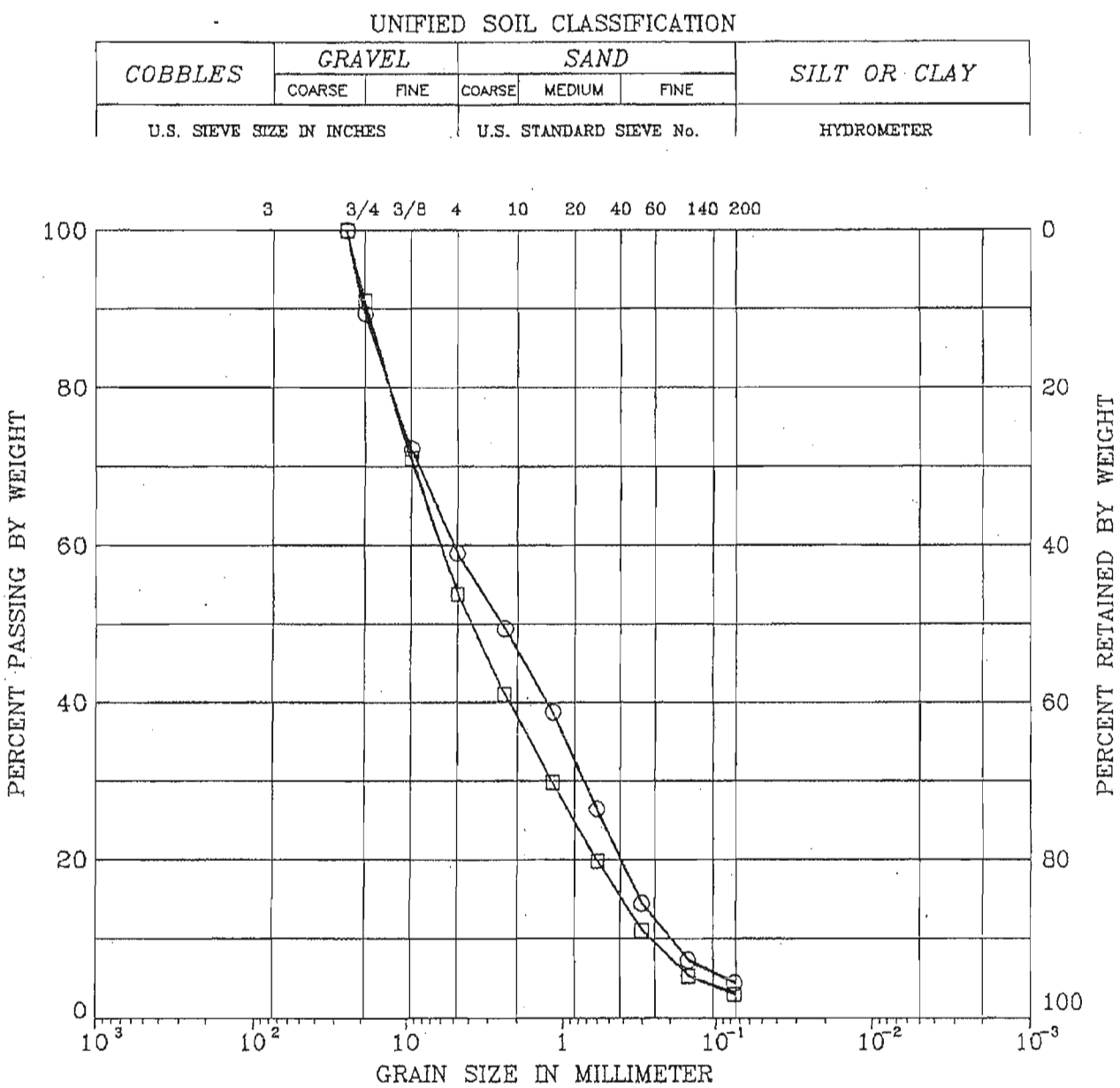
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-15



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-11 S1	7-9.7			silty gravelly SAND, orange yellow brown (SP-SM)
□	DH-11 S4	28-30.5			silty gravelly SAND, orange yellow brown (SW-SM)
△	DH-11 S8	62-64.5	36	7	sandy SILT, yellow brown (ML)
◊	DH-11 S8	62-64.5			silty SAND, yellow brown (SM)

Remark : May 1990

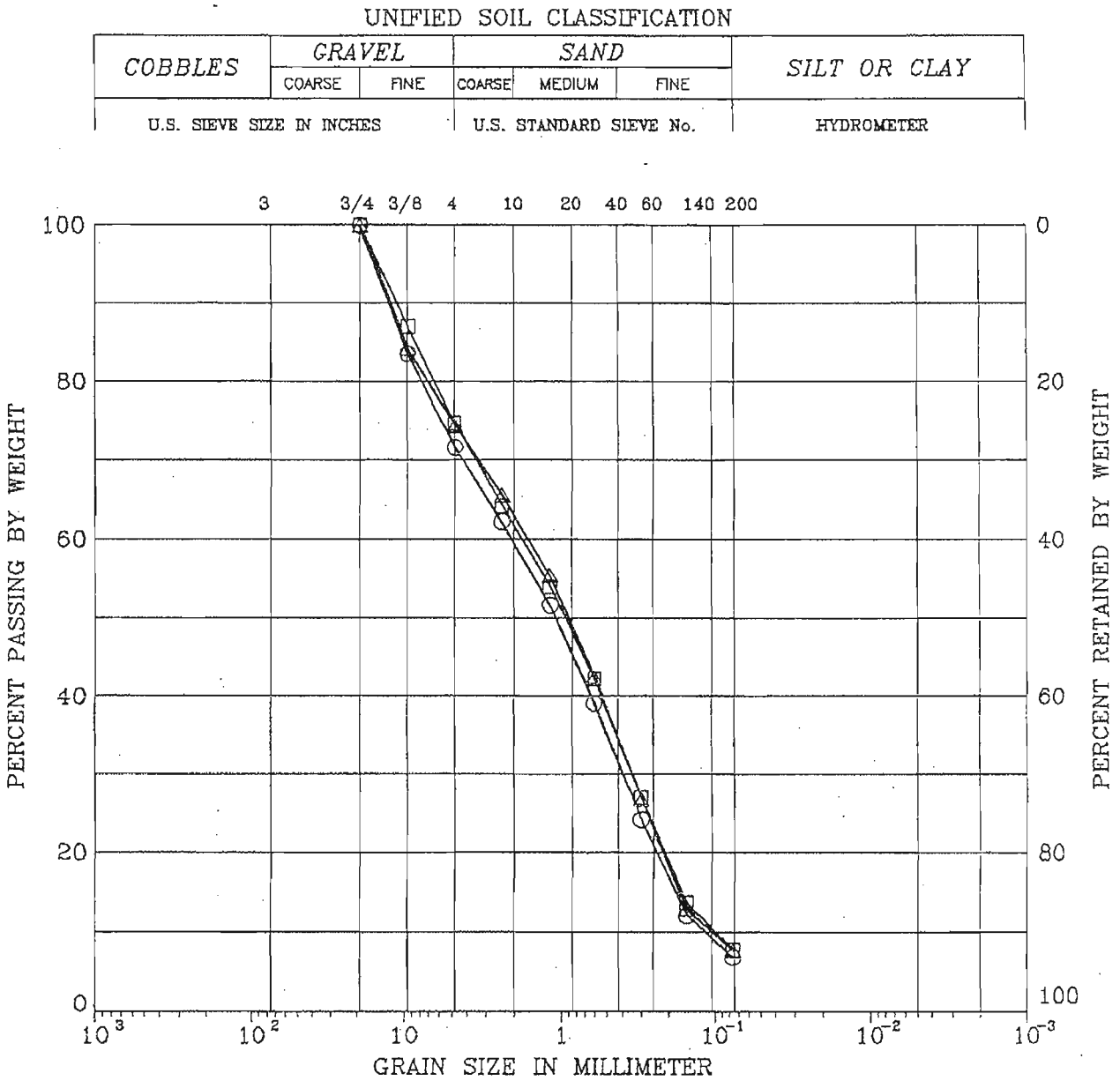
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-16



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	T-11 B-2	11-14			slightly silty gravelly SAND, yellow brown (SP)
□	T-13 B-3	10-12			slightly silty gravelly SAND, yellow brown (SP)

Remark : May 1990

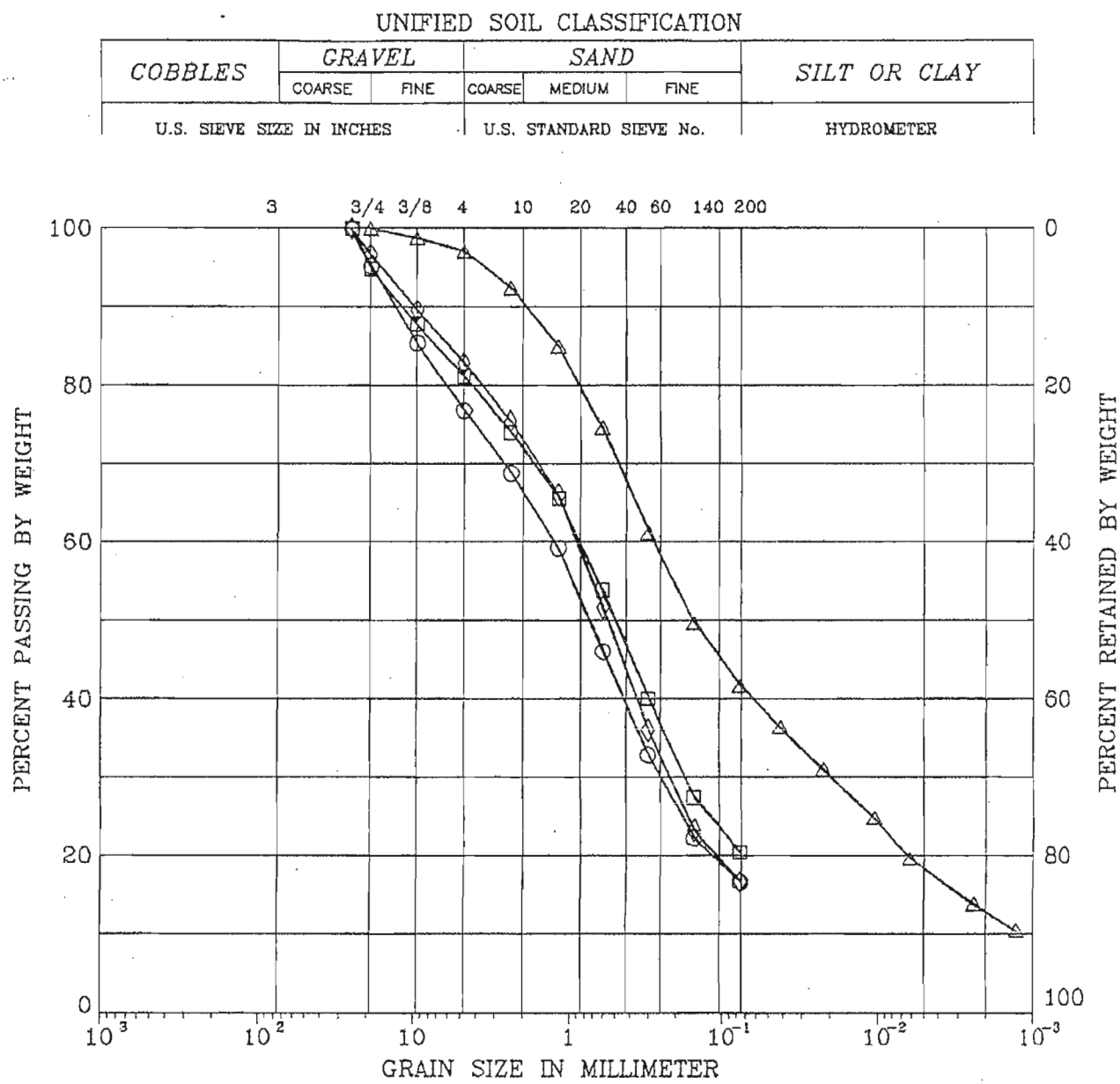
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-17



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-2	Composi			silty gravelly SAND, yellow brown (SP-SM)
□	DH-4	Composi			silty gravelly SAND, yellow brown (SP-SM)
△	DH-5	Composi			silty gravelly SAND, yellow brown (SP-SM)

Remark : May 1990

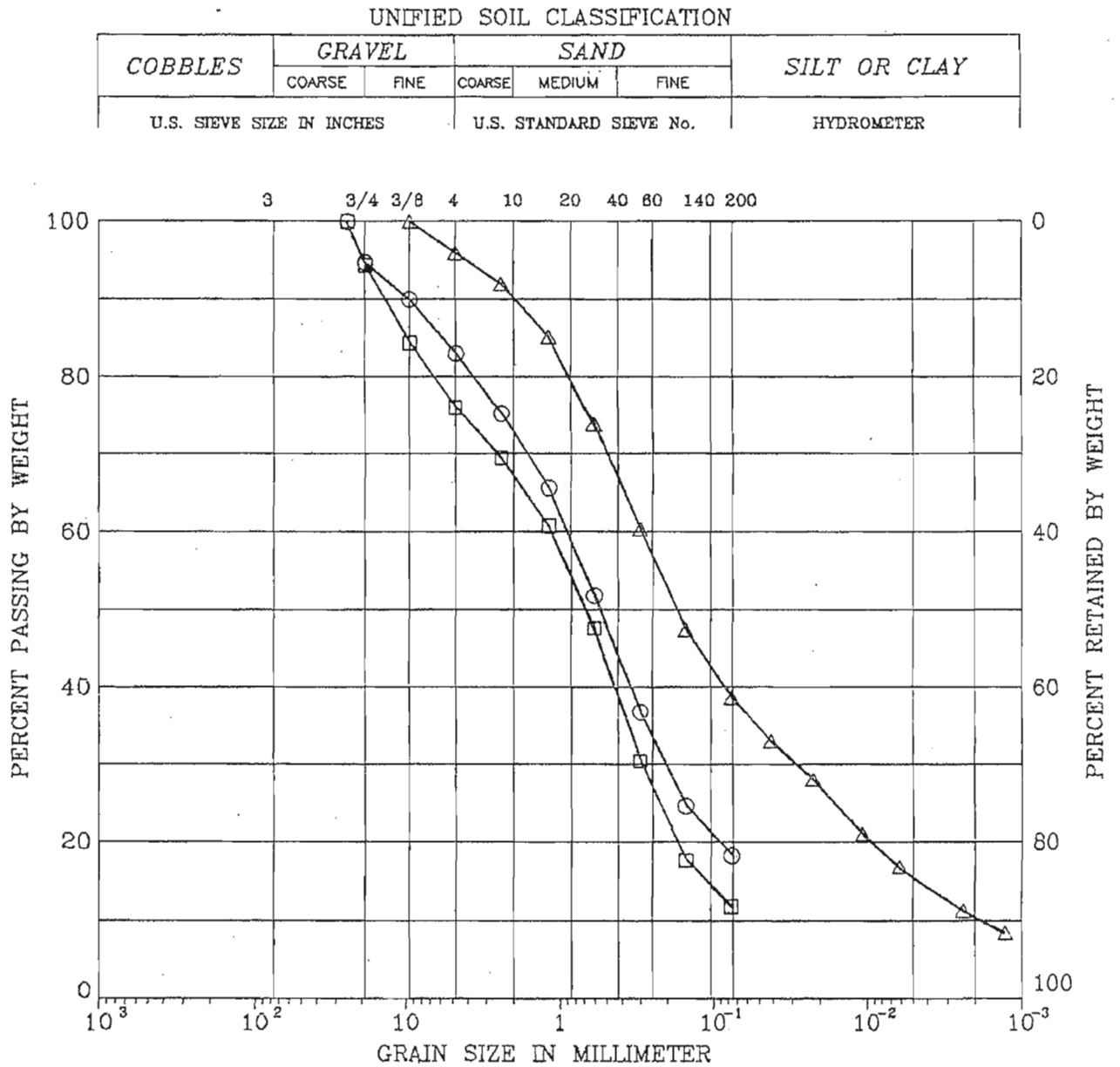
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-18



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-1 S-1	4-6.5	24	4	clayey silty gravelly SAND, yellow brown (SM-SC)
□	DH-1 S-1	4-6.5	24	8	clayey gravelly SAND, yellow brown (SC)
△	DH-1 S-3	8-10.5	21	4	clayey silty SAND, dark brown (SM-SC)
◊	DH-3 S-1	4-6.5	25	4	clayey silty gravelly SAND, yellow brown (SM-SC)

Remark : May 1990

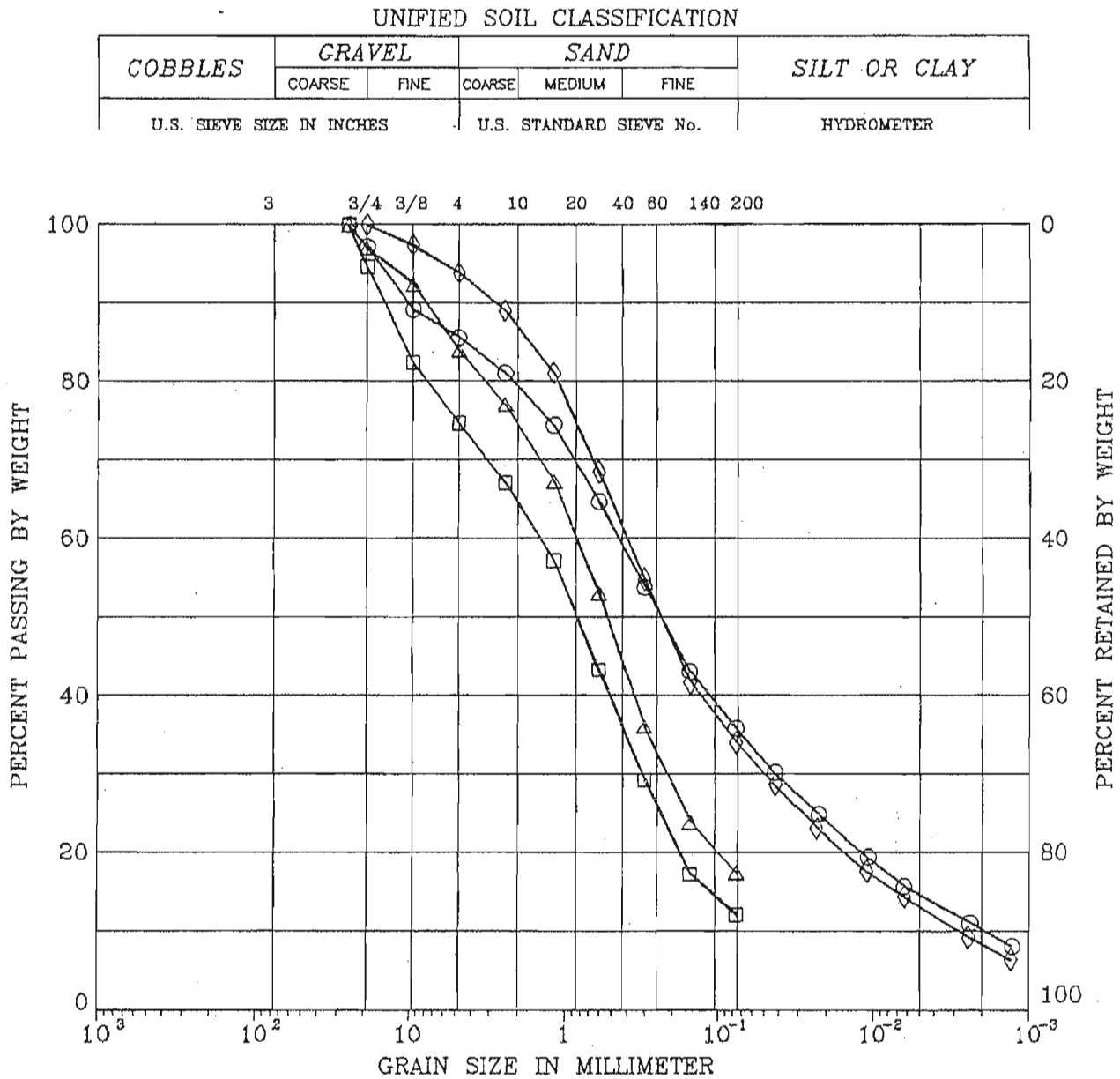
Project MWD-266A	Garvey Reservoir - Soil Liner Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-19



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	DH-4 S-1	4-6.5	24	5	clayey gravelly silty SAND, yellow brown (SM-SC)
□	DH-5 S-1	6-8.5	22	2	silty gravelly SAND, yellow brown (SW-SM)
△	DH-12 S1	7-9.6	20	3	silty SAND, dark brown (SM)

Remark : May 1990

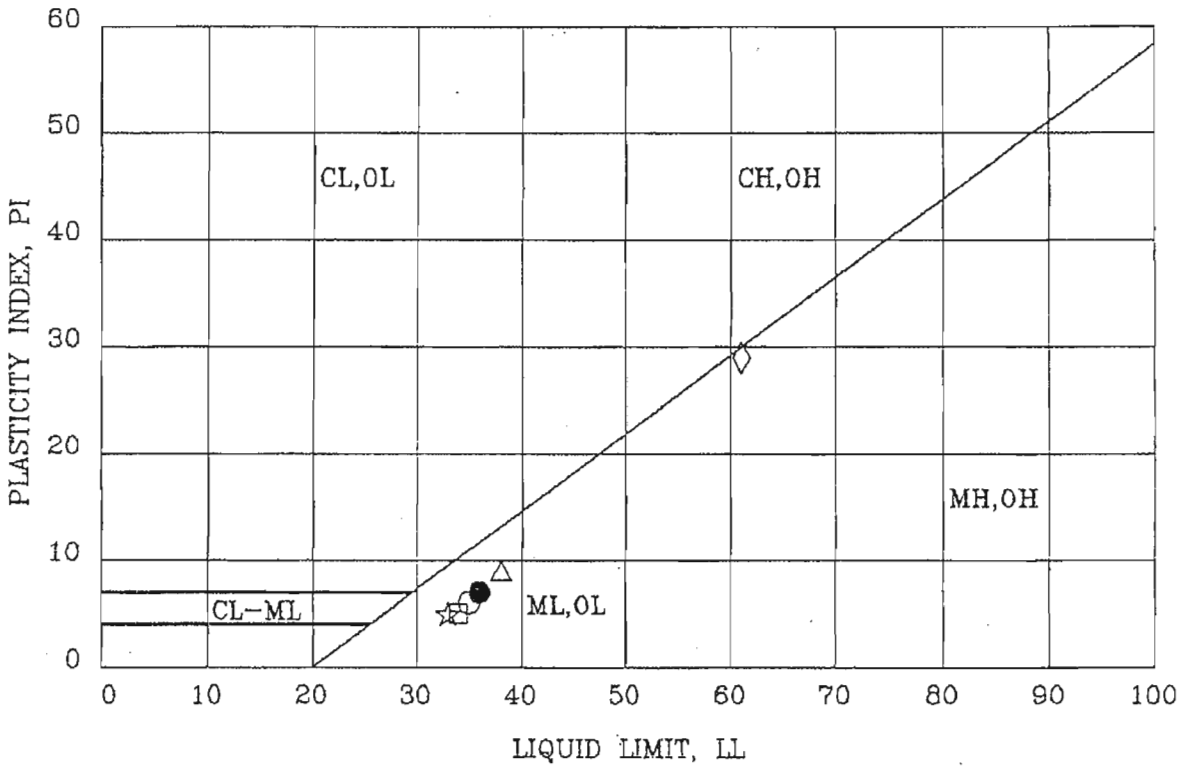
Project MWD-266A	Garvey Reservoir - Soil Liner Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-20



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	T-11 B-1	8-11	23	5	clayey gravelly silty SAND, dark brown (SM-SC)
□	T-11 B-3	0-8			silty gravelly SAND, yellow brown (SM)
△	T-13 B-1	0-9			silty gravelly SAND, yellow brown (SM)
◇	T-13 B-2	9-10	22	4	clayey gravelly silty SAND, dark brown (SM-SC)

Remark : May 1990

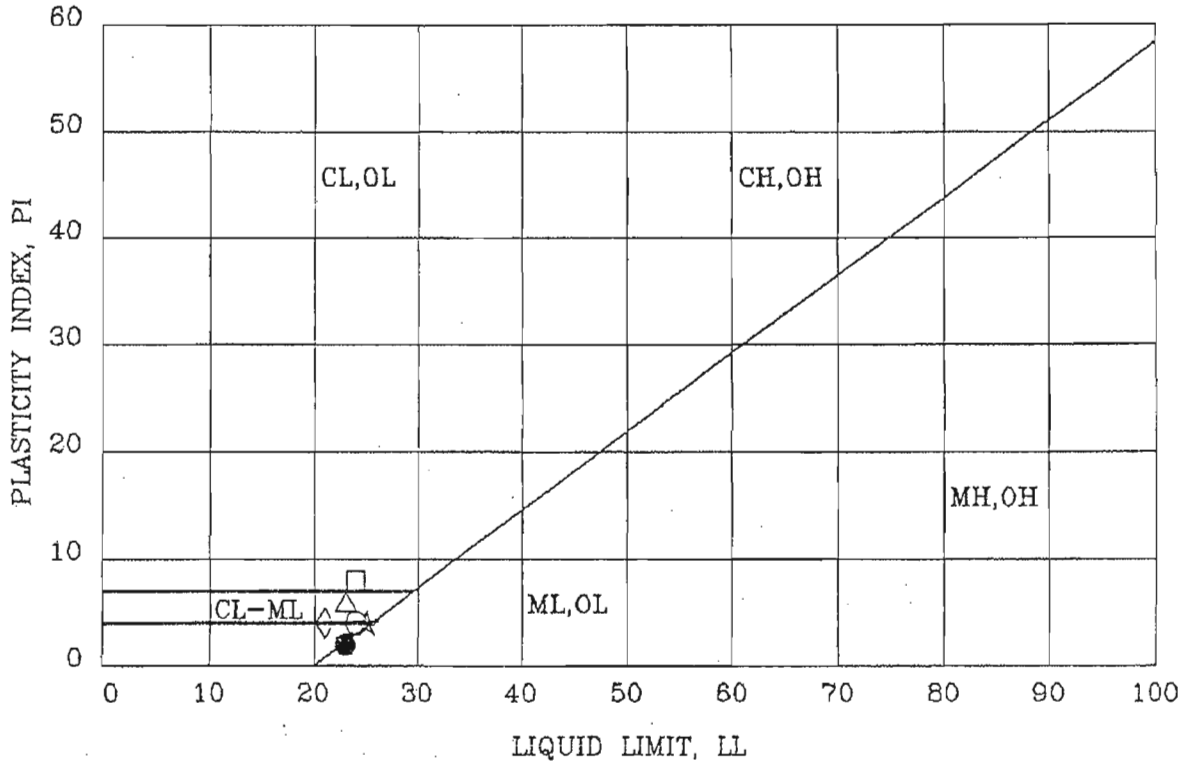
Project MWD-266A	Garvey Reservoir – Soil Liner Materials
Wahler Associates	GRAIN SIZE DISTRIBUTION Figure No. C-21



SYMBOL	BORING	DEPTH (ft)	MC (%)	LL (%)	PL (%)	PI (%)	LI (-)	DESCRIPTION
○	DH-5 S-11	60-62.5	22.1	35	29	6	-1.15	sandy SILT, yellow brown (ML)
□	DH-6 S-2	20-22.5	20.2	34	29	5	-1.76	sandy SILT, orange yellow brown (ML)
△	DH-7 S-9	72-74.5	26.6	38	29	9	-.27	sandy SILT, gray (ML)
◇	DH-8 S-2	20-22.5	24.8	61	32	29	-.25	sandy SILT, orange yellow gray (MH)
☆	DH-11 S-5	35-37.5	21.1	33	28	5	-1.38	sandy SILT, orange yellow gray (ML)
●	DH-11 S-8	62-64.5	21.4	36	29	7	-1.09	sandy SILT, yellow brown (ML)

Remark : May 1990

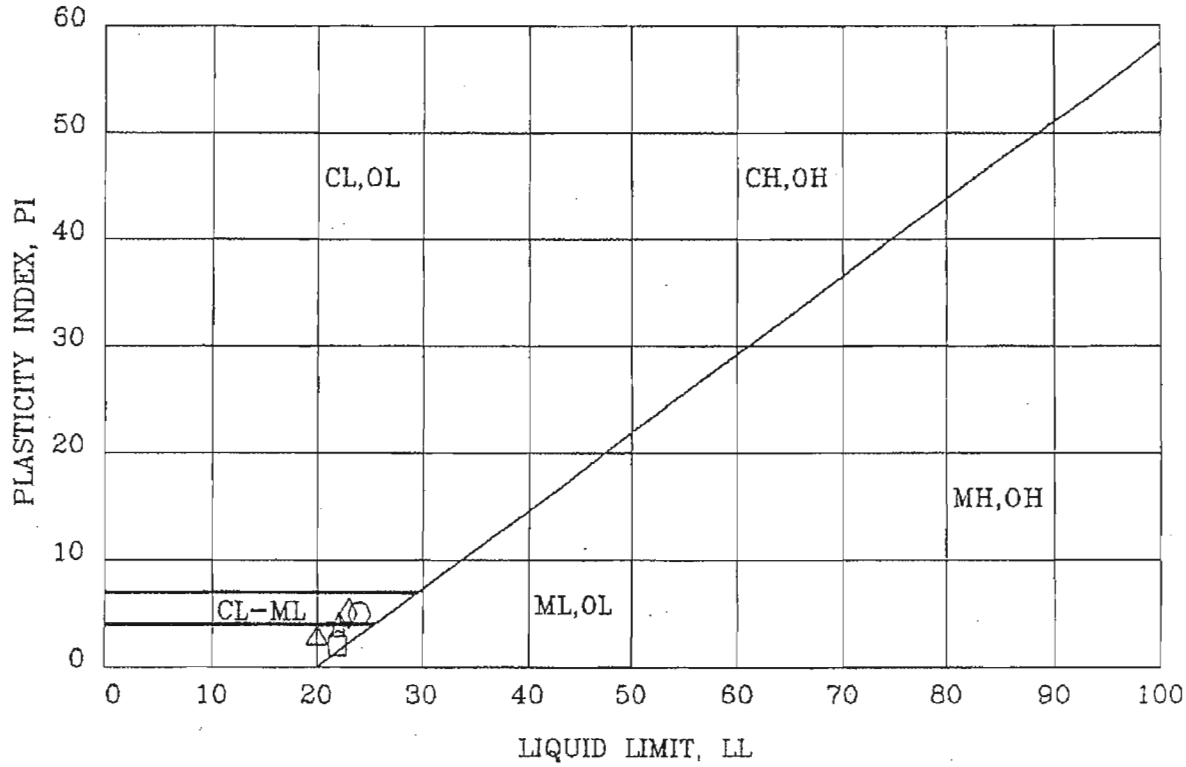
Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	PLASTICITY CHART Figure No. C-22



SYMBOL	BORING	DEPTH (ft)	MC (%)	LL (%)	PL (%)	PI (%)	LI (-)	DESCRIPTION
○	DH-1 S-1	4-6.5	10.8	24	20	4	-2.30	clayey silty grav SAND, yel brn (SM-SC)
□	DH-1 S-1	4-6.5	9.9	24	16	8	-.76	clayey gravelly SAND, yellow brown (SC)
△	DH-1 S-1	4-6.5	9.9	23	17	6	-1.18	clayey gravelly SAND, yel brown (SM-SC)
◇	DH-1 S-3	8-10.5	10.2	21	17	4	-1.70	clayey silty SAND, dark brown (SM-SC)
☆	DH-3 S-1	4-6.5	12.1	25	21	4	-2.23	clayey silty grav SAND, yel brn (SM-SC)
●	DH-3 S-1	4-6.5	13.1	23	21	2	-3.95	silty gravelly SAND, yellow brown (SM)

Remark : May 1990

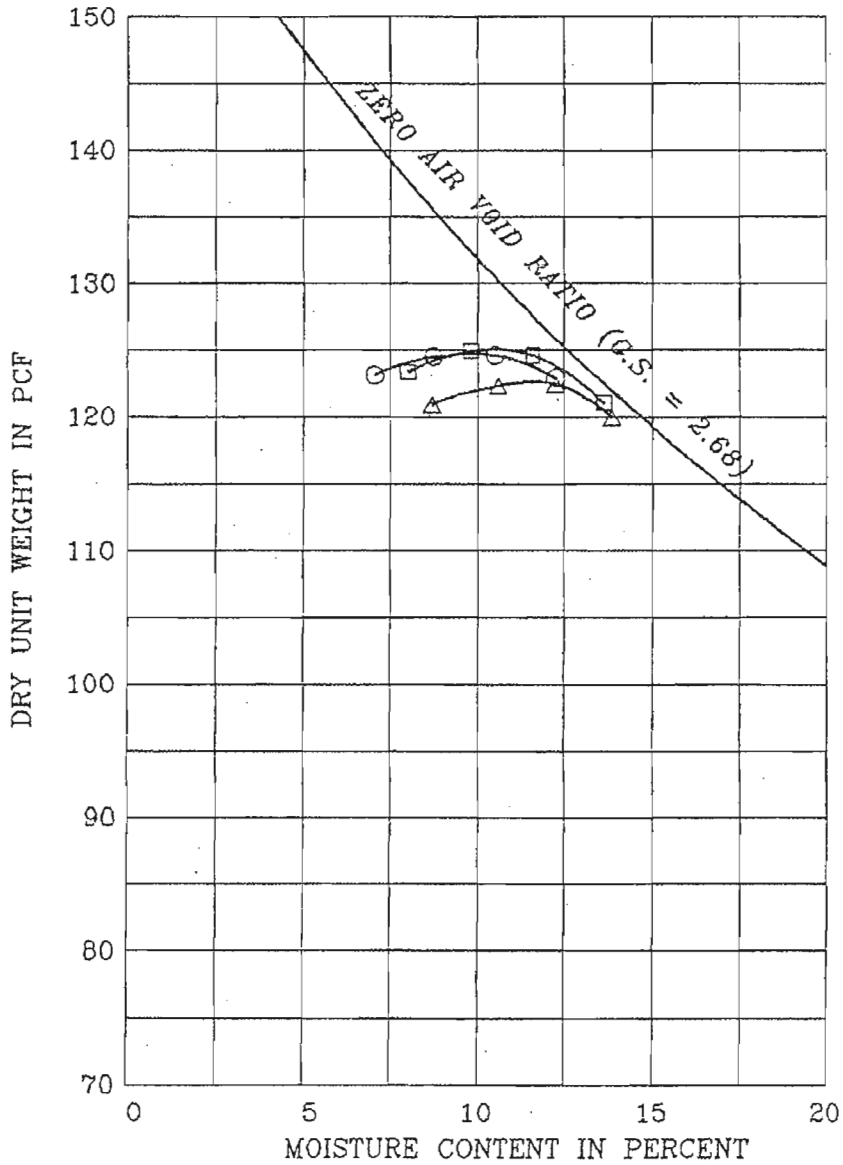
Project MWD-266A	Garvey Reservoir - Soil Liner Materials
Wahler Associates	PLASTICITY CHART Figure No. C-23



SYMBOL	BORING	DEPTH (ft)	MC (%)	LL (%)	PL (%)	PI (%)	LI (-)	DESCRIPTION
○	DH-4 S-1	4-6.5	11.6	24	19	5	-1.48	clayey silty grav SAND, yel brn (SM-SC)
□	DH-5 S-1	6-8.5	11.4	22	20	2	-4.30	silty gravelly SAND, yel brown (SW-SM)
△	DH-12 S-1	7-9.6	9.6	20	17	3	-2.47	clayey silty SAND, dark brown (SM)
◇	T-11 B-1	8-11	13.2	23	18	5	-.96	clayey silty grav SAND, drk brn (SM-SC)
☆	T-13 B-2	9-10	8.5	22	18	4	-2.38	clayey silty grav SAND, drk brn (SM-SC)

Remark : May 1990

Project MWD-266A	Garvey Reservoir - Soil Liner Materials
Wahler Associates	PLASTICITY CHART Figure No. C-24



SYMBOL	SAMPLE LOCATION	DEPTH (ft)	DESCRIPTION	TEST METHOD	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)
○	DH-2	Composite	silty grav SAND, yel brn	D1557-78-A*	9.9	124.8
□	DH-4	Composite	silty grav SAND, yel brn	D1557-78-A*	10.4	125.1
△	DH-5	Composite	silty grav SAND, yel brn	D1557-78-A*	11.7	122.6

Remark : *Modified to 20,000 ft.lb/ft. and minus 3/4 inch

Project MWD-266A	Garvey Reservoir - Foundation Materials
Wahler Associates	COMPACTION TEST — Figure No. C-25

MWD LABORATORY
TEST RESULTS

MEMORANDUM

January 9, 1990

To: Engineer George L. Barber

From: Senior Engineer Technician Ben F. Huntsman

Subject: Test Results On Soil Samples Received From Garvey Reservoir

1. Attached are the test results of soil samples received from Garvey Reservoir.

2. The Samples consisted of two materials to be used for backfilling of the test holes, five samples from Trench No. 1 and twenty-eight samples from various trenches and borings.

3. The first two samples were sampled by Ben Huntsman of the Soil and Concrete Laboratory on December 19, 1989. The five samples from Trench T-1 were sampled by Wahler and Associates on or about December 21, 1989. The twenty-nine samples from seven trenches and two borings were sampled on or about December 21, 1989.

4. The laboratory test completed on the thirty-six samples were as follows:

2 - Curves
7 - Specific Gravities
29 - Gradations
2 - Liquid Limit and Plastic Limit Tests
10 - Hydrometer - Gradations
1 - Gradation Summary Sheet
1 - Moisture and Test Completed Summary Sheet

5. The remaining soil samples are stored at the MWD Soil and Concrete Laboratory in La Verne.

6. If any additional information or the samples are needed, please call Ben Huntsman at extension 5077.

B. F. Huntsman
B. F. Huntsman

BFH/la

Attachments

cc: L. L. Treadway
T. R. Huff

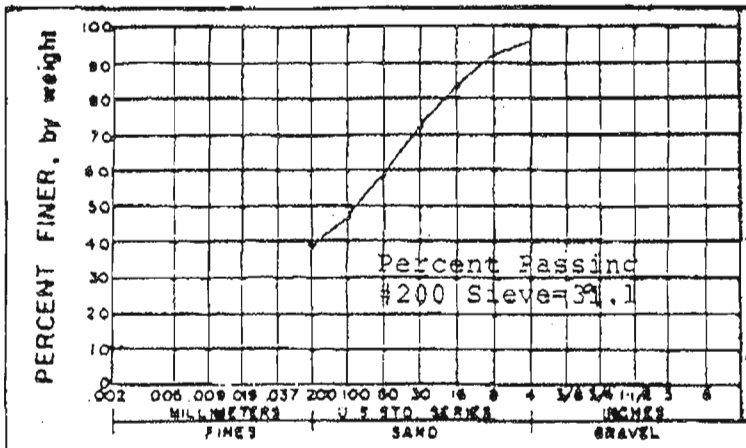
WAHLER ASSOC

GARVEY RESERVIOR SOIL SAMPLES

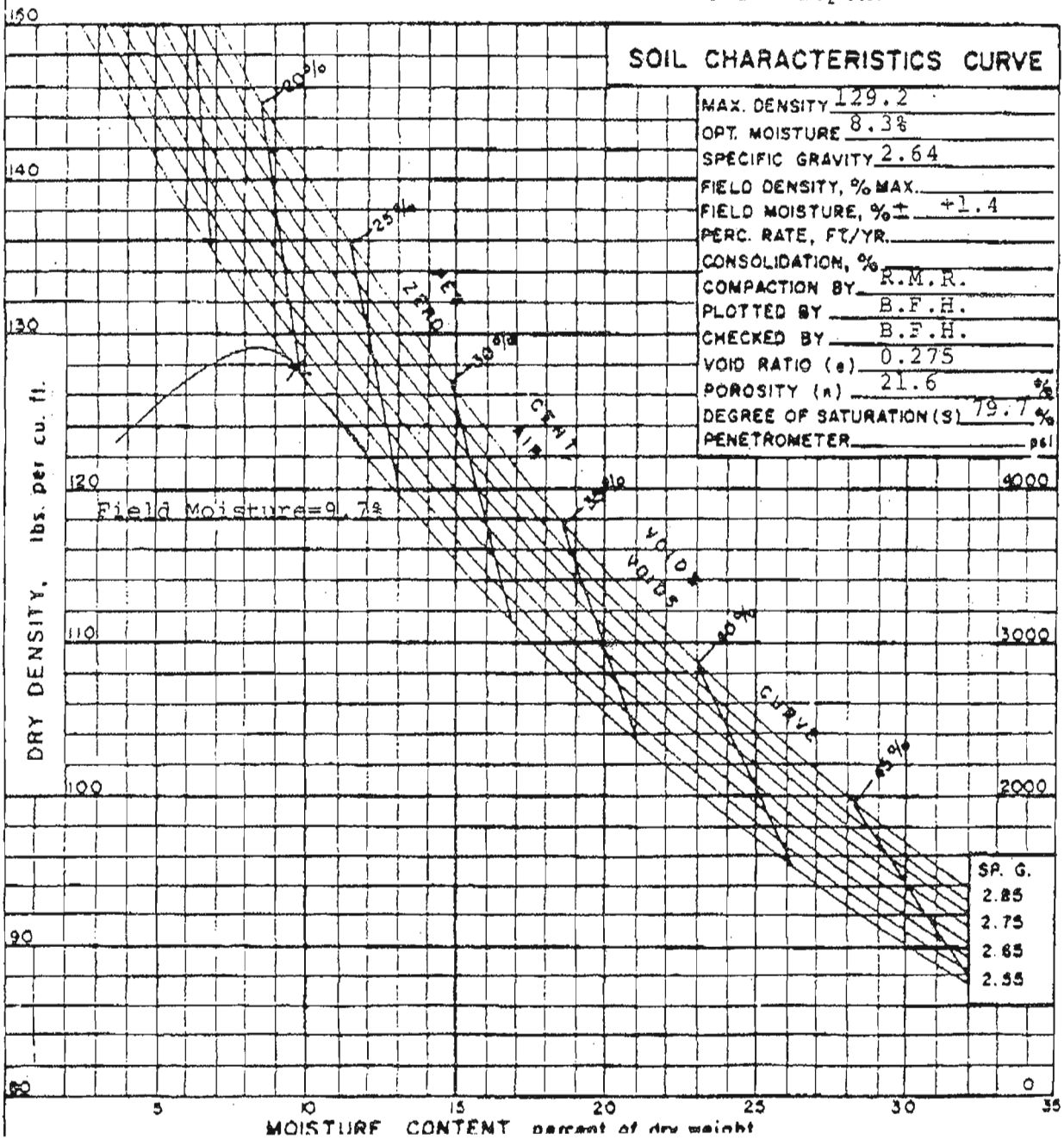
TRENCH/BORING	SAMPLE ID	DEPTH	DESCRIPTION	TEST REQ'D
T-3	B-1	0-6'	SANDY FILL	GRADATION
	B-2		PIPE INFILL	GRADATION
To small to split	B-3	Sample given to lines	SILTY CLAY SEAM	GRADATION/ATTERBURG
	B-4		FNDTN	GRADATION
	B-5		CLAY FILL	GRADATION/ATTERBURG
T-6	B-1	0-6'	SANDY FILL	GRADATION
To small to split	B-2	" 6-10' "	CLAY FILL	GRADATION/ATTERBURG
T-4	B-1	0-8'	SANDY FILL	GRADATION
	B-2	FLOOR SAMPLE	FNDTN	↓
	B-3	8-10'	SANDY FNDTN	
	B-4	10-13'	GRAVEL FNDTN	
BA-1	B-1	21-23'	SAND & GRAVEL	GRADATION
Sample too small	B-2	31-34'	FXR FACE	↓
	B-3	41'	SAND & GRAVEL	
	B-4	43'	SAND LENSE	
BA-4	B-1	44.5'	SAND LENSE	GRADATION
	B-2	~76.5'	SAND LENSE	↓
	B-3	79'	SAND LENSE	
	B-4	80-82'	Auger cuttings: Rubbly gravelly sand	
	B-5	83'	SAND	
T-2	B-1		Pipe infill	GRADATION
	B-2		GRAVELLY CHANNEL DEPOSIT	↓
T-8 were labeled T-7	B-1	0-8'	FILL	GRADATION/ATTERBURG
	B-2	13-16'	FNDTN	GRADATION
T-7	B-1	0-7'	FILL	GRADATION/ATTERBURG
	B-2	12'	SAND FNDTN	GRADATION
	B-3	B.R.T.	GRAVEL FNDTN	↓
T-10	B-1		FILL	GRADATION/ATTERBURG

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

SOIL LABORATORY



PROJECT Garvey Reservoir
SAMPLE No. GR-"A" - Above 10'
DATE 12-19-89 ELEV.
LOCATION Garvey Reservoir - Bottom of Reservoir
SOURCE OF MATERIAL Stockpiled Material Under Plastic Tarp
CLASSIFICATION Clayey Silty Sand (SC-SM) - Impervious Material
REMARKS Curve done at 56,250ft. 1 using method ASTM-D-1557 Mod. Curve Done Using - 3/4" Material Stockpiled Material For Backfill Above 10' Depth.



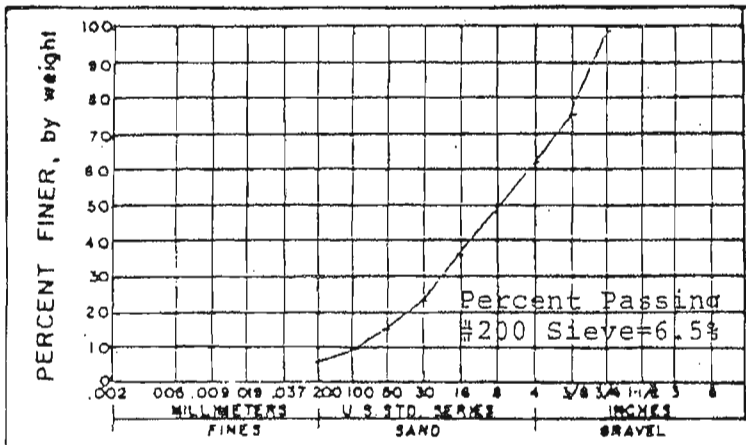
FORM 30.46

Garvey Reservoir

GR-"B"-Below 10'

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

SOIL LABORATORY



PROJECT Garvey Reservoir

SAMPLE No. GR-"B" - Below 10'

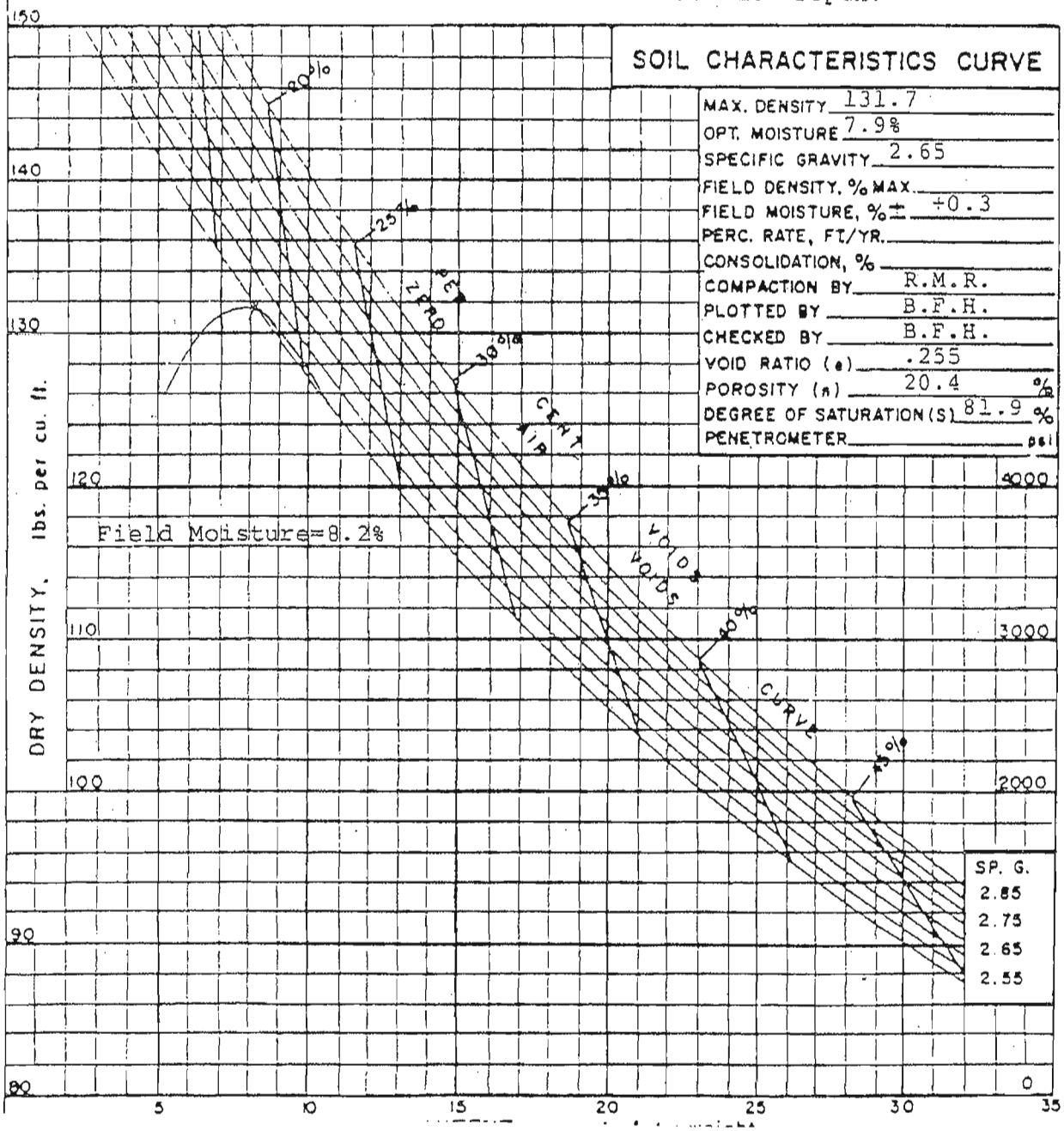
DATE 12-19-89 ELEV.

LOCATION Garvey Reservoir Bottom of Reservoir

SOURCE OF MATERIAL Stockpiled Material Under Plastic Tarp

CLASSIFICATION Silty Gravelly Sand (SM)

REMARKS Curve done @ 56,250 ft. lbs using method ASTM-D-1557 Mod. Curve done on - 3/4" material. Stockpiled material for backfill Below 10' Depth.



LIQUID AND PLASTIC LIMIT TESTS

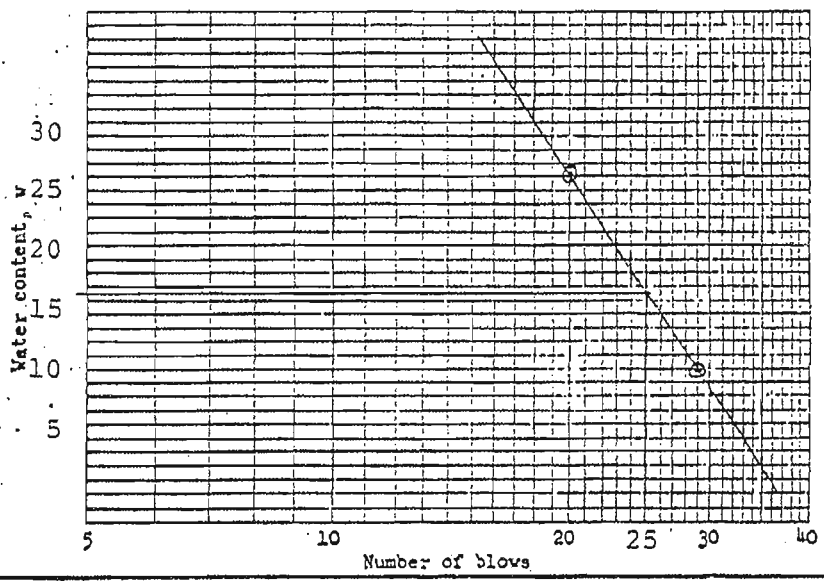
Date 1-3-90

Project Garvey Reservoir

Boring No. T-3 (B-5) Clayfill Sample No. T-3-(B-5)

LIQUID LIMIT

Run No.		1	2	3	4	5	6
Tare No.			18	10	15		
Weight in grams: Tare plus wet soil			42.08	38.76			
Tare plus dry soil			37.23	36.73			
Water	W_w		4.85	2.03			
Tare			17.96	18.17			
Dry soil	W_s		19.27	18.56			
Water content	w		25.2	10.9			
Number of blows			20	29			



LL 16.5

PL 10.5

PI 6.0

Symbol from plasticity chart

ML-CL

PLASTIC LIMIT

Run No.		1	2	3	4	5	Natural Water Content
Tare No.			9				
Weight in grams: Tare plus wet soil			19.79				
Tare plus dry soil			19.63				
Water	W_w		0.16				
Tare			18.10				
Dry soil	W_s		1.53				
Water content	w		10.5				
Plastic limit			10.5				

Remarks Difficult To Roll Thread

Clayey Silty Sand (SM)

Technician RB Computed by LAW Checked by LAW

* Note: Atterberg limits done on - 40 sieve.

PLATE III-1

LIQUID AND PLASTIC LIMIT TESTS

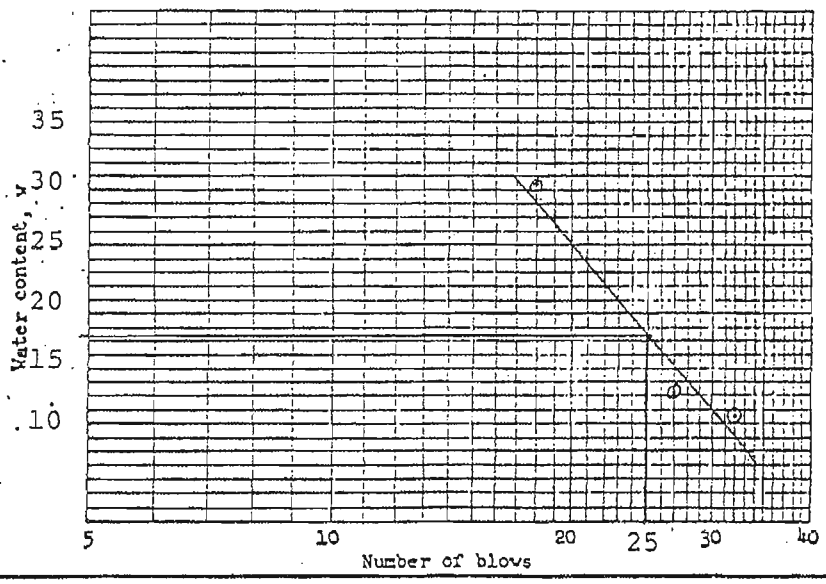
Date 1-3-90

Project Garvey Reservoir

Boring No. T-6 (B-2) Fill 6'-10' Depth Sample No. T-6-(B-2)

LIQUID LIMIT

	Run No.	1	2	3	4	5	6
	Tare No.	5	14	12			
Weight in grams	Tare plus wet soil	44.03	34.51	33.33			
	Tare plus dry soil	38.12	32.48	31.63			
	Water W_w	5.91	2.03	1.70			
	Tare	18.08	18.12	18.02			
	Dry soil W_s	20.04	14.36	13.61			
	Water content w	29.5	14.1	12.5			
	Number of blows	18	27	32			



LL 18.5

PL 11.1

PI 7.4

Symbol from plasticity chart CL-ML.

PLASTIC LIMIT

	Run No.	1	2	3	4	5	Natural Water Content
	Tare No.		16				
Weight in grams	Tare plus wet soil		19.90				
	Tare plus dry soil		19.70				
	Water W_w		0.20				
	Tare		17.90				
	Dry soil W_s		1.80				
	Water content w		11.1				
	Plastic limit		11.1				

Remarks Difficult to Roll Thread

Clayey, Silty Sand (SC)

Technician RB Computed by GS Checked by LAW

* Note: Atterberg limits done on - 40 sieve.

PLATE III-1

FORM 30-47

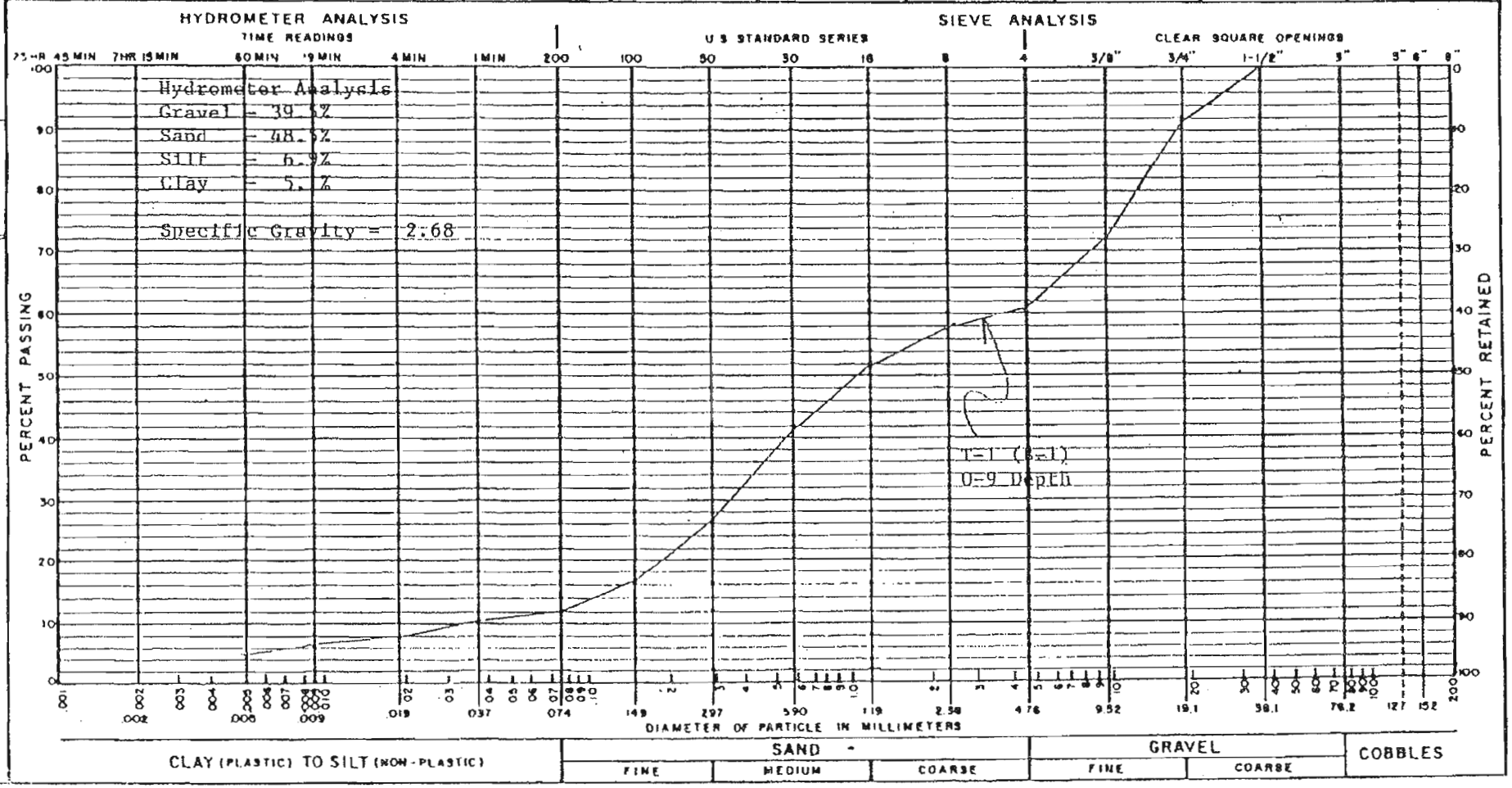
Garvey Reservoir

Hydrometer Analysis of T-1 (B-1) Sample

Garvey T-1 (B-1)

METROPOLITAN WATER DISTRICT

DATE SAMPLED		
SAMPLED BY	Wahler & Assoc	
DATE TESTED	12-20-89	
TESTED BY	L.A.W.	
STATION	0+15	(0-9 Depth)
OFFSET		
ELEVATION		
SHIFT	Sample T-1	(B-1)



Reviewed With

Approved

Date

Date

Structure

GRADATION TEST RESULTS

Date

ORM 30-47

Garvey Reservoir

Hydrometer Analysis of T-1 (B-2) Sample

Garvey Res T-1 (B-2)

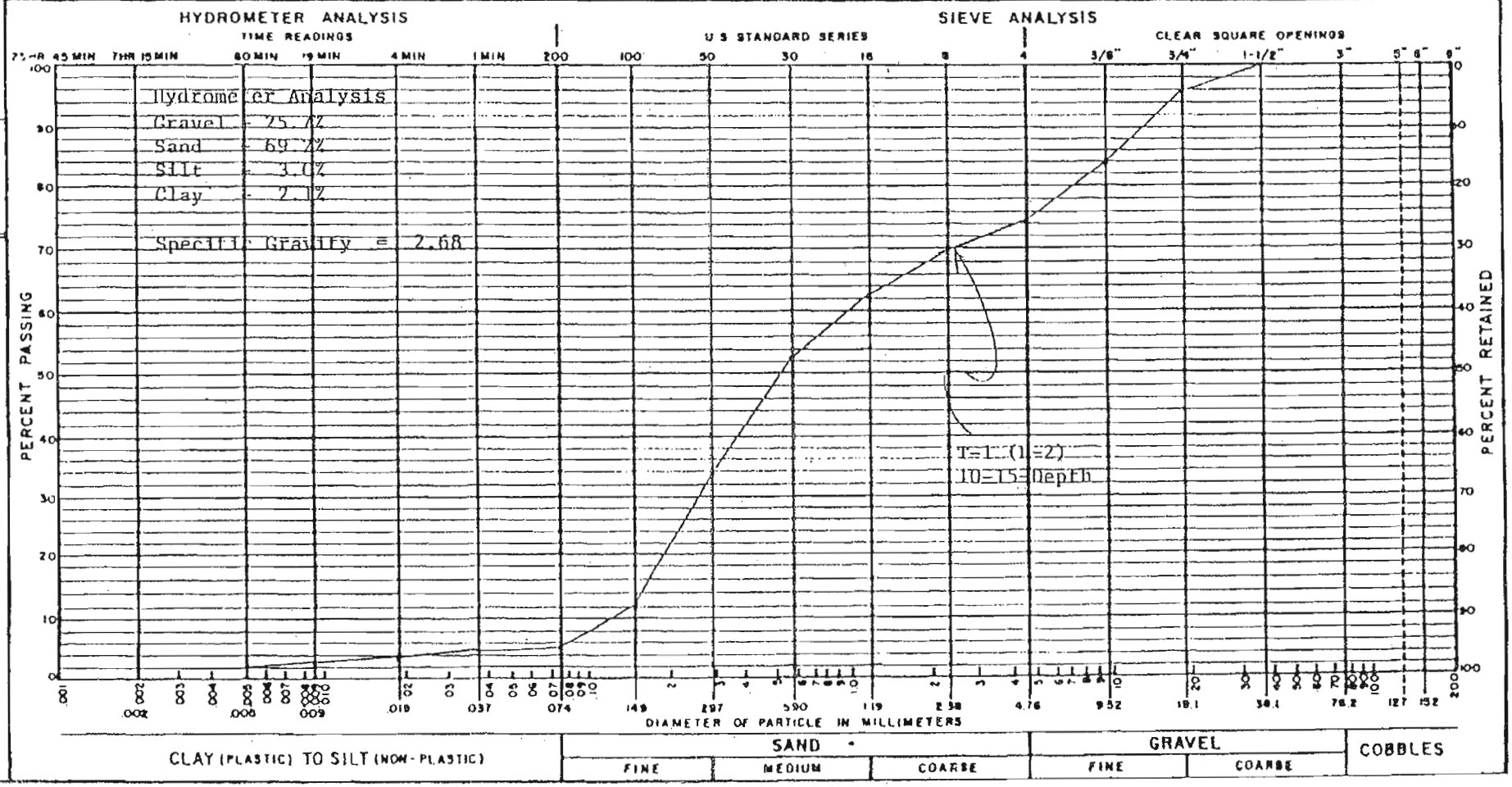
METROPOLITAN WATER DISTRICT

DATE SAMPLED									
SAMPLED BY	Wahler & Assoc.								
DATE TESTED	12-20-89								
TESTED BY	L.A.W.								
STATION	0+20	(10' - 15 Depth)							
OFFSET									
ELEVATION									
SHIFT	Sample	T-1 (B-2)							

Approved

Date

GRADATION TEST RESULTS



ORM 30-47

Hydrometer Analysis of T-1 (B-3) Sample

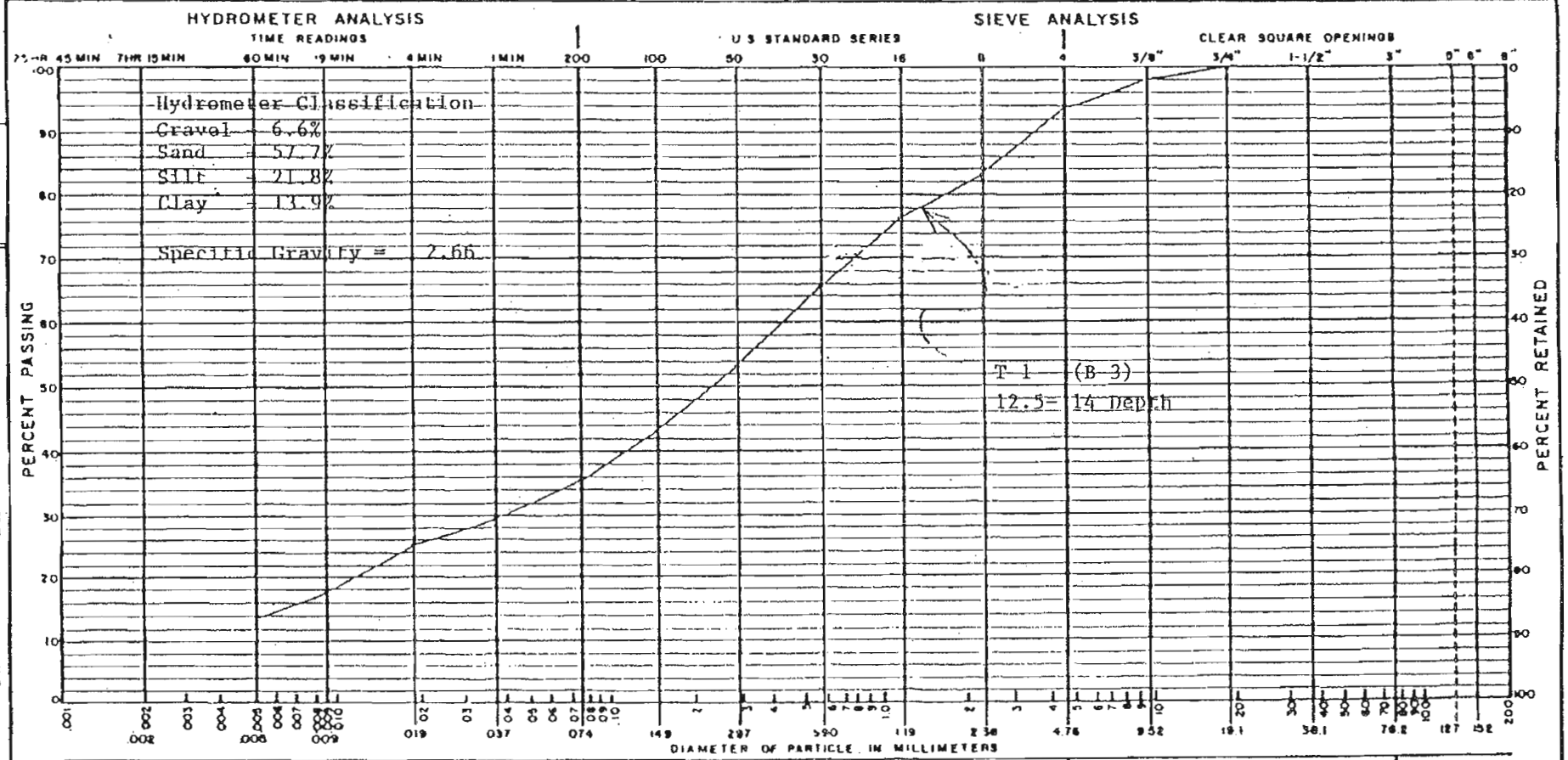
METROPOLITAN WATER DISTRICT

DATE SAMPLED									
SAMPLED BY	Wahler & Assoc.								
DATE TESTED	12-20-89								
TESTED BY	L.A.W.								
STATION	0+22.5	(12.5 - 14 Depth)							
OFFSET									
ELEVATION									
SHIFT	Sample T-1	(B-3)							

Approved

Date

GRADATION TEST RESULTS



FORM 30-47

Garvey Reservoir

Hydrometer Analysis of T-1 (B-4) Sample

Garvey Res T-1 (B-4)

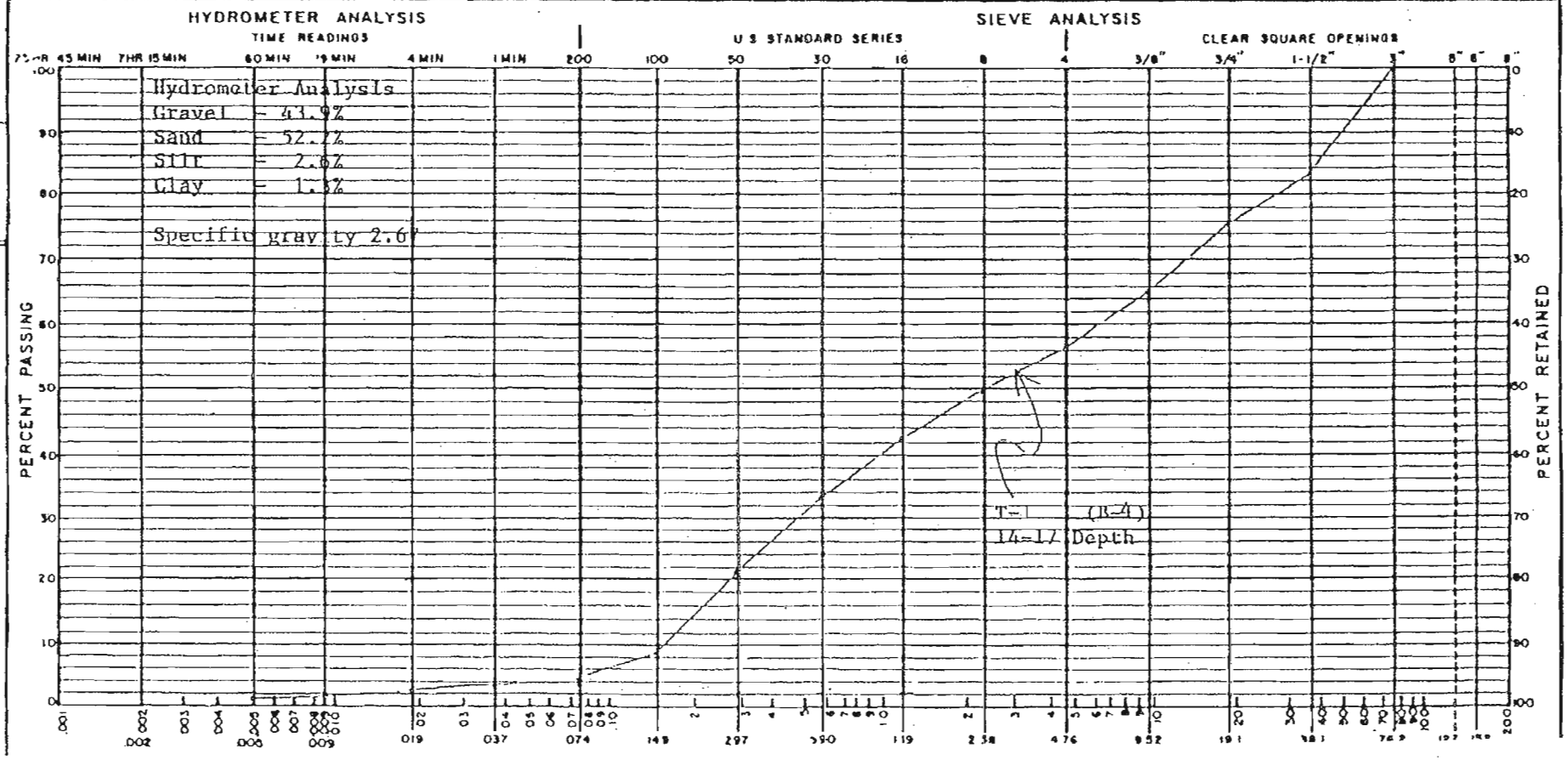
METROPOLITAN WATER DISTRICT

DATE SAMPLED	
SAMPLED BY	Wahler & Assoc.
DATE TESTED	12-20-89
TESTED BY	L.A.W.
STATION	0+24 (14-17 Depth)
OFFSET	
ELEVATION	
SHIFT	Sample T-1 (B-4)

Approved

Date

GRADATION TEST RESULTS



FORM 30-47

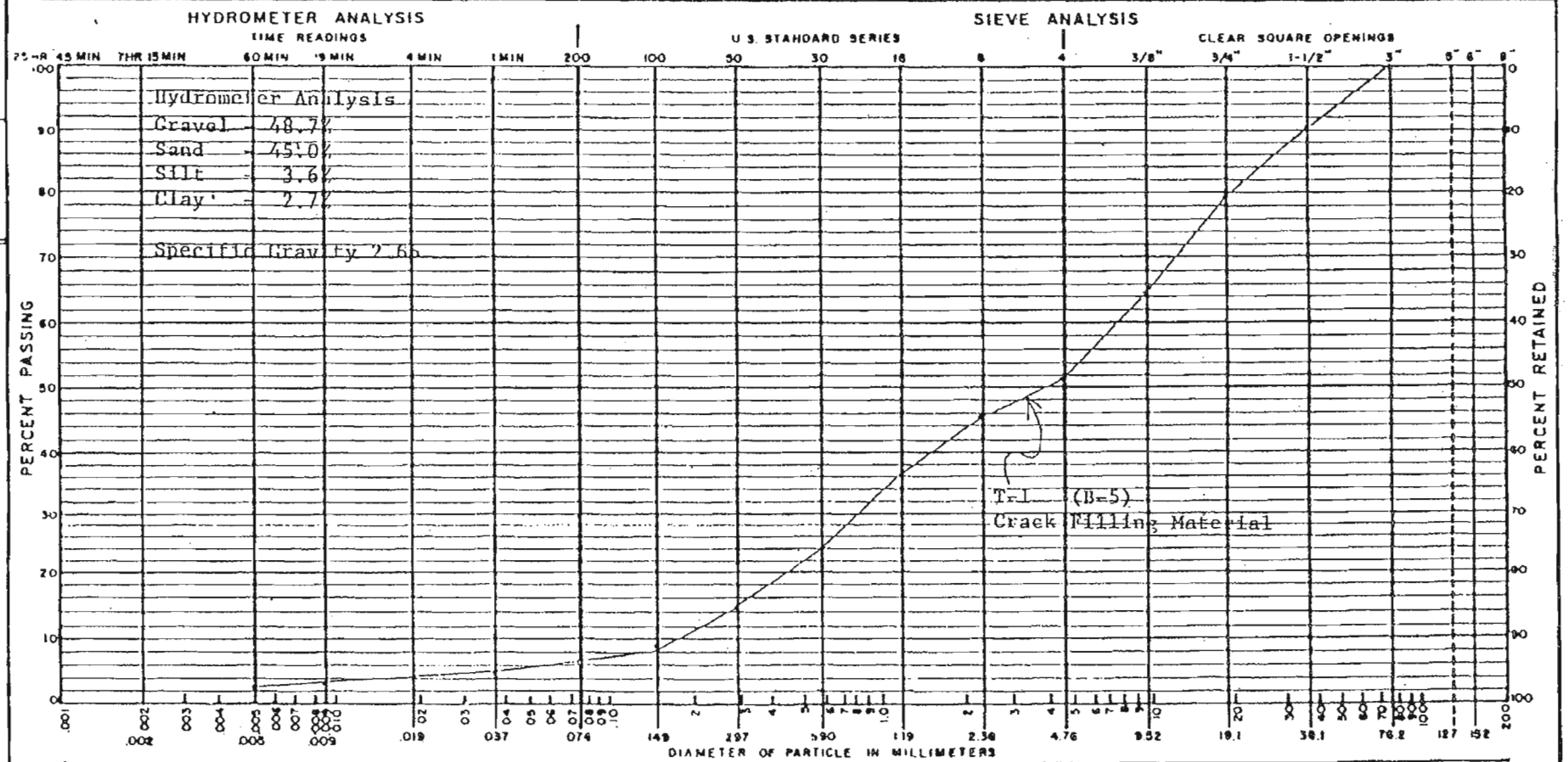
Garvey Reservoir

Hydrometer Analysis of T-1 (B-5) Sample

Garvey Res T-1 (B-5)

METROPOLITAN WATER DISTRICT

DATE SAMPLED	
SAMPLED BY	Wahler & Assoc.
DATE TESTED	12-20-89
TESTED BY	L.A.W.
STATION	Crack Filling Material
OFFSET	
ELEVATION	
SHIFT	Sample T-1 (B-5)



GRADATION TEST RESULTS

Reviewed With

Approved

Date

Structure

Page 830 of 1,185

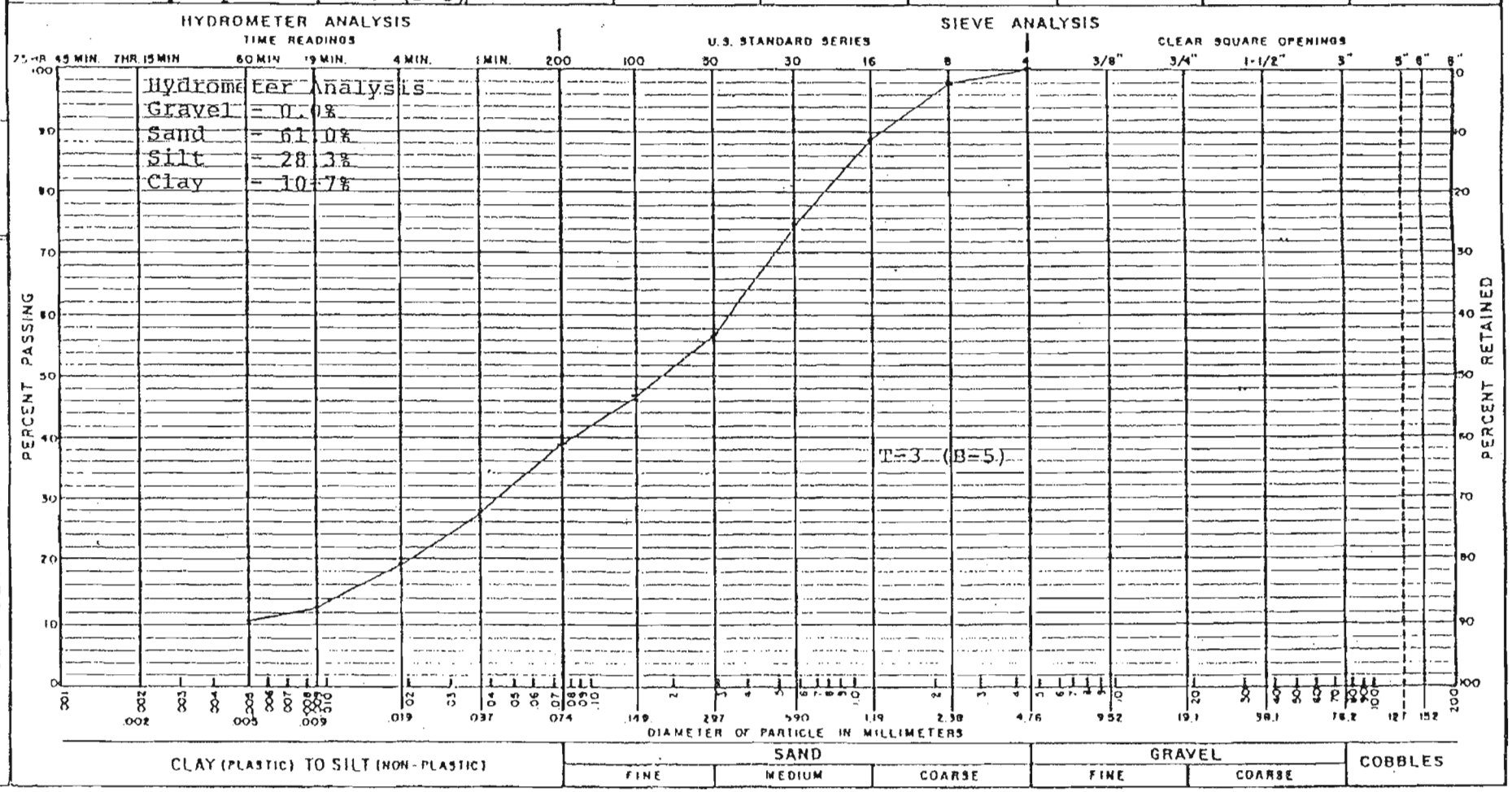
Garvey Reservoir

Hydrometer Analysis Of T-3 (B-5)

Garvey Res. T-3 (B-5)

METROPOLITAN WATER DISTRICT

DATE SAMPLED									
SAMPLED BY	Wahler &	Assoc.							
DATE TESTED	1-4-90								
TESTED BY	L.A.W.								
STATION									
OFFSET									
ELEVATION									
SHIFT	Sample	T-7 (B-3)							



Approved

Date

GRADATION TEST RESULTS

Garvey Res. voir

Hydrometer Analysis of T-6 (B-2)

Garvey Res. T-6 (B-2)

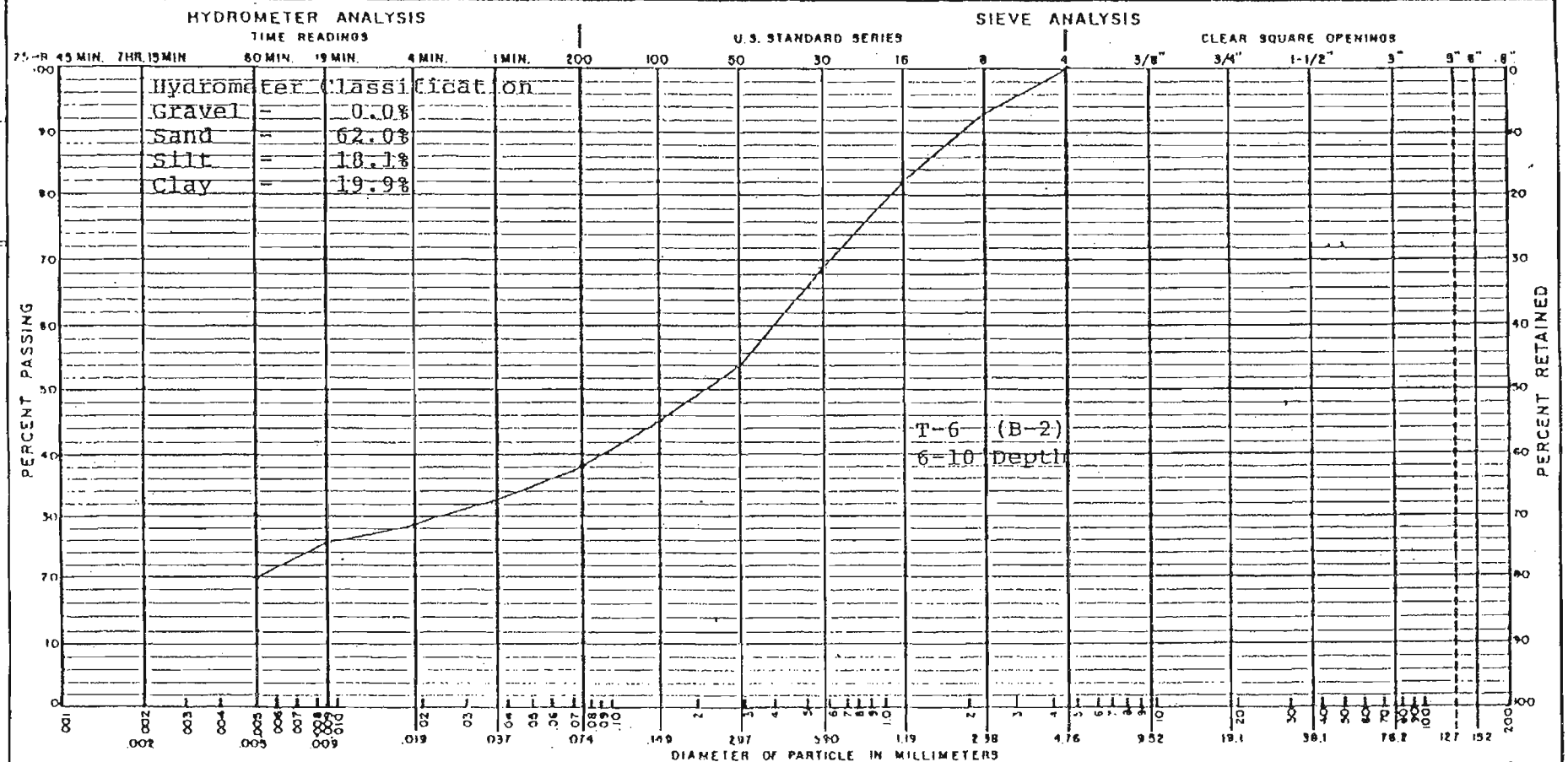
METROPOLITAN WATER DISTRICT

DATE SAMPLED									
SAMPLED BY	Wahler & Assoc.								
DATE TESTED	1-4-90								
TESTED BY	L.A.W.								
STATION									
OFFSET									
ELEVATION									
SHIFT	Sample T-6 (B-2)								

Approved

Date

GRADATION TEST RESULTS



Garvey Res oir

Hydrometer Analysis of T-7 (B-1)

Garvey Res. T-7 (B-1)

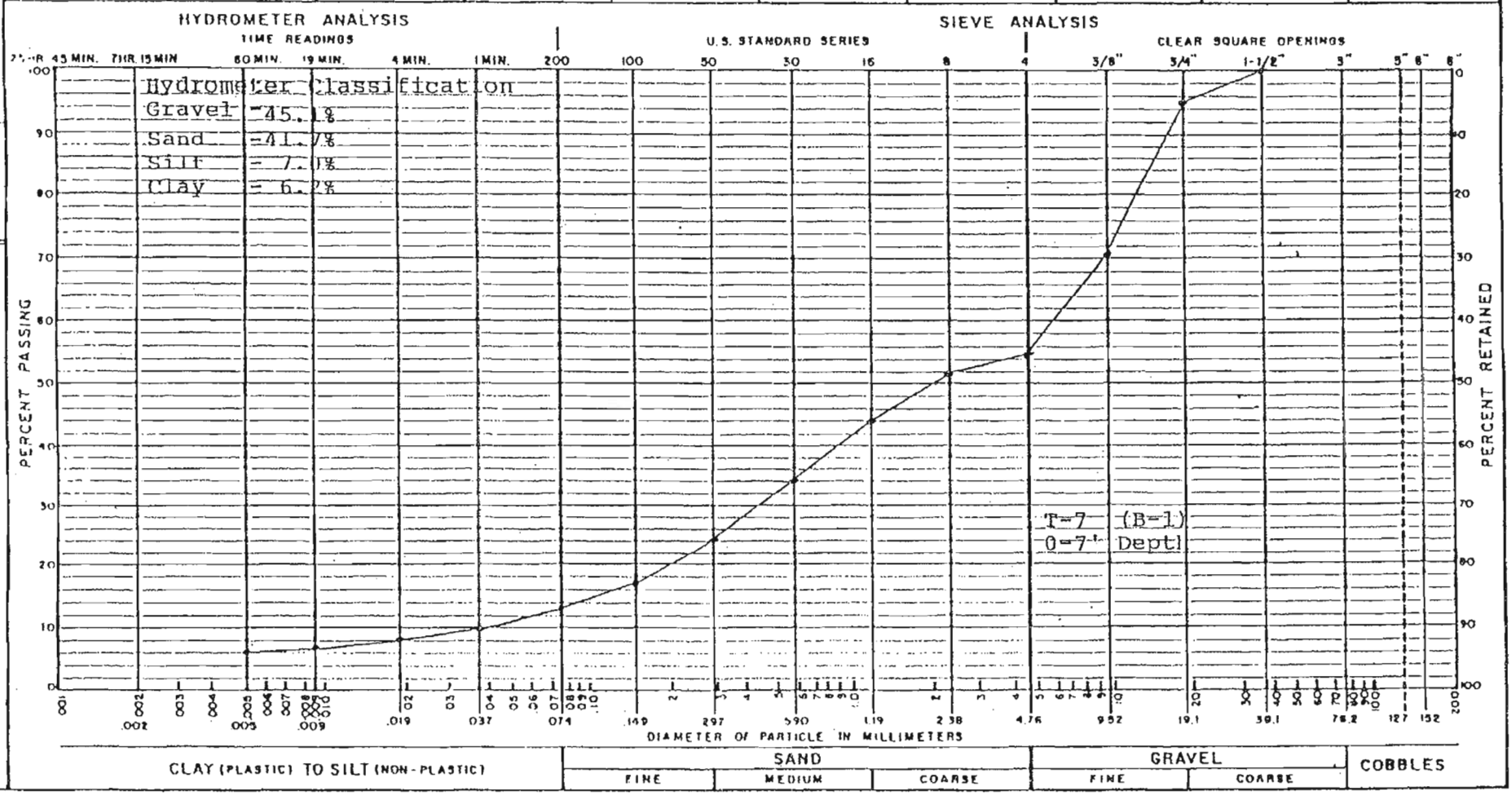
METROPOLITAN WATER DISTRICT

DATE SAMPLED									
SAMPLED BY	Wahler &	Assoc.							
DATE TESTED	1-4-90								
TESTED BY	L.A.W.								
STATION									
OFFSET									
ELEVATION									
SHIFT	Sample	T-7 (B-1)							

Approved

Date

GRADATION TEST RESULTS



Garvey Re voir

Garvey Res. T-8 (B

Hydrometer Analysis Of T-8 (B-1)

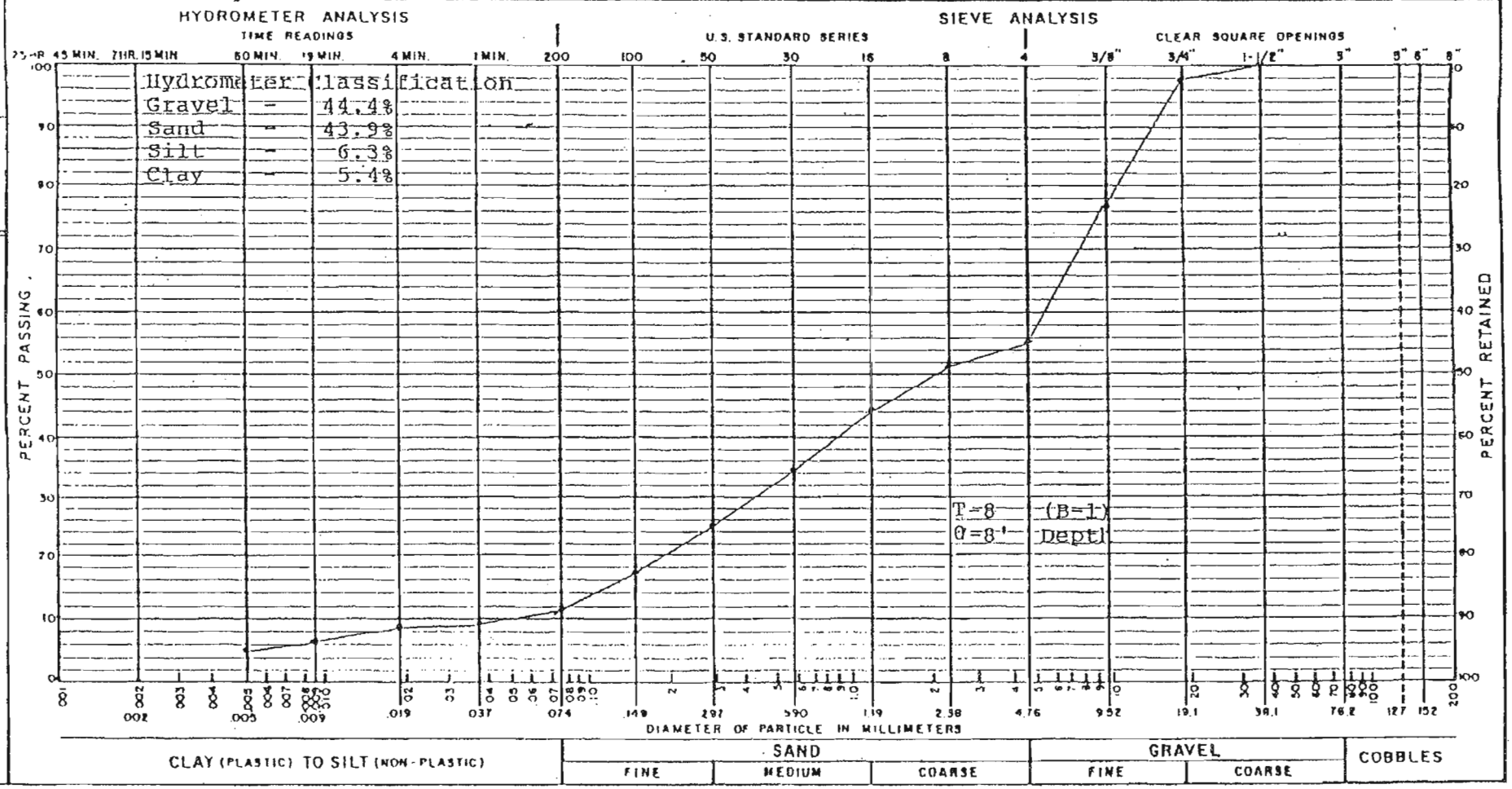
METROPOLITAN WATER DISTRICT

DATE SAMPLED									
SAMPLED BY	Wahler &	Assoc.							
DATE TESTED	1-4-90								
TESTED BY	L.A.W.								
STATION									
OFFSET									
ELEVATION									
SHIFT	Sample T-8 (B-1)								

Approved

Date

GRADATION TEST RESULTS



Garvey Res voir Garvey Res. T-10 (b

Hydrometer Analysis Of T-10 (B-1) Sample

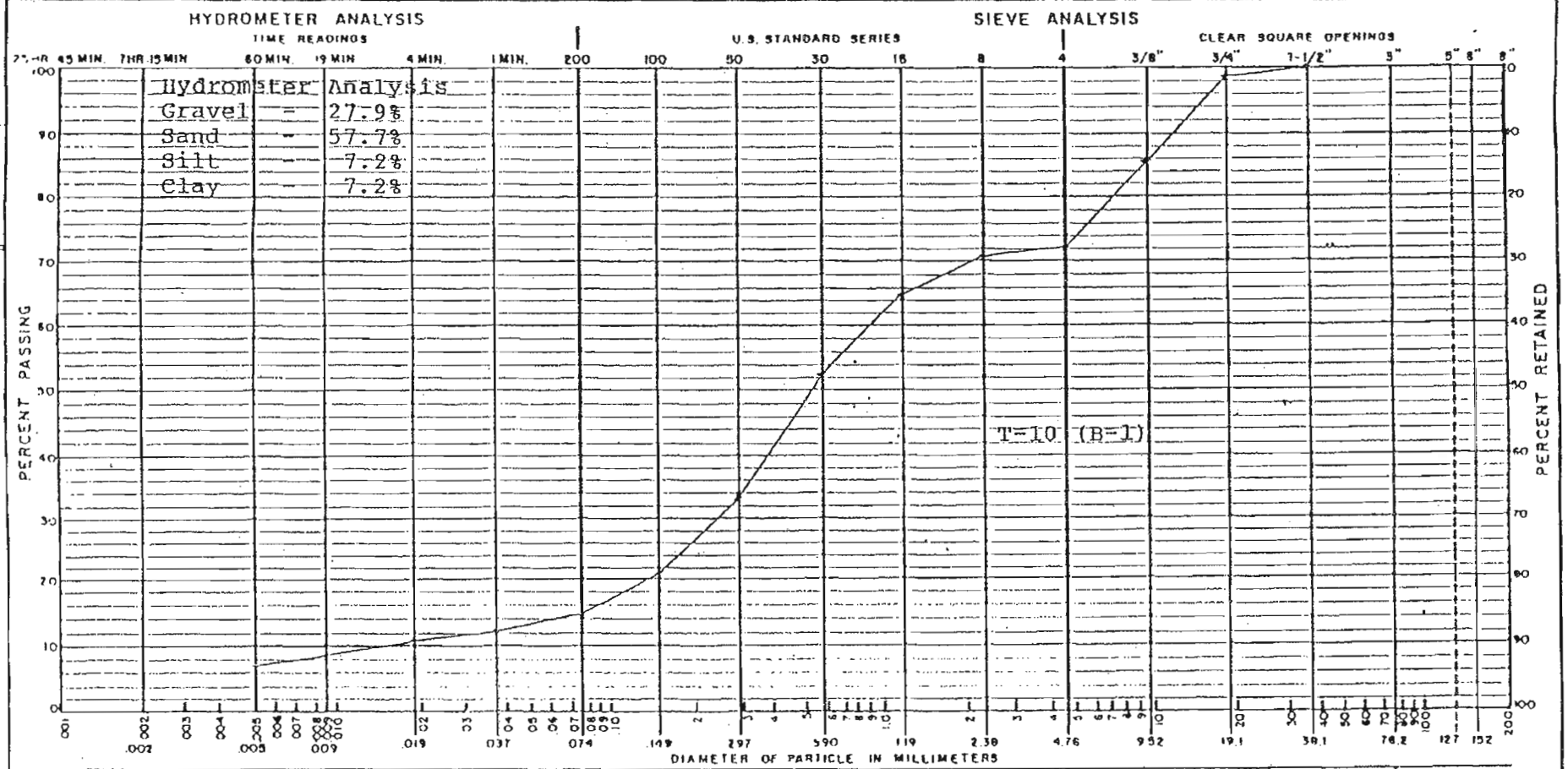
METROPOLITAN WATER DISTRICT

DATE SAMPLED									
SAMPLED BY	Wahler &	Assoc.							
DATE TESTED	1-4-90								
TESTED BY	L.A.W.								
STATION									
OFFSET									
ELEVATION									
SHIFT	Sample T-	10 (B-1)							

Approved

Date

GRADATION TEST RESULTS



GARVEY RESERVOIR - GRADATION RESULTS

Sieve Sizes with Percent Passing

Sample Number	1"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200
T-2(B-1)	100.0	96.0	86.6	78.7	72.2	62.8	49.1	32.5	18.1	12.3
" (B-2)	87.5	87.5	77.3	64.8	55.3	44.7	34.1	21.2	12.5	8.7
T-3(B-1)	90.6	90.6	81.3	75.7	69.4	59.7	46.2	31.9	20.8	15.6
" (B-2)	100.0	100.0	94.6	91.6	87.9	78.1	58.9	37.7	20.2	13.1
" (B-3)	Small	Sample	-	Siltstone	-	No	tests			
" (B-4)	100.0	96.2	86.5	82.7	76.8	69.2	55.7	30.3	10.3	5.9
" (B-5)	100.0	100.0	97.9	95.1	91.2	84.5	73.3	60.6	49.2	42.0
T-4(B-1)	100.0	100.0	90.8	82.2	75.0	65.1	51.6	36.2	23.7	18.1
" (B-2)	100.0	100.0	79.8	69.8	58.9	45.3	27.1	13.6	5.8	3.5
" (B-3)	100.0	100.0	100.0	97.1	88.9	72.7	53.1	32.9	22.6	20.4
" (B-4)	100.0	93.4	79.8	67.2	56.4	44.7	31.3	16.8	8.0	5.4
T-6(B-1)	100.0	94.6	90.7	84.9	79.5	68.7	52.9	37.5	25.9	20.5
" (B-2)	100.0	100.0	100.0	100.0	93.0	82.0	69.0	54.0	45.0	38.0
T-7(B-1)	86.8	78.3	69.3	64.6	59.8	51.9	40.7	28.0	18.0	13.2
" (B-2)	100.0	100.0	88.2	79.8	70.2	57.9	39.3	19.1	7.9	6.2
" (B-3)	100.0	70.7	55.2	44.8	36.2	28.6	19.3	10.3	5.9	4.1
T-8(B-1)	87.7	87.7	82.8	76.5	69.6	61.8	50.0	36.8	24.0	17.2
" (B-2)	100.0	96.4	89.2	78.9	73.1	65.5	50.7	29.2	10.8	6.7
T-10(B-1)	100.0	98.8	85.9	72.1	70.7	64.9	52.6	33.2	20.9	14.4
BA-1(B-1)	85.2	82.3	73.8	61.6	52.5	43.0	30.8	17.9	7.2	4.2
" (B-2)	100.0	100.0	100.0	94.7	89.5	86.8	78.9	60.5	34.2	23.7
" (B-3)	100.0	94.2	72.5	61.6	55.8	50.4	43.8	34.9	27.1	23.6
" (B-4)	100.0	100.0	100.0	95.6	91.9	84.7	68.5	41.4	14.2	6.4
BA-4(B-1)	100.0	100.0	94.8	91.8	88.4	80.7	67.0	50.2	20.6	10.3
" (B-2)	100.0	100.0	99.7	98.3	94.1	79.5	53.5	28.5	13.2	8.0
" (B-3)	100.0	100.0	97.2	92.6	83.9	66.6	44.9	25.3	12.5	7.7
" (B-4)	90.6	88.4	73.9	62.4	53.2	42.5	30.9	19.1	11.0	7.5
" (B-5)	100.0	100.0	100.0	94.7	84.8	67.1	48.1	29.0	13.1	7.8

Garvey Reservoir Soil Samples

Trench/ Boring	Sample ID	Depth Feet	Moisture Percent	Wahler&Assoc. Description	Gradation	Atterberg	Hydrometer	Remarks
T-2	B-1	-	6.8	Pipe in fill	Yes	No	No	
	B-2	-	10.1	Gravelly Channel Dep.	Yes	No	No	
T-3	B-1	6-0	7.8	Sandy Fill				
	B-2		15.7	Pipe in fill	Yes	No	No	
	B-3		No test	Sandy Clay Seam	No	No	No	Small Piece Siltstone
	B-4		8.5	Foundation	Yes	"	"	
	B-5		11.6	Clay Fill	Yes	Yes	Yes	
T-4	B-1	0-8	7.6	Sandy fill	Yes	No	No	
	B-2	Fir Sample	5.7	Foundation	Yes	No	No	
	B-3	8-10	6.6	Sandy Foundation	Yes	No	No	
	B-4	10-13	5.3	Gravel Foundation	Yes	No	No	
T-6	B-1	0-6	24.5	Sandy Fill	Yes	No	Yes	
	B-2	6-10	No Test	Clay Fill	No	Yes	Yes	Small Sample
T-7	B-1	0-7	9.2	Fill	Yes	No	Yes	
	B-2	12	6.6	Sand Foundation	Yes	No	No	
	B-3	B.O.T.	7.6	Gravel Foundation	Yes	No	No	
T-8	B-1	0-8	14	Fill	Yes	No	Yes	Labeled as T-7
	B-2	13-16	15.4	Foundation	Yes	No	No	Labeled as T-7
T-10	B-1	-	14.6	Fill	Yes	No	Yes	
BA-1	B-1	21-23	7.7	Sand & Gravel	Yes	No	No	
	B-2	31-34	15.8	FIR Face	Yes	No	No	Small Sample
	B-3	41	7.9	Sand & Gravel	Yes	No	No	
	B-4	43	10.5	Sand Lense	Yes	No	No	
BA-4	B-1	44.5	12.8	Sand Lense	Yes	No	No	
	B-2	76.5	17	Sand Lense	Yes	No	No	
	B-3	78	15	Sand Lense	Yes	No	No	
	B-4	80-82	10.3	Redbin Gravelly Sand	Yes	No	No	
	B-5	83	16.4	Sand	Yes	No	No	

MWD CENTRAL LIBRARY
RP006287
R#444

METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA
CENTRAL LIBRARY

METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA
CENTRAL LIBRARY

2/27/91

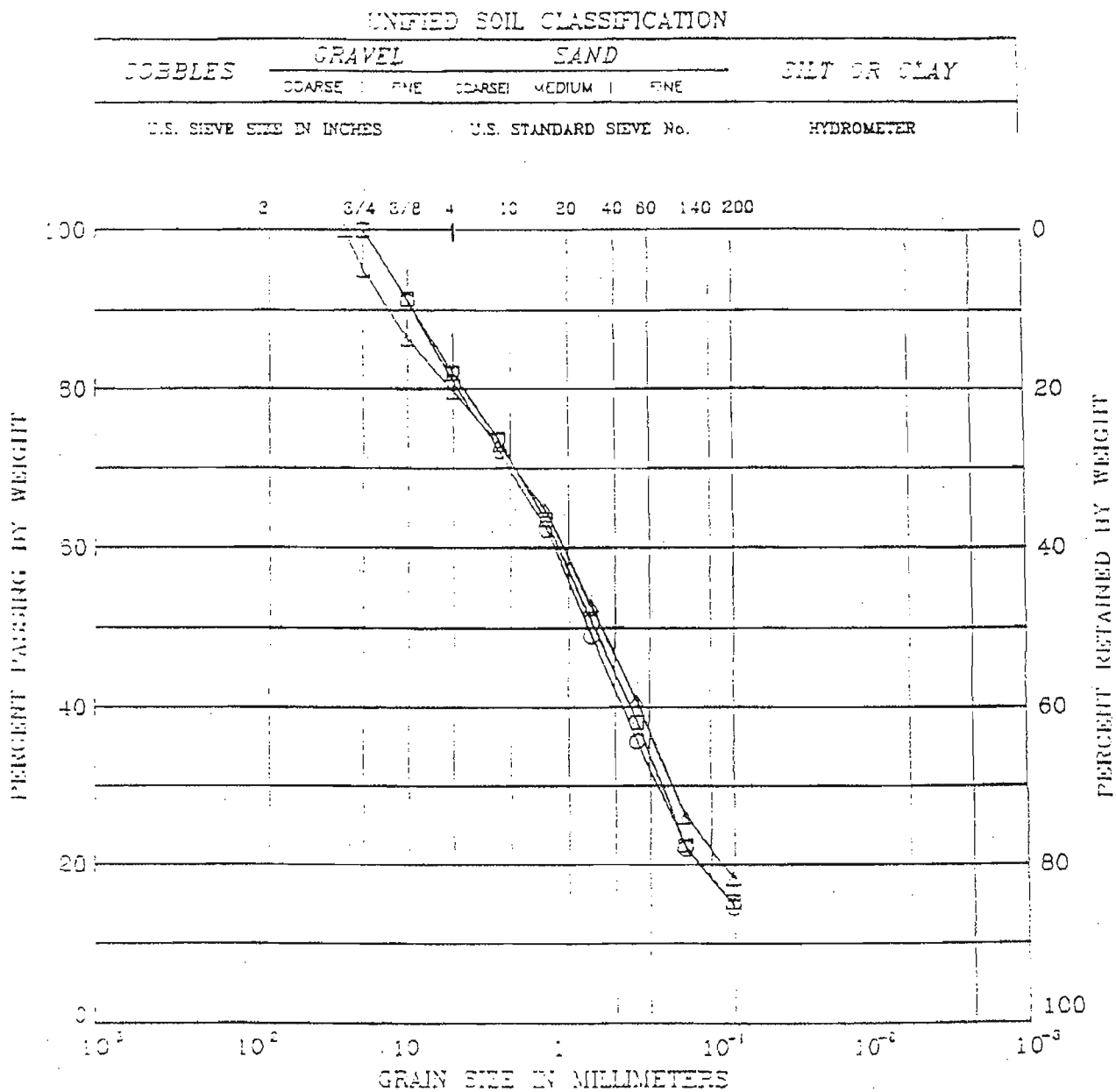
REPORT
SEISMIC STABILITY INVESTIGATION
GARVEY RESERVOIR
FOR METROPOLITAN WATER DISTRICT

UR-91
000059

JOB NO. 02269-025-015
JANUARY 30, 1991

DAMES & MOORE

SANTA ANA, CALIFORNIA

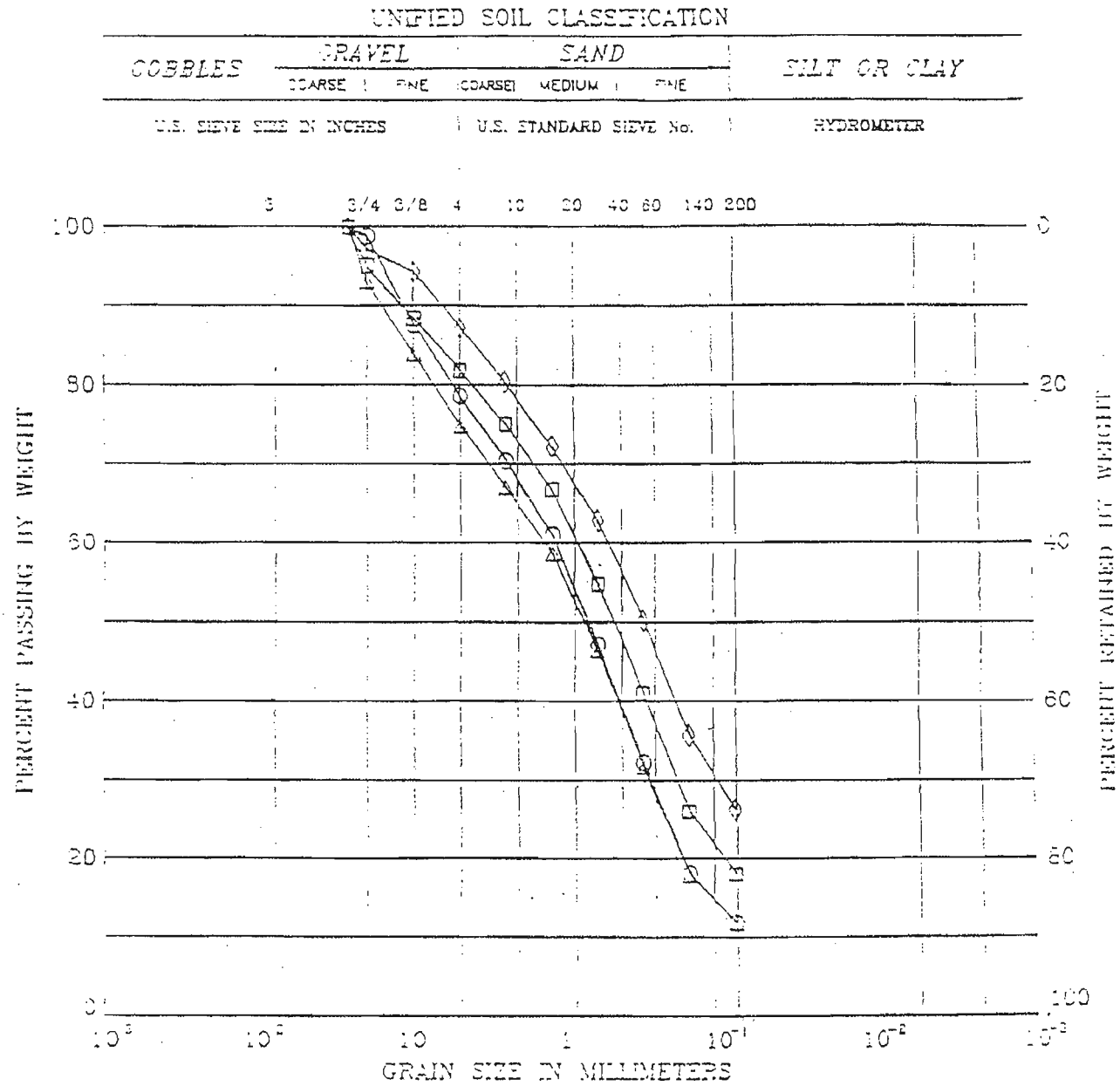


SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	[illegible] S-2	50-52.5			silty gravelly SAND, yellow brown (SM)
□	[illegible] S-3	60-62.5			silty gravelly SAND, yellow brown (SM)
△	[illegible] S-[illegible]	[illegible]			silty gravelly SAND, yellow brown (SM)

Remark : October 1990

Project MWD-266B ; Garvey Reservoir

Wahler Associates ; GRAIN SIZE DISTRIBUTION Figure No. 3



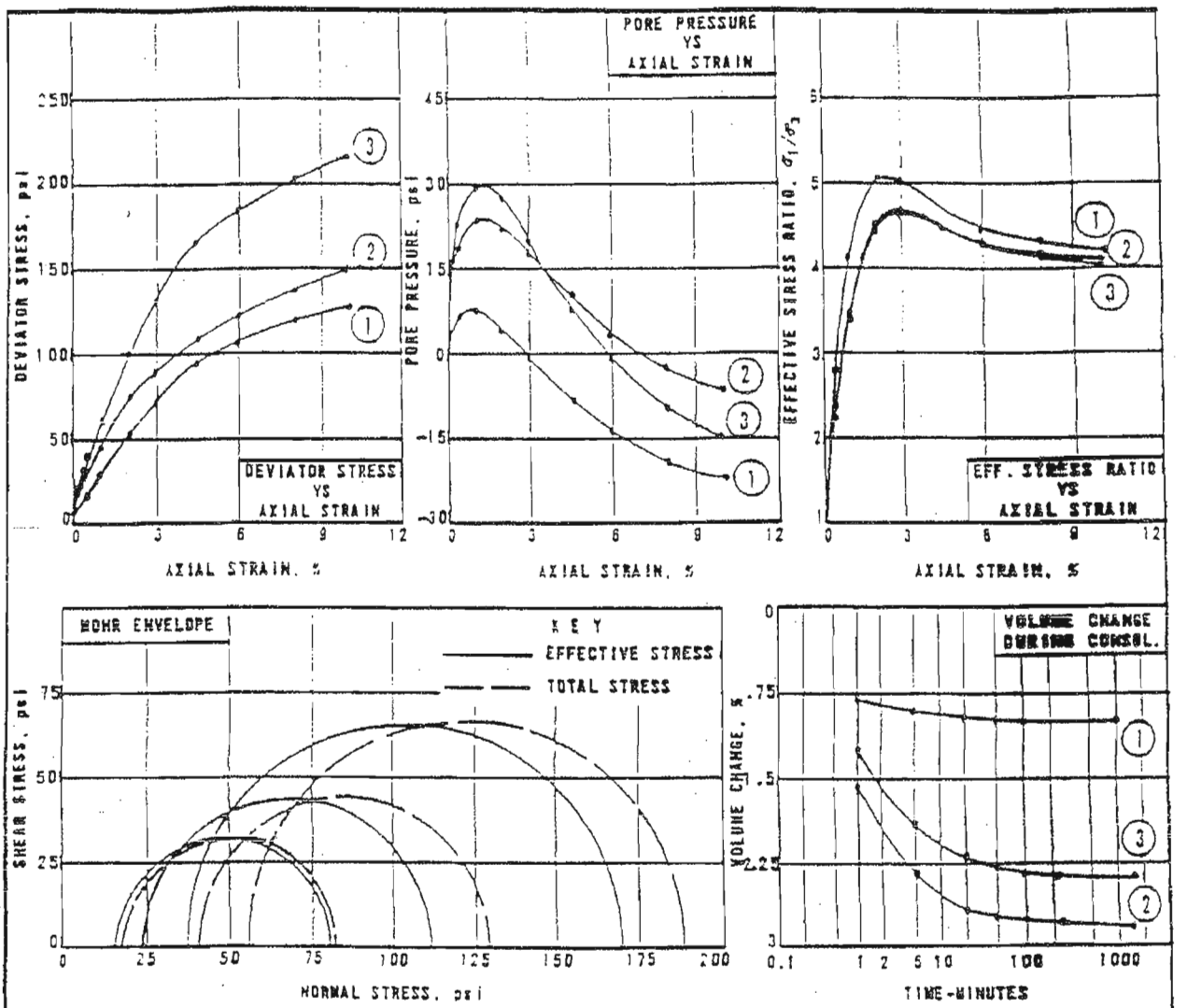
SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	-19, S-1	20-22			silty gravelly SAND, yellow brown (SW-SM)
□	-19, S-2	40-42.4	25	5	clayey gravelly SAND, yellow brown (SC)
△	-19, S-3	60-61.9			silty gravelly SAND, yellow brown (SW-SM)
◇	-19, S-4	80-81.9	23	4	gravelly clayey SAND, orange yellow brown (SC-SM)

Remark : October 1990

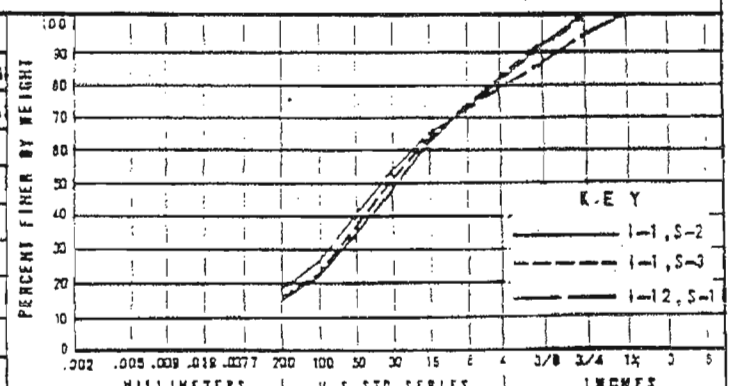
Project MWD-288B Garvey Reservoir

Wahler Associates

GRAIN SIZE DISTRIBUTION Figure No. 5



SPECIMEN NO.	(1)	(2)	(3)
INITIAL CONDITION: Hole No., Sample No.	I-12, S-1	I-1, S-2	I-1, S-3
Depth, ft.	25-28	50-50.5	60-62.3
Water Content, %	12.5	12.8	10.9
Dry Density, pcf	119.6	118.5	121.0
Void Ratio	0.382	0.396	0.368
Saturation, %	87	86	78
FINAL CONDITION: Consol. Pressure, psi	17.4	41.7	55.8
Water Content, %	13.9	13.4	12.6
Dry Density, pcf	120.2	121.8	124.0
Void Ratio	0.368	0.356	0.334
Saturation, %	100	100	100
GENERAL: Specimen Diameter, in.	2.88	2.88	2.88
Back Pressure, psi	50.0	50.0	50.0
Test Time, hr	2.42	2.45	2.45
Rate of Strain, %/hr	4.13	4.07	4.05



USCS	SM	SOIL CLASSIFICATION	SILTY GRAVELLY SAND, YELLOW BROWN
LL	---		
PL	---	SAMPLE LOCATION	I-1, S-2 & S-3; I-12, S-1
PI	---		
SG	2.65 (Est.)	NOTE: UNDISTURBED TUBE SPECIMENS	

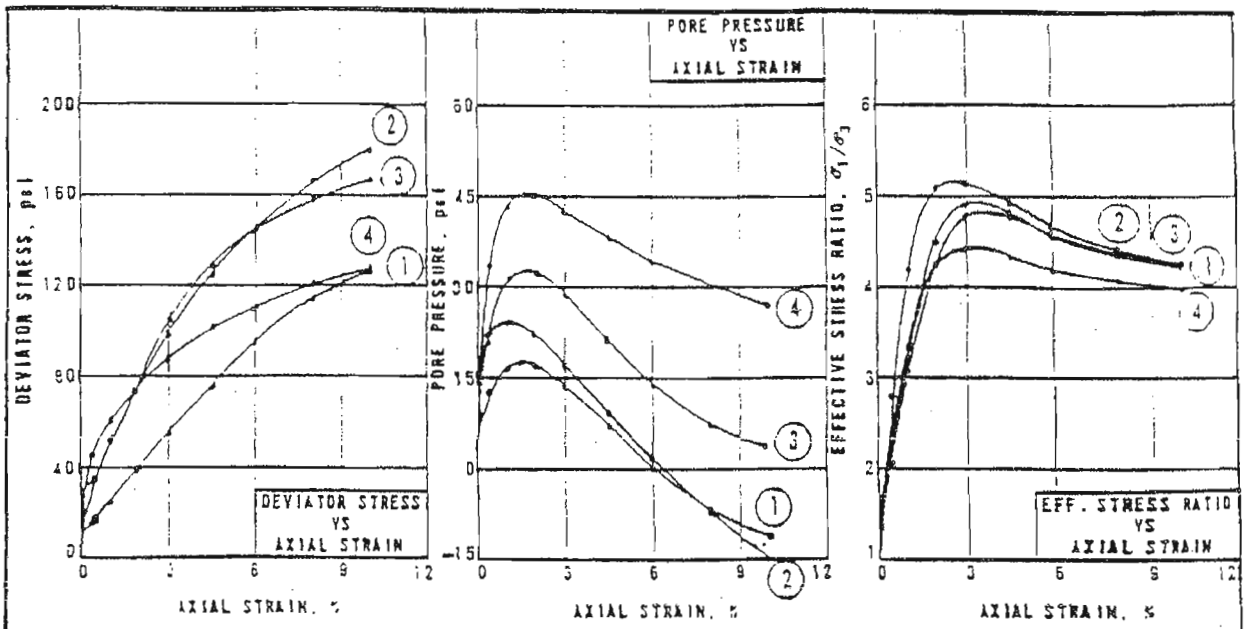
Wahler Associates
PALO ALTO • CALIFORNIA

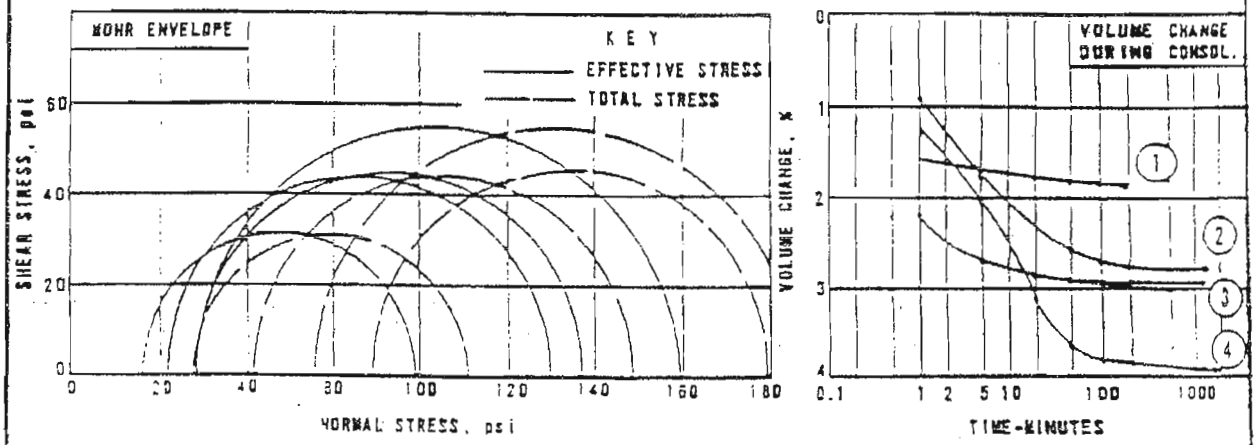
GARVEY RESERVOIR

TRIAXIAL TEST RESULTS
CONSOLIDATED UNDRAINED

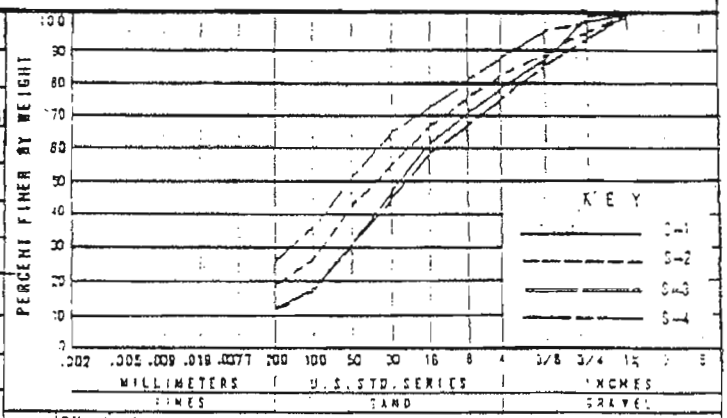
PROJECT NO.	DATE	FIGURE NO.
WWD-2868	OCTOBER 1990	7

HOLE NO., SAMPLE NO.
I-1, S-2 & 3
I-12, S-1





	SPECIMEN NO.	(1)	(2)	(3)	(4)
INITIAL CONDITION	Sample no.	S-1	S-2	S-3	S-4
	Depth, ft.	20-22	40-42.4	50-51.9	80-81.5
	Water Content, %	11.3	11.6	11.8	13.2
	Dry Density, pcf	117.7	122.0	118.5	119.3
	Void Ratio	0.405	0.355	0.396	0.386
	Saturation, %	74	86	79	90
FINAL CONDITION	Consol. Pressure, psi	27.8	41.7	55.6	69.4
	Water Content, %	14.0	12.0	13.4	12.5
	Dry Density, pcf	119.9	125.5	122.1	124.2
	Void Ratio	0.380	0.318	0.354	0.331
	Saturation, %	100	100	100	100
GENERAL	Specimen Diameter, in	2.88	2.88	2.88	2.88
	Back Pressure, psi	50.0	50.0	50.0	50.0
	Test Time, hr	2.40	2.80	2.38	2.73
	Rate of Strain, %/hr	4.16	3.58	4.18	3.66



SYMB	SM / SC SOIL CLASSIFICATION SPEC #1 & 3: SILTY GRAV. SAND. YEL.
LL	--- BRN. SPEC #2 & 4: CLAYEY GRAV. SAND. YEL. BRN.
PL	--- SAMPLE LOCATION 1-19: S-1, S-2, S-3 & S-4
PI	---
SG	2.65 NOTE: UNDISTURBED TUBE SPECIMENS
	(est.)

Wahler Associates

PALO ALTO • CALIFORNIA

GARVEY RESERVOIR

TRIAXIAL TEST RESULTS
CONSOLIDATED UNDRAINED

PROJECT NO.	DATE	FIGURE NO.
WWD-2888	OCTOBER 1990	9

HOLE NO.
SAMPLE NO. 1-19, S-1,2,3&4

Hanier Associates
Palo Alto, California
Triaxial Test Report

Project No. : MWD-266B
Hole/Samp.No.: 1-1, S-3
Description : silty gravelly SAND, yellow brown
undisturbed tube specimen
Specimen No. : 1

Project Name : Garvey Reservoir
Depth : 60-62.3 feet
Test Date : 10/12/90

TEST CONDITIONS

Isotropic Consolidation
Undrained
Pore Pressure Measured

Consolidation Pressure (psi): 55.6

PHYSICAL PROPERTIES	INITIAL CONDITION	FINAL CONDITION
Water Content (%)	10.9	12.6
Dry Density (pcf)	121.0	124.0
Void Ratio	0.366	0.334
Saturation (%)	79.2	100.0
Skempton B Parameter	0.980	
Back Pressure (psi)	50.0	
Volume Change (%)	2.38	

Test Point No.	Axial Strain (%)	Deviator Stress (psi)	Pore Pressure (psi)	Avg Stress (psi)	Avg Eff Stress (psi)	Max Shear (psi)	Sigma 1 Bar (psi)	Sigma 3 Bar (psi)	Skempton's A Parameter	Effective Stress Ratio
0	0.00	0.00	0.00	55.60	55.60	0.00	55.60	55.60	N/A	1.00
1	0.21	30.65	14.35	70.92	56.57	15.32	71.89	41.24	0.468	1.74
2	0.40	40.63	22.08	75.92	53.84	20.32	74.16	33.52	0.543	2.21
3	0.60	48.30	26.43	79.75	53.32	24.15	77.47	29.17	0.547	2.66
4	0.81	54.72	28.61	82.96	54.35	27.36	81.70	26.99	0.523	3.03
5	1.00	61.26	29.60	86.23	56.63	30.63	87.26	26.00	0.483	3.36
6	1.21	68.68	29.90	89.94	60.04	34.34	94.38	25.70	0.435	3.67
7	1.40	75.93	29.70	93.56	63.86	37.96	101.83	25.90	0.391	3.93
8	1.60	83.00	29.11	97.10	67.99	41.50	109.49	26.49	0.351	4.13
9	1.80	91.37	28.31	101.29	72.97	45.69	118.66	27.29	0.310	4.35
10	2.00	99.78	27.33	105.09	77.57	49.89	127.36	28.37	0.275	4.49
11	2.50	116.95	23.46	114.07	90.61	58.47	149.09	32.14	0.201	4.64
12	2.98	132.53	19.31	121.86	102.56	66.26	168.82	36.29	0.146	4.65
13	3.50	145.39	14.95	128.29	113.35	72.69	186.04	40.65	0.103	4.58
14	4.00	155.79	11.19	133.49	122.31	77.89	200.20	44.41	0.072	4.51
15	4.48	164.34	7.73	137.77	130.05	82.17	212.22	47.88	0.047	4.43
16	4.98	172.19	4.65	141.70	137.04	86.10	223.14	50.95	0.027	4.38
17	5.48	185.04	-0.59	148.12	148.71	92.52	241.23	56.19	-0.003	4.29
18	5.98	195.44	-5.05	153.32	158.37	97.72	256.09	60.65	-0.026	4.22
19	6.48	204.45	-8.91	157.82	166.73	102.22	268.96	64.51	-0.044	4.17
20	6.98	211.17	-12.28	161.18	173.46	105.58	279.04	67.88	-0.059	4.11
21	7.51	217.05	-15.05	164.12	179.17	108.52	287.69	70.65	-0.069	4.07

Time for test was : 2.45 hours
Average strain rate : 4.05% per hour

Mentier Associates
Palo Alto, California
Triaxial Test Report

Project No. : MWD-2208 3-3
Hole/Sample No.: 1-12, 3-3
Description : silty gravelly SAND, yellow brown
undisturbed tube specimen
Specimen No. : 1

Project Name : Garvey Reservoir
Depth : 30.5-31 feet
Test Date : 11/19/79

TEST CONDITIONS

Isotropic Consolidation
Undrained
Pore Pressure Measured

Consolidation Pressure (psi): 23.6

PHYSICAL PROPERTIES	INITIAL CONDITION	FINAL CONDITION
Water Content (%)	10.7	11.8
Dry Density (pcf)	123.8	126.0
Void Ratio	0.336	0.312
Saturation (%)	84.5	100.0
Skempton B Parameter	0.980	
Back Pressure (psi)	50.0	
Volume Change (%)	1.78	

Test Point No.	Axial Strain (%)	Deviator Stress (psi)	Pore Pressure (psi)	Avg Stress (psi)	Avg Eff Stress (psi)	Max Shear (psi)	Sigma 1 Bar (psi)	Sigma 3 Bar (psi)	Skempton's A Parameter	Effective Stress Ratio
0	0.00	0.00	0.00	23.60	23.60	0.00	23.60	23.60	N/A	1.00
1	0.21	16.11	7.03	31.66	24.63	8.06	32.68	16.57	0.436	1.97
2	0.40	22.00	10.00	34.60	24.60	11.00	35.60	13.60	0.455	2.62
3	0.60	27.41	11.48	37.30	25.82	13.70	39.52	12.12	0.419	3.26
4	0.81	31.89	12.19	39.54	27.36	15.94	43.30	11.41	0.382	3.79
5	1.10	36.49	12.38	41.85	29.47	18.25	47.72	11.23	0.339	4.25
6	1.21	41.63	12.38	44.52	32.14	20.92	53.06	11.23	0.296	4.72
7	1.40	47.01	12.38	47.10	35.03	23.50	58.53	11.53	0.257	5.18
8	1.60	52.31	11.46	49.76	38.37	26.16	64.43	12.12	0.220	5.32
9	1.81	57.14	10.99	52.17	41.18	28.57	69.75	12.61	0.192	5.53
10	2.00	61.88	10.21	54.50	44.30	30.90	75.20	13.40	0.165	5.61
11	2.50	72.18	7.82	59.69	51.87	36.09	87.96	15.78	0.108	5.57
12	3.00	80.82	5.35	64.01	58.66	40.41	99.08	18.25	0.066	5.43
13	3.50	87.46	3.07	67.33	64.26	43.73	107.99	20.53	0.035	5.26
14	4.00	94.02	1.77	70.61	69.32	47.01	116.33	22.81	0.008	5.12
15	4.50	98.15	-1.13	73.42	74.61	49.82	124.43	24.73	-0.012	5.12
16	5.00	104.33	-3.17	75.77	78.93	52.17	131.10	26.77	-0.030	4.90
17	6.01	111.97	-6.73	79.58	86.32	55.98	142.30	30.33	-0.060	4.69
18	7.01	117.36	-8.60	82.53	92.33	59.93	151.26	33.40	-0.083	4.53
19	8.01	123.46	-12.77	85.33	98.10	61.73	159.63	36.37	-0.103	4.39
20	8.98	127.29	-15.54	87.24	102.78	63.64	166.43	39.14	-0.122	4.25
21	9.99	130.11	-17.32	88.66	106.48	65.06	171.53	41.42	-0.137	4.14

Time for test was : 2.25 hours
Average strain rate : 3.77% per hour

Lanier Associates
Palo Alto, California
Triaxial Test Report

Project No. : MWD-2608
Hole/Sample No.: C-19, S-2
Description : clayey gravelly SAND, yellow brown
undisturbed tube specimen
Specimen No. : 1

Project Name : Garvey Reservoir
Depth : 40-42.4 feet
Test Date : 10/09/90

TEST CONDITIONS

Isotropic Consolidation
Undrained
Pore Pressure Measured

Consolidation Pressure (psi): 41.7

PHYSICAL PROPERTIES	INITIAL CONDITION	FINAL CONDITION
Water Content (%)	11.6	12.0
Dry Density (pcf)	122.0	125.5
Void Ratio	0.355	0.318
Saturation (%)	86.2	100.0
Skempton B Parameter	0.980	
Back Pressure (psi)	50.0	
Volume Change (%)	2.79	

Test Point No.	Axial Strain (%)	Deviator Stress (psi)	Pore Pressure (psi)	Avg Stress (psi)	Avg Eff Stress (psi)	Max Shear (psi)	Sigma 1 Bar (psi)	Sigma 3 Bar (psi)	Skempton's A Parameter	Effective Stress Ratio
0	0.00	0.00	0.00	41.70	41.70	0.00	41.70	41.70	N/A	1.00
1	0.21	28.88	16.93	56.14	39.21	14.44	53.65	24.77	0.586	2.17
2	0.41	37.06	20.89	60.23	39.34	18.53	57.87	20.81	0.564	2.78
3	0.60	43.23	22.97	63.31	40.35	21.61	61.96	18.73	0.531	3.31
4	0.81	49.06	24.16	66.23	42.07	24.53	66.60	17.54	0.492	3.80
5	0.99	54.13	24.55	68.76	44.21	27.06	71.27	17.15	0.454	4.16
6	1.20	59.15	24.75	71.28	46.53	29.58	76.10	16.95	0.418	4.49
7	1.41	64.01	24.35	73.70	49.35	32.00	81.36	17.35	0.380	4.69
8	1.61	68.70	23.96	76.05	52.09	34.35	86.45	17.74	0.349	4.87
9	1.80	73.23	23.36	78.31	54.95	36.61	91.57	18.34	0.319	4.99
10	2.11	77.87	22.67	80.64	57.97	38.94	96.90	19.03	0.291	5.09
11	2.52	88.52	20.39	85.96	65.57	44.26	109.83	21.31	0.230	5.15
12	3.00	98.18	17.82	90.79	73.97	49.09	122.06	23.88	0.182	5.11
13	3.50	107.42	15.15	95.41	80.26	53.71	133.97	26.55	0.141	5.05
14	4.01	116.37	12.47	99.83	87.36	58.13	145.50	29.23	0.107	4.99
15	4.44	124.45	9.80	103.93	94.13	62.23	156.35	31.90	0.079	4.90
16	5.01	132.07	7.03	107.73	100.71	66.03	166.74	34.67	0.053	4.81
17	5.99	145.54	1.98	114.47	112.49	72.77	185.26	39.73	0.014	4.66
18	7.01	157.06	-3.07	120.23	123.30	78.53	201.83	44.77	-0.020	4.51
19	8.03	166.60	-7.43	125.00	132.42	83.30	215.72	49.13	-0.045	4.39
20	9.12	174.14	-11.39	129.77	140.16	87.07	227.23	52.08	-0.065	4.23
21	10.11	181.34	-15.05	132.37	147.42	90.67	238.09	56.75	-0.083	4.20

Time for test was : 2.80 hours
Average strain rate : 3.58% per hour

Wahler Associates
Palo Alto, California
Triaxial Test Report

Project No. : MWD-166B
Hole/Samp.No.: 1-19, S-4
Description : clayey gravelly SAND, orange yellow brown
undisturbed tube specimen
Specimen No. : 1

Project Name : Garvey Reservoir
Depth : 20-21.5 feet
Test Date : 10/03/90

TEST CONDITIONS

Isotropic Consolidation
Undrained
Pore Pressure Measured

Consolidation Pressure (psi): 69.4

PHYSICAL PROPERTIES

	INITIAL CONDITION	FINAL CONDITION
Water Content (%)	13.2	12.5
Dry Density (pcf)	119.3	124.2
Void Ratio	0.386	0.331
Saturation (%)	90.3	100.0

Skempton B Parameter: 0.980
Back Pressure (psi) : 50.0
Volume Change (%) : 3.95

Test Point No.	Axial Strain (%)	Deviator Stress (psi)	Pore Pressure (psi)	Avg Stress (psi)	Avg Eff Stress (psi)	Max Shear (psi)	Sigma 1 Bar (psi)	Sigma 3 Bar (psi)	Skempton's A Parameter	Effective Stress Ratio
0	0.00	0.00	0.00	69.40	69.40	0.00	69.40	69.40	N/A	1.00
1	0.21	37.97	24.45	88.39	63.93	18.99	82.92	44.95	0.644	1.84
2	0.41	47.26	33.56	93.03	59.47	23.63	83.10	35.84	0.710	1.32
3	0.60	52.52	38.31	95.66	57.35	26.26	83.61	31.09	0.729	1.69
4	0.82	57.30	41.38	98.05	56.67	28.65	85.32	28.02	0.722	1.15
5	1.01	61.15	43.26	99.98	56.71	30.58	87.29	26.14	0.707	1.34
6	1.21	64.84	44.35	101.82	57.47	32.42	89.89	25.05	0.684	1.59
7	1.40	68.20	44.95	103.50	58.56	34.10	92.66	24.45	0.659	1.79
8	1.62	71.69	45.24	105.25	60.00	35.85	95.85	24.16	0.631	1.97
9	1.80	74.59	45.34	106.69	61.35	37.29	98.65	24.06	0.608	4.10
10	2.01	77.90	45.14	108.35	63.21	38.95	102.16	24.26	0.580	[illegible]
11	2.51	84.71	44.25	111.75	67.50	42.35	107.25	25.15	0.522	4.37
12	3.00	90.11	43.06	114.45	71.39	45.05	116.44	26.34	0.478	4.42
13	3.51	94.54	41.48	116.67	75.19	47.27	122.46	27.92	0.439	4.39
14	4.02	98.73	40.00	118.79	78.79	49.39	128.18	29.40	0.405	4.31
15	4.50	102.54	38.41	120.67	82.26	51.27	133.53	30.99	0.375	4.31
16	5.01	105.95	37.03	122.38	85.35	52.98	138.33	32.37	0.349	4.27
17	6.01	111.65	34.45	125.22	90.77	55.82	146.59	34.95	0.309	4.19
18	7.00	116.48	32.17	127.64	95.47	58.24	153.71	37.23	0.276	4.13
19	8.01	120.88	30.10	129.84	99.75	60.44	160.19	39.30	0.249	4.08
20	9.01	124.48	28.31	131.64	103.33	62.24	165.57	41.09	0.227	4.03
21	10.01	127.42	26.83	133.11	106.28	63.71	169.99	42.57	0.211	3.99

Time for test was : 1.73 hours
Average strain rate : 3.66% per hour

Wahler Associates
Palo Alto, California
Triaxial Test Report

MWD-206B
1-1F, B-3
: clayey gravelly SAND, yellow brown
undisturbed tube specimen
:

Project Name : Garvey Reservoir
Depth : 40-42.4 feet

Test Date : 10/09/90

VS

PHYSICAL PROPERTIES

	INITIAL CONDITION	FINAL CONDITION
Water Content (%)	11.6	12.0
Dry Density (pcf)	122.0	125.5
Void Ratio	0.355	0.318
Saturation (%)	86.2	100.0
Skempton B Parameter:	0.980	
Back Pressure (psi) :	50.0	
Volume Change (%) :	2.79	

solidation

Measured

Pressure (psi): 41.7

Water Press (psi)	Pore Pressure (psi)	Avg Stress (psi)	Avg Eff Stress (psi)	Max Shear (psi)	Sigma 1 Bar (psi)	Sigma 3 Bar (psi)	Skempton's A Parameter	Effective Stress Ratio
0.00	0.00	41.70	41.70	0.00	41.70	41.70	N/A	1.00
18.88	16.93	56.14	39.21	14.44	53.65	24.77	0.586	3.17
[illegible]	20.89	60.23	39.34	18.53	57.87	20.81	0.564	2.78
[illegible]	22.97	63.31	40.35	21.61	61.96	18.73	0.531	3.31
[illegible]	24.16	66.23	42.07	24.53	66.60	17.54	0.492	3.80
[illegible]	24.55	68.76	44.21	27.06	71.27	17.15	0.454	[illegible]
[illegible]	24.75	71.29	46.53	29.58	76.10	16.95	0.418	[illegible]
[illegible]	24.35	73.70	49.35	32.00	81.36	17.35	0.380	[illegible]
6.70	23.76	76.05	52.09	34.35	86.45	17.74	0.349	[illegible]
[illegible]	23.36	78.31	54.95	36.61	91.57	18.34	0.319	[illegible]
[illegible]	22.67	80.64	57.97	38.94	96.90	19.03	0.291	[illegible]
8.52	20.39	85.96	65.57	44.26	109.83	21.31	0.230	5.15
[illegible]	17.62	90.79	73.97	49.09	122.06	23.88	0.182	5.11
[illegible]	15.15	95.41	80.26	53.71	133.97	26.55	0.141	[illegible]
[illegible]	12.47	99.83	87.36	58.13	145.50	29.23	0.107	[illegible]
[illegible]	9.80	103.93	94.13	62.23	156.35	31.90	0.079	[illegible]
[illegible]	7.03	107.73	100.71	66.03	166.74	34.67	0.053	4.81
[illegible]	1.98	114.47	112.49	72.77	185.26	39.72	0.014	4.66
7.06	-3.07	120.23	123.30	78.53	201.83	44.77	-0.020	4.51
[illegible]	-7.43	125.00	132.42	83.30	215.72	49.13	-0.045	[illegible]
[illegible]	-11.39	128.77	140.16	87.07	227.23	52.08	-0.065	[illegible]
[illegible]	-15.05	132.37	147.42	90.67	238.09	56.75	-0.083	[illegible]

Test was : 3.80 hours
Strain rate : 1.58% per hour

Lanier Associates
Palo Alto, California
Triaxial Test Report

E. : MWD-Ibob Project Name : Sarvey Reservoir
No.: I-19, B-4 Depth : 30-31.5 feet
on : clayey gravelly SAND, orange yellow brown
undisturbed tube specimen
No. : 1 Test Date : 10/03/90

ITIONS PHYSICAL PROPERTIES INITIAL CONDITION FINAL CONDITION

Consolidation Water Content (%) : 13.2 12.5
Dry Density (pcf) : 119.3 124.2
ure Measured Void Ratio : 0.386 0.331
Saturation (%) : 90.3 100.0
Skempton B Parameter: 0.980
Back Pressure (psi) : 50.0
tion Pressure (psi): 69.4 Volume Change (%) : 3.95

Deviator Stress (psi)	Pore Pressure (psi)	Avg Stress (psi)	Avg Eff Stress (psi)	Max Shear (psi)	Sigma 1 Bar (psi)	Sigma 3 Bar (psi)	Skempton's A Parameter	Effective Stress Ratio
0.00	0.00	69.40	69.40	0.00	69.40	69.40	N/A	1.00
37.97	24.45	88.39	63.93	18.99	82.92	44.95	0.644	1.84
47.26	33.56	93.03	59.47	23.63	83.10	35.84	0.710	1.32
52.52	38.31	95.66	57.35	26.26	83.61	31.09	0.729	1.69
57.30	41.38	99.05	56.67	28.65	85.32	28.02	0.722	1.55
61.15	43.26	99.98	56.71	30.58	87.29	26.14	0.707	1.34
64.84	44.35	101.62	57.47	32.42	89.89	25.05	0.684	1.59
68.20	44.95	103.50	58.56	34.10	92.66	24.45	0.659	1.79
71.69	45.24	105.25	60.00	35.85	95.85	24.16	0.631	1.97
74.59	45.34	106.69	61.35	37.29	98.65	24.06	0.608	4.10
77.50	45.14	108.35	63.21	38.95	102.16	24.26	0.580	4.21
84.71	44.25	111.75	67.50	42.35	107.25	25.15	0.522	4.37
90.11	43.06	114.45	71.39	45.05	116.44	26.34	0.478	4.42
94.54	41.48	116.67	75.19	47.27	122.46	27.92	0.439	4.39
98.73	40.00	118.73	78.73	49.39	128.18	29.40	0.405	4.36
102.54	38.41	120.67	82.26	51.27	133.53	30.99	0.375	4.31
105.95	37.03	122.38	85.35	52.98	138.33	32.37	0.349	4.27
111.65	34.45	125.22	90.77	55.82	146.59	34.95	0.309	4.19
116.48	32.17	127.64	95.47	58.24	153.71	37.23	0.276	4.13
120.88	30.10	129.54	99.75	60.44	160.19	39.30	0.249	4.08
124.48	28.31	131.64	103.33	62.24	165.57	41.09	0.227	4.03
127.42	26.83	133.11	106.28	63.71	169.99	42.57	0.211	3.99

Total test time : 2.73 hours
Axial strain rate : 3.66% per hour

APPENDIX B
LABORATORY TESTING

GENERAL

Laboratory tests were performed on selected representative samples to assist in classifying the materials and to evaluate their physical properties. The results of some of the tests performed are presented on Table B-1. A description of the laboratory testing program is presented below.

MOISTURE AND DENSITY TESTS

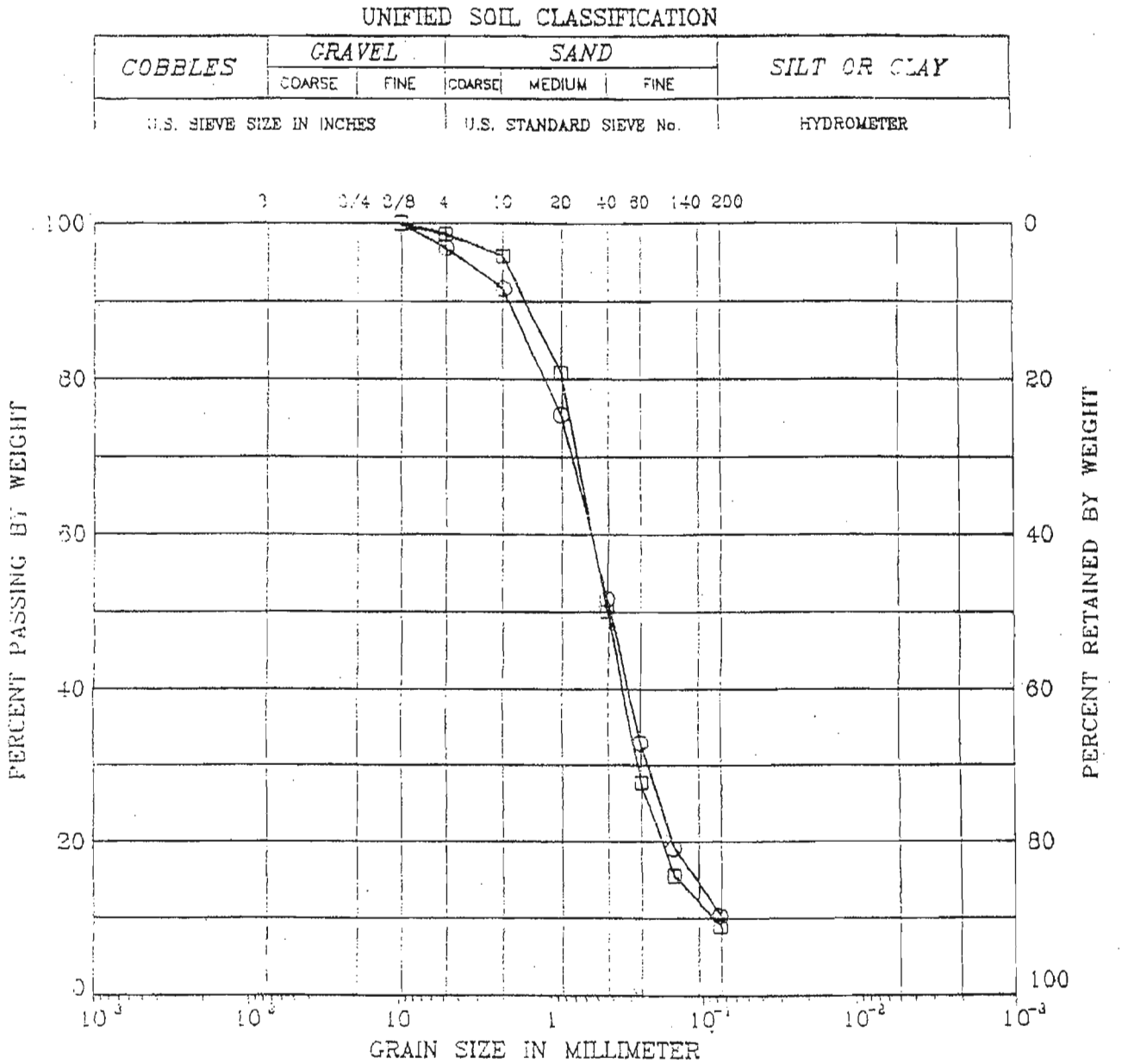
Moisture content and density tests were performed on several samples to aid in evaluating and correlating material properties. The results of these tests are presented on Table B-1.

DIRECT SHEAR TEST

Direct shear tests were performed on selected samples to evaluate the shear strength of the foundation materials. Samples were tested in a saturated state. The results of these tests are presented on Table B-1.

GRAIN SIZE ANALYSES

Sieve analyses were performed on several samples to obtain grain size distribution. The sieve analysis is a mechanical shaking test. The results of the analyses are present on Figures B-1 and B-2.



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	112/S8				BROWN SILTY F-M SAND (SW)
□	112/S9				BROWN SILTY F-M SAND (SM)

Remark :

02269-025-015	GARVEY RESERVOIR
Dames & Moore	GRAIN SIZE DISTRIBUTION

FIGURE B-1

APPENDIX D

Corrected SPT Blowcount Spreadsheet Calculations

GARVEY RESERVOIR
Wahler Associates DH-26
Input Parameters

Water Table Depth (m) =	30	(DRY)	
Average gamma above water table (kN/m3)		21	(135 pcf)
Average gamma below water table (kN/m3)		22	(140 pcf)
Borehole Diameter (mm)	150		
Requires Correction for sample liners (YES/NO)			NO

Rod lengths assumed equal to the depth of 1.5 m (for the ground extension)

SPT Sample	Depth (ft)	Depth (m)	"Field" Blowcount (N)	Soil Type	Flag "Clay"	FC (%)	ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_v (kPa)	σ_v' (kPa)	C_N	$N_{1(60)}$
1	21.5	6.5	77	SM		20	60	1	1.05	0.95	1	77	138	138	0.92	70.8
2	23.0	7.0	63	SM		20	60	1	1.05	0.95	1	63	148	148	0.90	56.8
3	24.5	7.5	66	SM		20	60	1	1.05	0.95	1	66	159	159	0.89	58.4
4	26.0	7.9	52	SM		20	60	1	1.05	0.95	1	52	167	167	0.87	45.3
5	27.5	8.4	63	SM		20	60	1	1.05	0.95	1	63	178	178	0.86	54.1
6	29.0	8.8	58	SM		20	60	1	1.05	1	1	61	187	187	0.85	51.8
7	30.5	9.3	50	SM		20	60	1	1.05	1	1	53	197	197	0.83	43.6
8	32.0	9.8	32	SM-ML		40	60	1	1.05	1	1	34	207	207	0.75	25.3
9	33.5	10.2	36	SM		10	60	1	1.05	1	1	38	216	216	0.75	28.4
10	35.0	10.7	40	SM		10	60	1	1.05	1	1	42	227	227	0.75	31.6
11	36.5	11.1	34	SM		10	60	1	1.05	1	1	36	235	235	0.72	25.5
12	38.0	11.6	97	SM		10	60	1	1.05	1	1	102	246	246	0.79	80.6

NOTE: $N_{60} = N*C_E*C_B*C_R*C_S$

GARVEY RESERVOIR
Dames and Moore(1981) B-1
Input Parameters

Water Table Depth (m) =	30	(98 ft)	
Average gamma above water table (kN/m3)		21	(135 pcf)
Average gamma below water table (kN/m3)		22	(140 pcf)
Borehole Diameter (mm)	150		
Requires Correction for sample liners (YES/NO)			NO

Rod lengths assumed equal to the depth of 1.5 m (for the ground extension)

SPT Sample	Depth (ft)	Depth (m)	"Field" Blowcount (N)	Soil Type	Flag "Clay"	FC (%)	ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_v (kPa)	σ_v' (kPa)	C_N	$N_{1(60)}$
1	9.0	2.7	74	SM		20	60	1	1.05	0.85	1	66	57	57	1.16	76.7
2	17.0	5.2	105	SM		20	60	1	1.05	0.95	1	105	110	110	0.98	102.4
3	25.0	7.6	105	SM		17	60	1	1.05	0.95	1	105	161	161	0.88	92.6
4	33.0	10.0	106	SM		17	60	1	1.05	1	1	111	212	212	0.82	91.6
5	40.0	12.2	92	SM		24	60	1	1.05	1	1	97	259	259	0.78	75.4
6	48.0	14.6	62	SM		20	60	1	1.05	1	1	65	310	310	0.74	48.5
7	57.0	17.4	118	SM		18	60	1	1.05	1	1	124	369	369	0.71	88.1
8	65.0	19.8	158	SM		18	60	1	1.05	1	1	166	420	420	0.69	114.0
9	72.5	22.1	127	SM		20	60	1	1.05	1	1	133	469	469	0.67	89.1
10	81.0	24.7	98	SM		20	60	1	1.05	1	1	103	524	524	0.65	66.7
11	89.0	27.1	108	SM		28	60	1	1.05	1	1	113	575	575	0.63	71.8
12	97.0	29.6	82	SM		15	60	1	1.05	1	1	86	628	628	0.62	53.2
13	105.0	32.0	110	ML		75	60	1	1.05	1	1	116	680	660	0.61	69.9

NOTE: $N_{60} = N*C_E*C_B*C_R*C_S$

GARVEY RESERVOIR
Dames and Moore(1981) B-3
Input Parameters

Water Table Depth (m) =	30	(DRY)	
Average gamma above water table (kN/m3)		21	(135 pcf)
Average gamma below water table (kN/m3)		22	(140 pcf)
Borehole Diameter (mm)	150		
Requires Correction for sample liners (YES/NO)			NO

Rod lengths assumed equal to the depth of 1.5 m (for the ground extension)

SPT Sample	Depth (ft)	Depth (m)	"Field" Blowcount (N)	Soil Type	Flag "Clay"	FC (%)	ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_v (kPa)	σ_v' (kPa)	C_N	$N_{1(60)}$
1	9.0	2.7	**80**	**SM**		15	60	1	1.05	0.85	1	71	57	57	1.16	82.9
2	17.0	5.2	**91**	**SM**		16	60	1	1.05	0.95	1	91	110	110	0.98	88.7
3	25.0	7.6	**86**	**SM**		15	60	1	1.05	0.95	1	86	161	161	0.88	75.9
4	33.0	10.1	**66**	**SM-ML**		50	60	1	1.05	1	1	69	214	214	0.82	56.9
5	41.0	12.5	**104**	**ML**		63	60	1	1.05	1	1	109	265	265	0.78	84.7

NOTE: $N_{60} = N*C_E*C_B*C_R*C_S$

GARVEY RESERVOIR
Dames and Moore(1981) B-4

Input Parameters

Water Table Depth (m) =	21.6	(71 ft)	
Average gamma above water table (kN/m3)		21	(135 pcf)
Average gamma below water table (kN/m3)		22	(140 pcf)
Borehole Diameter (mm)	150		
Requires Correction for sample liners (YES/NO)			NO

Rod lengths assumed equal to the depth of 1.5 m (for the ground extension)

SPT Sample	Depth (ft)	Depth (m)	"Field" Blowcount (N)	Soil Type	Flag "Clay"	FC (%)	ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_v (kPa)	σ_v' (kPa)	C_N	$N_{1(60)}$
1	9.0	2.7	76	SM		20	60	1	1.05	0.85	1	68	58	58	1.16	78.5
2	17.0	5.2	70	SM		20	60	1	1.05	0.95	1	70	110	110	0.98	68.3
3	25.0	7.6	89	SM		20	60	1	1.05	0.95	1	89	162	162	0.88	78.5
4	33.0	10.1	116	SM		20	60	1	1.05	1	1	122	213	213	0.82	100.1
5	41.0	12.5	74	SM		20	60	1	1.05	1	1	78	265	265	0.78	60.3
6	48.0	14.6	85	SM		20	60	1	1.05	1	1	89	310	310	0.74	66.4
7	57.0	17.4	100	SM		20	60	1	1.05	1	1	105	368	368	0.71	74.7
8	65.0	19.8	146	SM		20	60	1	1.05	1	1	153	420	420	0.69	105.4
9	73.0	22.2	105	SM		20	60	1	1.05	1	1	110	472	466	0.67	73.5
10	80.0	24.4	110	SM		20	60	1	1.05	1	1	116	519	492	0.65	75.1

NOTE: $N_{60} = N*C_E*C_B*C_R*C_S$

GARVEY RESERVOIR
Dames and Moore(1981) B-5
Input Parameters

Water Table Depth (m) =	13.7	(45 ft)	
Average gamma above water table (kN/m3)		21	(135 pcf)
Average gamma below water table (kN/m3)		22	(140 pcf)
Borehole Diameter (mm)	150		
Requires Correction for sample liners (YES/NO)			NO

Rod lengths assumed equal to the depth of 1.5 m (for the ground extension)

SPT Sample	Depth (ft)	Depth (m)	"Field" Blowcount (N)	Soil Type	Flag "Clay"	FC (%)	ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_v (kPa)	σ_v' (kPa)	C_N	$N_{1(60)}$
1	9.0	2.7	40	SM		20	60	1	1.05	0.85	1	36	57	57	1.18	42.0
2	17.0	5.2	78	SM		20	60	1	1.05	0.95	1	78	110	110	0.98	76.0
3	25.0	7.6	82	SM		20	60	1	1.05	0.95	1	82	161	161	0.88	72.3
4	33.0	10.1	30	SM		20	60	1	1.05	1	1	32	214	214	0.73	23.1
5	41.0	12.5	38	SM-ML-CL		50	60	1	1.05	1	1	40	265	265	0.69	27.7
6	48.0	14.6	155	ML-SM		63	60	1	1.05	1	1	163	310	301	0.74	121.1

NOTE: $N_{60} = N*C_E*C_B*C_R*C_S$

GARVEY RESERVOIR
Dames and Moore(1981) B-6
Input Parameters

Water Table Depth (m) =	15	(DRY)	
Average gamma above water table (kN/m3)		21	(135 pcf)
Average gamma below water table (kN/m3)		22	(140 pcf)
Borehole Diameter (mm)	150		
Requires Correction for sample liners (YES/NO)			NO

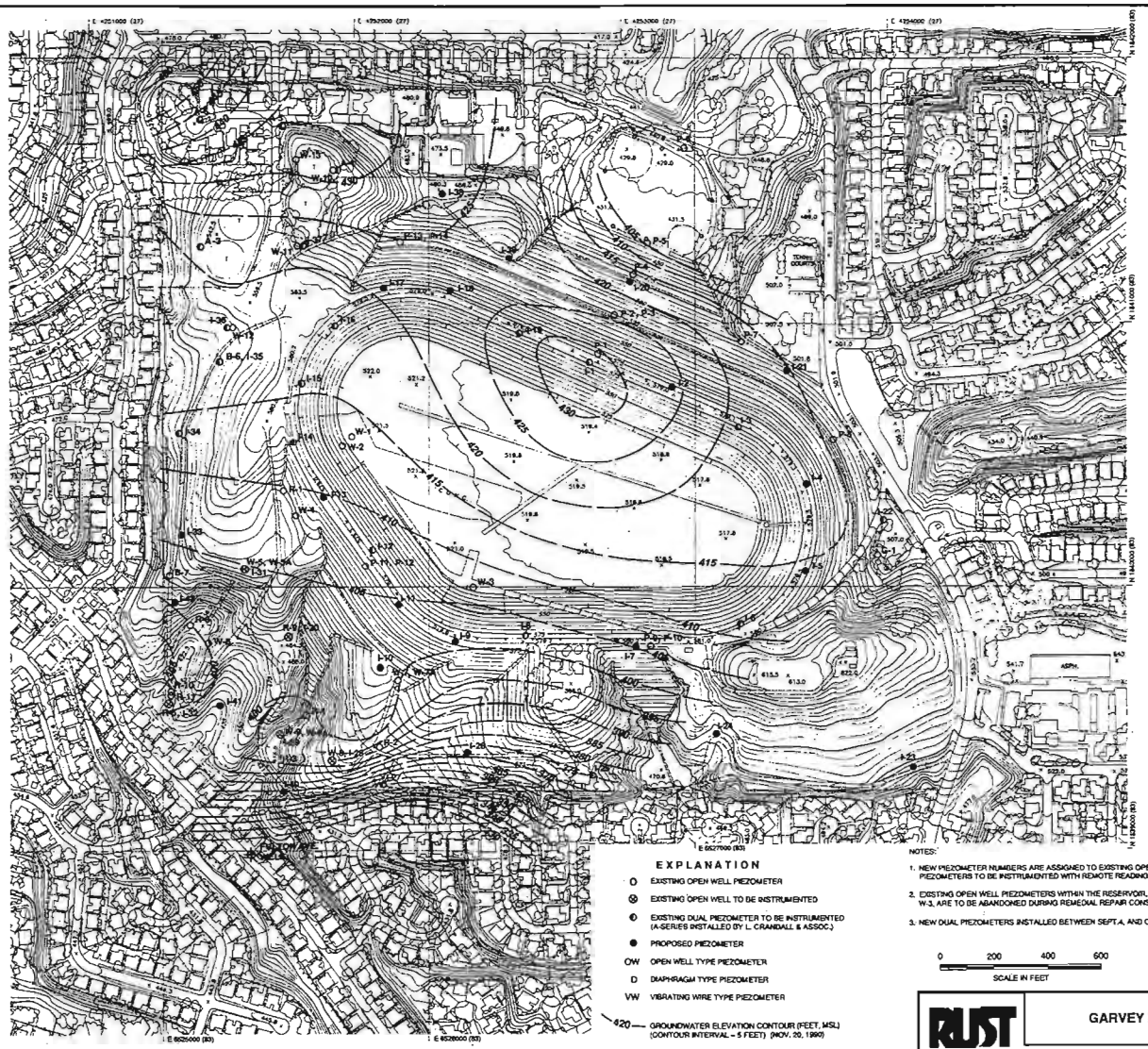
Rod lengths assumed equal to the depth of 1.5 m (for the ground extension)

SPT Sample	Depth (ft)	Depth (m)	"Field" Blowcount (N)	Soil Type	Flag "Clay"	FC (%)	ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_v (kPa)	σ_v' (kPa)	C_N	$N_{1(60)}$
1	8.0	2.4	59	SM		30	60	1	1.05	0.8	1	50	51	51	1.20	59.4
2	17.0	5.2	48	SM		30	60	1	1.05	0.95	1	48	110	110	0.98	46.8
3	24.0	7.3	54	SM		19	60	1	1.05	0.95	1	54	155	155	0.89	48.1
4	33.0	10.1	76	SM		20	60	1	1.05	1	1	80	214	214	0.82	65.5
5	40.0	12.2	52	SM		20	60	1	1.05	1	1	55	259	259	0.76	41.6
6	48.0	14.6	100	SM		20	60	1	1.05	1	1	105	310	310	0.74	78.2

NOTE: $N_{60} = N*C_E*C_B*C_R*C_S$

APPENDIX E

Previous Groundwater Elevation Contour Map (RUST, 1997)



PIEZOMETER INSTRUMENTATION DATA

EXISTING PIEZOMETER NUMBER	EXISTING PIEZOMETER NUMBER	COORDINATES EAST	COORDINATES NORTH	PIEZ.[1] DEPTH (FEET)	TIP[2] ELEV. (FEET)	PIEZ.[3] TYPE
P-1		6,526,628	1,840,885	70	510	OW
P-2		6,526,694	1,841,034	80	451	OW
P-3		6,526,694	1,841,034	110	421	OW
P-4		6,526,765	1,841,188	39	441	OW
P-5		6,526,816	1,841,305	30	402	OW
P-6		6,526,958	1,841,663	42	400	OW
P-7		6,527,120	1,840,987	29	471	OW
P-8		6,527,509	1,840,561	88	443	OW
P-9		6,526,830	1,839,774	20	561	OW
P-10		6,526,830	1,839,774	87	494	OW
P-11		6,525,760	1,840,077	30	550	OW
P-12		6,525,760	1,840,077	143	437	OW
P-13		6,525,891	1,841,312	20	510	OW
P-14		6,525,891	1,841,312	50	480	OW
G-1		6,527,787	1,840,096	53	462	OW
R-1		6,525,447	1,840,369	35	516	OW
R-2		6,525,813	1,839,401	89	395	OW
R-3		6,525,437	1,839,332	45	375	OW
R-4		6,525,537	1,839,523	32	390	OW
R-5	I-32	6,525,028	1,839,888	32	388	OW
B-6	I-35	6,525,163	1,840,748	95	443	D
B-7		6,525,022	1,840,045	84	426	VW
R-8		6,525,099	1,839,856	90	355	OW
R-9	I-30	6,525,465	1,839,815	110	375	D
R-10		6,525,027	1,839,610	100	418	OW
R-11		6,525,028	1,839,800	20	399	OW
* W-1		6,525,707	1,840,574	120	402	OW
* W-2		6,525,671	1,840,539	112	422	OW
* W-3		6,526,159	1,839,967	101	422	OW
W-4		6,525,494	1,840,273	141	411	OW
W-5	I-31	6,525,298	1,840,070	115	417	VW
W-5A		6,525,298	1,840,070	140	392	OW
W-6		6,525,164	1,839,790	109	333	OW
W-7		6,525,881	1,839,649	104	411	OW
W-7A		6,525,881	1,839,649	124	391	OW
W-8	I-28	6,525,630	1,839,350	118	362	D
W-9		6,525,434	1,839,452	33	388	OW
W-9A	I-29	6,525,434	1,839,452	122	298	VW
	** I-1	6,526,600	1,840,650	199	379.7	VW
	I-2	6,526,907	1,840,763	200	380	D
	** I-3	6,527,160	1,841,062	199	379.9	VW
	I-4	6,526,410	1,840,397	200	380	VW
	I-5	6,527,406	1,840,059	200	380	VW
	** I-6	6,527,170	1,839,855	199	380.1	D
	I-7	6,526,744	1,829,770	200	380	VW
	** I-8	6,526,355	1,839,825	199	380.1	D
	I-9	6,526,094	1,839,792	200	380	VW
	I-10	6,525,816	1,839,696	200	380	VW
	I-11	6,525,886	1,839,930	200	380	D
	** I-12	6,525,738	1,840,140	199	380.1	VW
	I-13	6,525,599	1,840,343	200	380	D
	I-14	6,525,486	1,840,554	200	380	VW
	** I-15	6,525,515	1,840,785	199	380.1	D
	** I-16	6,525,840	1,841,000	200	379.7	VW
	I-17	6,525,826	1,841,136	200	380	D
	I-18	6,525,073	1,841,125	200	380	VW
	** I-19	6,525,335	1,840,965	199	380	D
	I-20	6,526,751	1,841,158	100	380	VW
	I-21	6,527,335	1,840,822	125	380	VW
	** I-22	6,527,705	1,840,245	133.5	378.4	VW
	I-23	6,527,810	1,839,322	145	375	VW
	I-24	6,527,077	1,839,449	130	380	VW
	** I-25	6,526,610	1,839,295	150.8	379.1	VW
	I-26	6,526,138	1,839,279	135	375	VW
	** I-27	6,525,830	1,839,255	200	288.8	VW
	I-33	6,525,070	1,840,196	140	380	VW
	** I-34	6,525,070	1,840,590	145	381.2	VW
	** I-36	6,525,230	1,840,980	157.5	388.4	VW
	** I-37	6,525,525	1,841,300	178	385.4	VW
	I-38	6,525,047	1,841,490	100	380	VW
	I-39	6,526,296	1,841,248	135	380	VW
	I-40	6,525,449	1,839,228	70	380	VW
	I-41	6,525,206	1,839,550	60	360	VW
	I-42	6,525,040	1,839,945	40	375	VW

* SEE NOTE 2
** SEE NOTE 3.

1 DEPTH OF OPEN WELL OR INSTRUMENT BELOW GROUND SURFACE
2 ELEVATION AT BOTTOM OF OPEN WELL OR AT INSTRUMENT TIP
3 SEE LEGEND

EXPLANATION

- O EXISTING OPEN WELL PIEZOMETER
- ⊗ EXISTING OPEN WELL TO BE INSTRUMENTED
- ◐ EXISTING DUAL PIEZOMETER TO BE INSTRUMENTED (A-SERIES INSTALLED BY L. CRANDALL & ASSOC.)
- ● PROPOSED PIEZOMETER
- OW OPEN WELL TYPE PIEZOMETER
- D DIAPHRAGM TYPE PIEZOMETER
- VW VIBRATING WIRE TYPE PIEZOMETER
- 620 — GROUNDWATER ELEVATION CONTOUR (FEET, MSL) (CONTOUR INTERVAL = 5 FEET) (NOV. 20, 1990)

NOTES:

1. NEW PIEZOMETER NUMBERS ARE ASSIGNED TO EXISTING OPEN WELL PIEZOMETERS TO BE INSTRUMENTED WITH REMOTE READING EQUIPMENT.
2. EXISTING OPEN WELL PIEZOMETERS WITHIN THE RESERVOIR, W-1, W-2, AND W-3, ARE TO BE ABANDONED DURING REMEDIAL REPAIR CONSTRUCTION.
3. NEW DUAL PIEZOMETERS INSTALLED BETWEEN SEPT.4, AND OCT.21, 1990.

0 200 400 600
SCALE IN FEET

RUST

GARVEY RESERVOIR

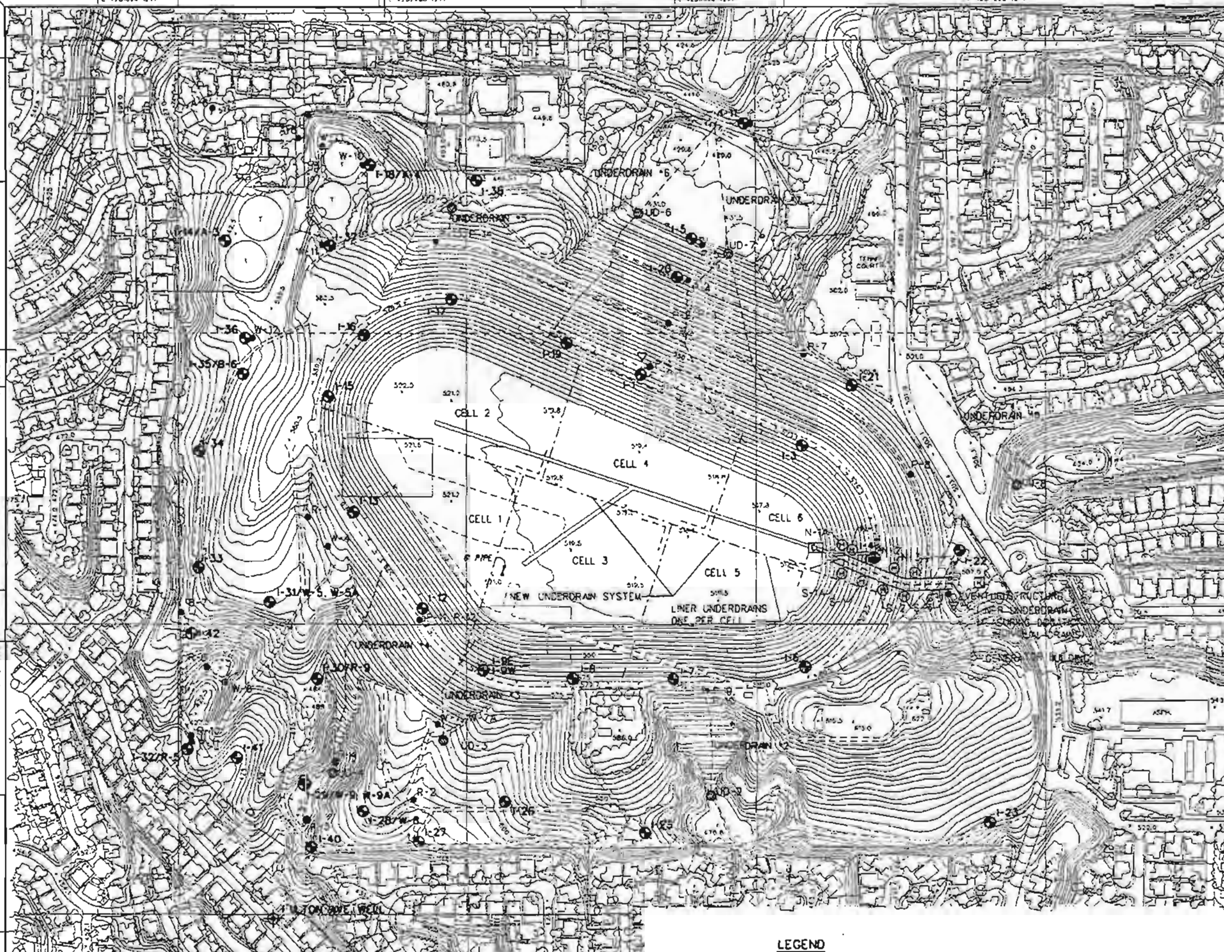
1990 WELL LOCATION AND GROUNDWATER CONTOUR MAP

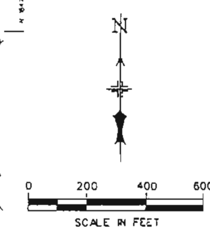
PROJECT NO.	DATE	FIGURE NO.
88264.340	JULY 1996	2

APPENDIX F

Garvey Reservoir Piezometer Data

SPECIFICATION NO. SHEET NO.





PIEZOMETER INSTRUMENTATION DATA						
PIEZOMETER I.D.[1]	T.O.P. ELEV.[2] (FEET)	DEPTH WELL[3] (FEET)	B.O.P. ELEV.[4] (FEET)	T.O.S. ELEV.[5] (FEET)	DIA. WELL[6] (IN)	DATE OF INSTALL[7]
I-1	579.3	200.4	378.9	467	2	9/90 WA
I-3	579.6	200.4	379.2	459	2	10/90 WA
I-4	580.1	231.7	348.4	435	2	10/93 WA
I-5	434.0	111.7	322.3	388	2	11/93 WA
I-6	579.8	200.5	379.3	463	2	10/90 WA
I-7	580.5	211.4	369.1	435	2	11/93 WA
I-8	579.8	200.4	379.4	463	2	10/90 WA
I-9E	580.2	315.0	265.2	349	2	10/93 WA
I-9W	580.3	330.0	250.3	351	2	10/93 WA
I-11E	442.3	112.7	329.6	415	1	11/93 WA
I-11W	442.3	*52.5	389.8	415	2	11/93 WA
I-12	579.8	199.7	380.1	465	2	9/90 WA
I-13	580.6	330.0	250.6	335	2	11/93 WA
I-14/A-3	546.3	*161.1	385.2	465	2	7/90 LC
I-15	579.8	200.4	379.4	466	2	9/90 WA
I-16	580.2	*192.5	387.7	468	2	8/90 LC
I-17	580.3	232.2	348.1	437	2	10/93 WA
I-18E/A-4	562.9	*166.9	396.0	480	2	7/90 LC
I-18W/A-4	562.9	*162.9	400.0	480	2	7/90 LC
I-19	579.7	198.8	380.9	464	2	9/90 WA
I-20	481.2	111.5	369.7	475	2	11/93 WA
I-21	504.9	126.9	377.9	463	2	11/93 WA
I-22	513.1	135.1	378.0	463	2	10/90 WA
I-23	519.2	161.8	357.4	443	2	11/93 WA
I-25	531.6	153.3	378.3	465	2	10/90 WA
I-26	507.3	161.0	346.3	431	2	11/93 WA
I-27	470.0	202.1	267.9	437	2	10/90 WA
I-28/W-8	480.1	120.0	360.1	416	2	2/90 WA
I-29N/W-9	419.5	34.2	385.3	406	2	2/90 WA
I-29S/W-9A	419.6	123.2	296.4	318	3/4	2/90 WA
I-30/R-9	484.6	109.1	375.5	467	4	12/89 LC
I-31E/W-5A	531.3	140.2	391.1	405	3/4	2/90 WA
I-31W/W-5	531.3	116.7	414.6	454	2	2/90 WA
I-32/R-5	419.6	*31.4	388.2		6	1958 S
I-33	513.9	141.8	372.1	457	2	10/93 WA
I-34	527.4	146.2	381.7	465	2	9/90 WA
I-35/B-6	537.0	93.2	443.8	476	2	11/89 LC
I-36	545.6	159.7	385.9	470	2	8/90 LC
I-37	563.0	179.4	383.6	465	2	8/90 LC
I-38	483.9	111.4	372.5	439	2	11/93 WA
I-40	430.3	181.7	248.6	335	2	10/93 WA
I-41	421.3	101.0	320.3	375	2	11/93 WA
I-42	488.9	129.5	359.4	445	2	11/93 WA
A-5	523.0	*127.7	395.3	488	2	8/90 LC
A-6	522.1	*135.6	386.5	486	2	8/90 LC
A-8	534.7	74.9	459.8	528	2	10/90 LC
B-7	505.5	83.5	422.0	455	2	11/89 LC
G-1	512.1	47.9	464.2	468	1.5	8/64 B
P-1	580.8	70.8	510.0	514	1.5	6/64 B
P-2	530.8	79.3	451.5	500	1.5	8/64 B
P-3	531.1	108.7	422.9	427	1.5	6/64 B
P-4	481.4	39.2	442.2	448	1.5	6/64 B
P-5	433.2	30.5	402.7	407	1.5	6/64 B
P-6	442.3	42.4	399.9	410	1.5	6/64 B
P-7	500.4	29.5	470.9	478	1.5	6/64 B
P-8	530.7	88.3	442.4	449	1.5	6/64 B
P-9	581.8	21.3	560.5	564	1.5	7/64 B
P-10	581.7	87.6	494.1	550	1.5	7/64 B
P-11	580.9	30.3	550.6	557	1.5	7/64 B
P-12	580.7	*134.6	446.1	544	1.5	7/64 B
P-13	530.6	19.8	510.8	515	1.5	6/64 B
P-14	530.7	30.1	500.6	488	1.5	6/64 B
R-1	552.1	*30.4	518.7		2	
R-2	483.9	88.3	395.6		2	1958 S
R-3	420.6	*35.4	385.2		1.5	1958 S
R-4	422.4	33.4	389.0		2	1958 S
R-8	445.7	88.4	357.3	471	[illegible]	11/89 LC
R-10S	417.8	*42.4	375.4	[illegible]	[illegible]	12/89 LC
R-10N	437.8	*87.0	350.8	[illegible]	[illegible]	12/89 LC
R-11	418.7	19.4	399.3	410	6	12/89 LC
W-4	551.2	140.3	410.9	474	2	1/90 WA
W-6	441.9	109.6	332.3	357	2	1/90 WA
W-7	515.3	106.4	408.9	462	2	2/90 WA
W-7A	515.3	123.9	389.4	402	3/4	2/90 WA
W-10	563.8	45.3	518.5	551	2	9/90 WA
W-11	564.1	64.2	499.9	527	2	9/90 WA
W-12	546.5	62.1	484.4	504	2	9/90 WA
W-13	562.5	29.4	533.1	542	2	9/90 WA
Fulton Ave.	383.9	110.0	273.9		12	1959

TABLE FOOTNOTES

1. SEE NOTES 1 AND 3
2. ELEV. T.O.P. (TOP OF PIEZOMETER), BASED ON SURVEY DATA
3. DEPTH FROM TOP OF PIEZOMETER TO BOTTOM OF PIEZOMETER AS PROBED AUGUST 1997.
4. B.O.P. (BOTTOM OF PIEZOMETER) AS PROBED AUGUST 1997.
5. T.O.S. (TOP OF SAND FILTER PACK INTERVAL)
6. WHERE TWO PIEZOMETER TUBES ARE IN ONE BORING, THE LARGER DIAMETER IS INDICATED.
7. B BECHTEL CORPORATION
   S STONE GEOLOGICAL SERVICE, INC.
   LC LEROY CRANDALL AND ASSOCIATES
   WA WAHLER ASSOCIATES (NOW RUST)
8. INSTALLATION DEPTH MORE THAN 3 FEET GREATER THAN PROBED DEPTH.

HORIZONTAL PIEZOMETERS ALONG INLET/OUTLET CONDUIT		
PIEZ. INST. NO.	GAUGE ELEV.	TIP ELEV.
S-1	512.26	512.00
S-1A	516.08	515.50
S-2	505.61	506.00
S-3	499.00	499.00
N-1	522.25	N/A
N-1A	518.87	519.50
N-2	516.06	516.00
N-3	509.28	509.50
N-4	503.16	503.00

NOTES:

1. "I" SERIES PIEZOMETERS, WITHOUT AN ASSOCIATED WELL NUMBER, EXCEPT I-9, AND "A" SERIES PIEZOMETERS, EXCEPT A-8, HAVE DUAL OPEN WELL STANDPIPES. I-9E AND I-9W ARE INSTALLED IN SEPARATE HOLES. I-29 AND I-31 HAVE DUAL PIEZOMETER TUBES INSTALLED TO DIFFERENT DEPTHS. R-8, R-10 AND R-11 WERE ORIGINALLY INSTALLED AS PUMPING WELLS AND EACH HAS A SECONDARY SMALLER DIAMETER SOUNDING STANDPIPE.
2. W-10, W-11, W-12, AND W-13 IN THE NORTHWEST AREA ARE SHALLOW PIEZOMETERS INTENDED TO MEASURE PERCHED GROUNDWATER.
3. "I" PIEZOMETER NUMBER DESIGNATIONS ARE ASSIGNED TO OPEN WELL PIEZOMETERS EQUIPPED FOR REMOTE READING. TWO PIEZOMETER TUBES IN ONE BORING ARE TABULATED SEPARATELY WHEN THE DIFFERENCE IN PROBED DEPTHS EXCEEDS ONE FOOT. AN EXCEPTION TO THIS IS I-9E AND I-9W WHICH ARE INSTALLED IN SEPARATE HOLES, ONLY ONE OF WHICH IS INSTRUMENTED.
4. THE PIEZOMETER LOCATIONS SHOWN ON THE TOPOGRAPHIC PLAN ARE APPROXIMATE.
5. ALL COORDINATES SHOWN HEREON ARE BASED ON THE 1983 NORTH AMERICAN DATUM, ZONE 5, IN FEET.

LEGEND

- ● OBSERVATION WELL NOT FITTED WITH SENSOR/DATA COLLECTOR.
- OBSERVATION WELL FITTED WITH SENSOR/DATA COLLECTOR.
- (H) EXISTING HORIZONTAL HYDRAULIC PIEZOMETER
- [R] RAIN GAUGE
- [EL] RESERVOIR ELEVATION STILLING WELL
- ▽ STRONG MOTION ACCELEROGRAPH
- UNDERDRAIN (UD) MEASURING LOCATIONS

Drawing 6-1

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

DISTRIBUTION SYSTEM COLORADO RIVER ACUEDUCT

GARVEY RESERVOIR

PIEZOMETER AND UNDERDRAIN INSTRUMENTATION PLAN

DESIGNED	S. KLINE	REVIEWED	A. BUANGAN
DRAWN	JDS - LBM	APPROVED	S. KLINE

NO.	DATE	DWN.	CKD.	REVISION	REC.	APP.
2	11/97	WR	CJH	TABLE, LOG REV.		
1	11-13-96	DEJH		NOTE-LEG.-DATA CHGS.		

DESIGNED ____ RECOMMENDED ____
DRAWN ____ APPROVED ____
CHECKED ____

WORK ORDER NO. 4-6693 | LOS ANGELES ____ 1993 | B-35362

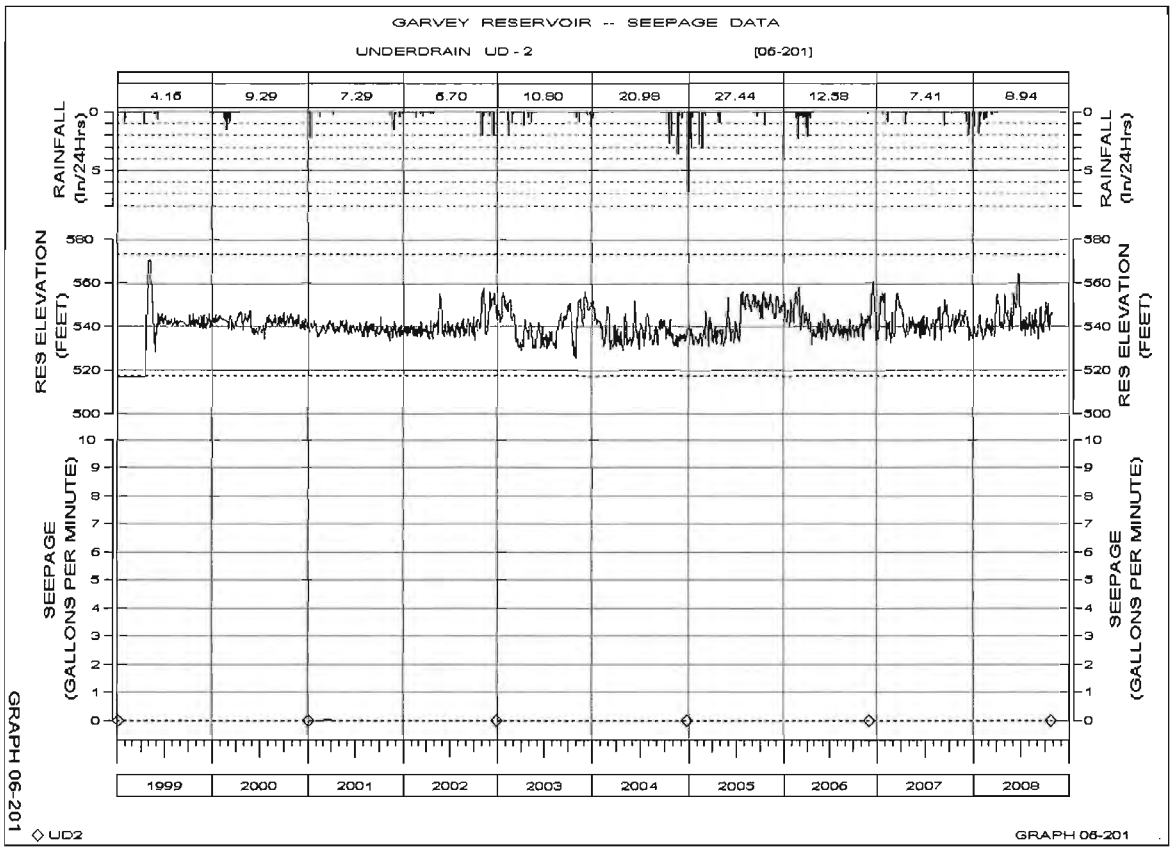
ORIGINAL RELEASE	MECH.	STRUCT.	ELEC.	CIVIL	SPECS.	I & C	COMM.	DATE

REVISION COORDINATION CHECK

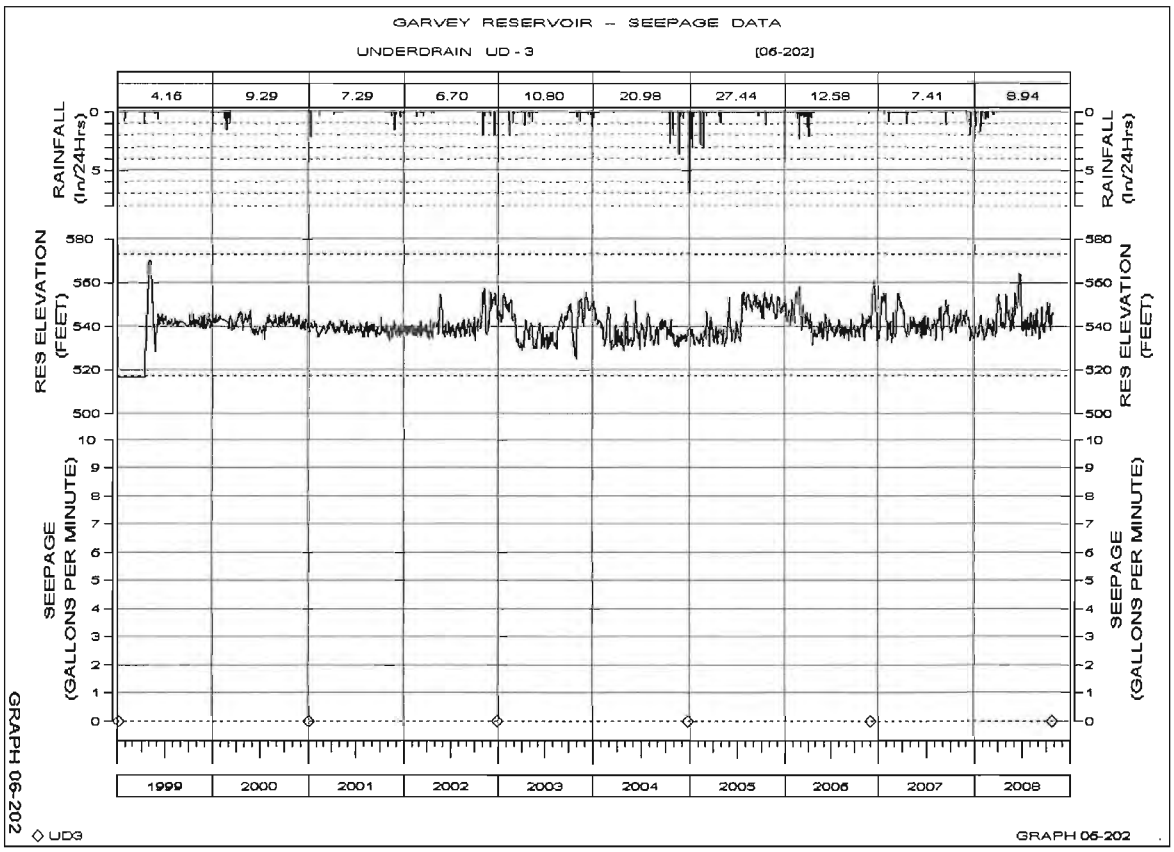
COORDINATION CHECK

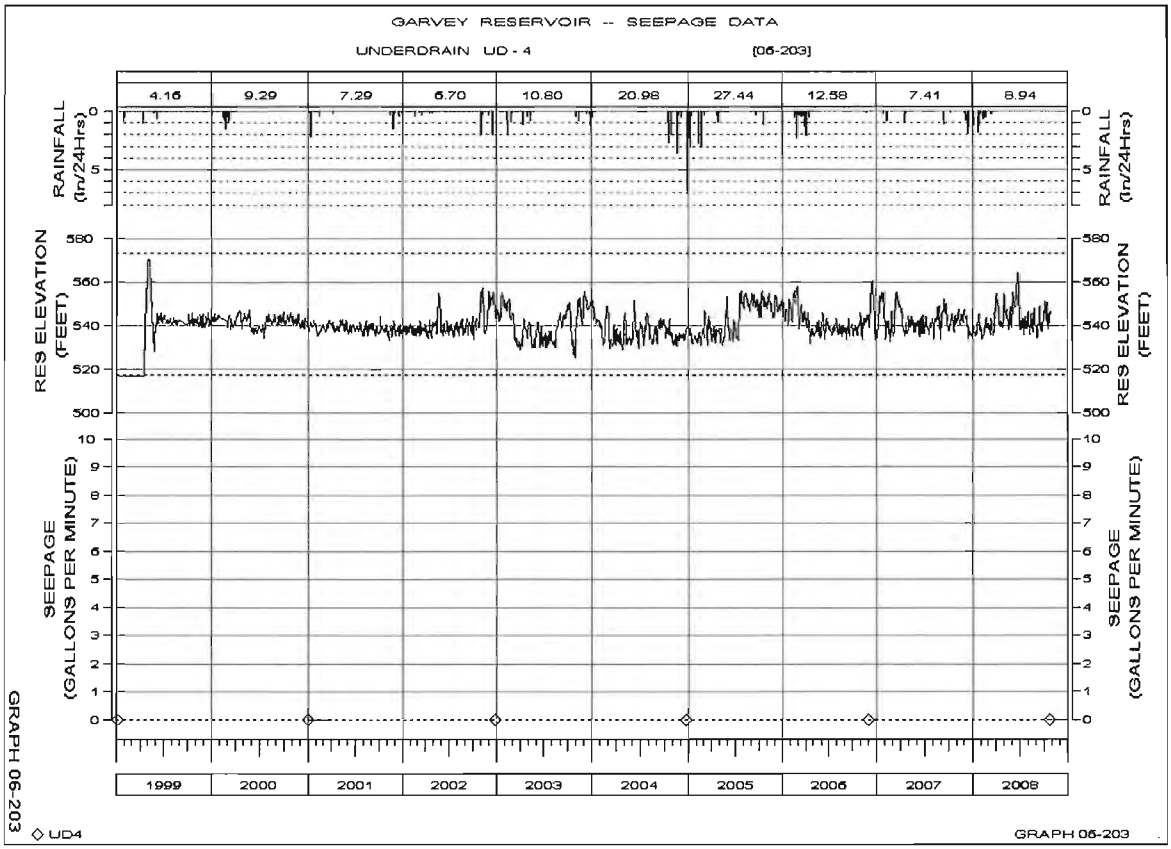
$J10 PEN TABLE ATTACHED$ USERID: $userid$ PLOT TIME: $time$ INTERGRAPH FILE NAME:

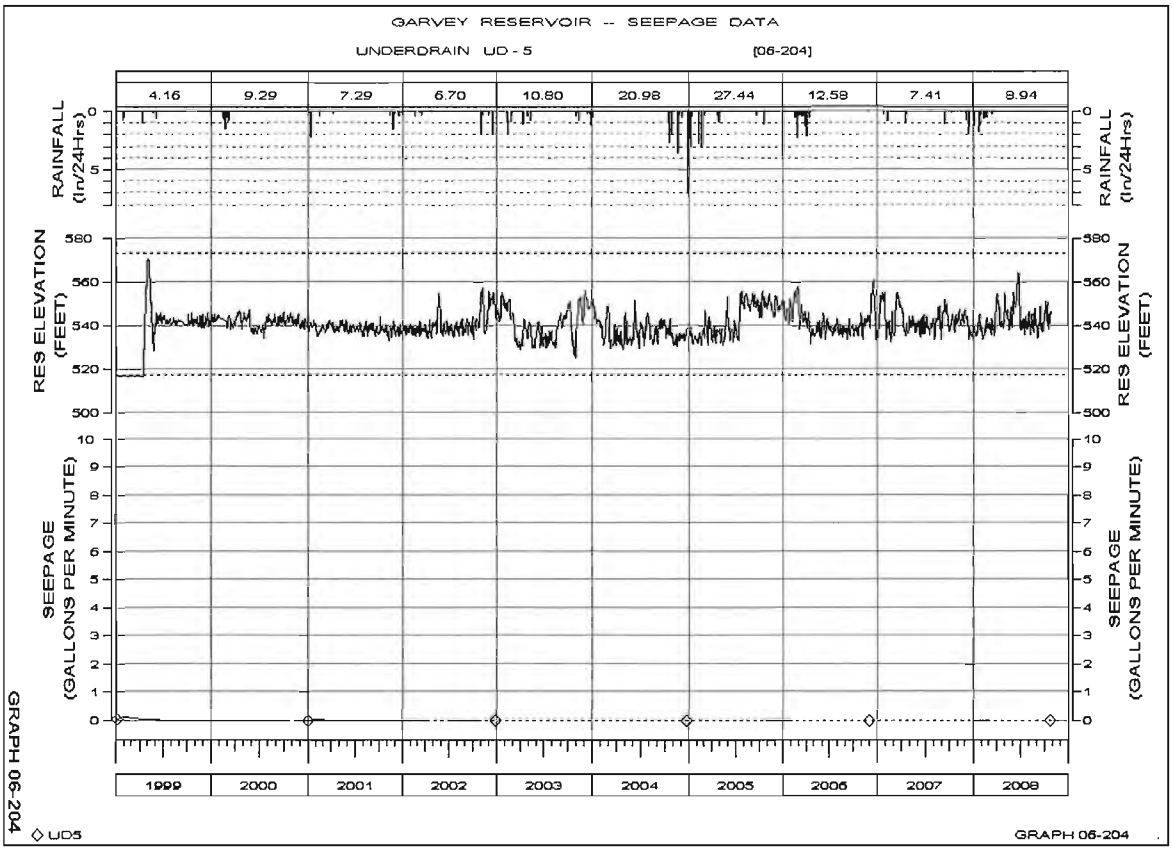
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



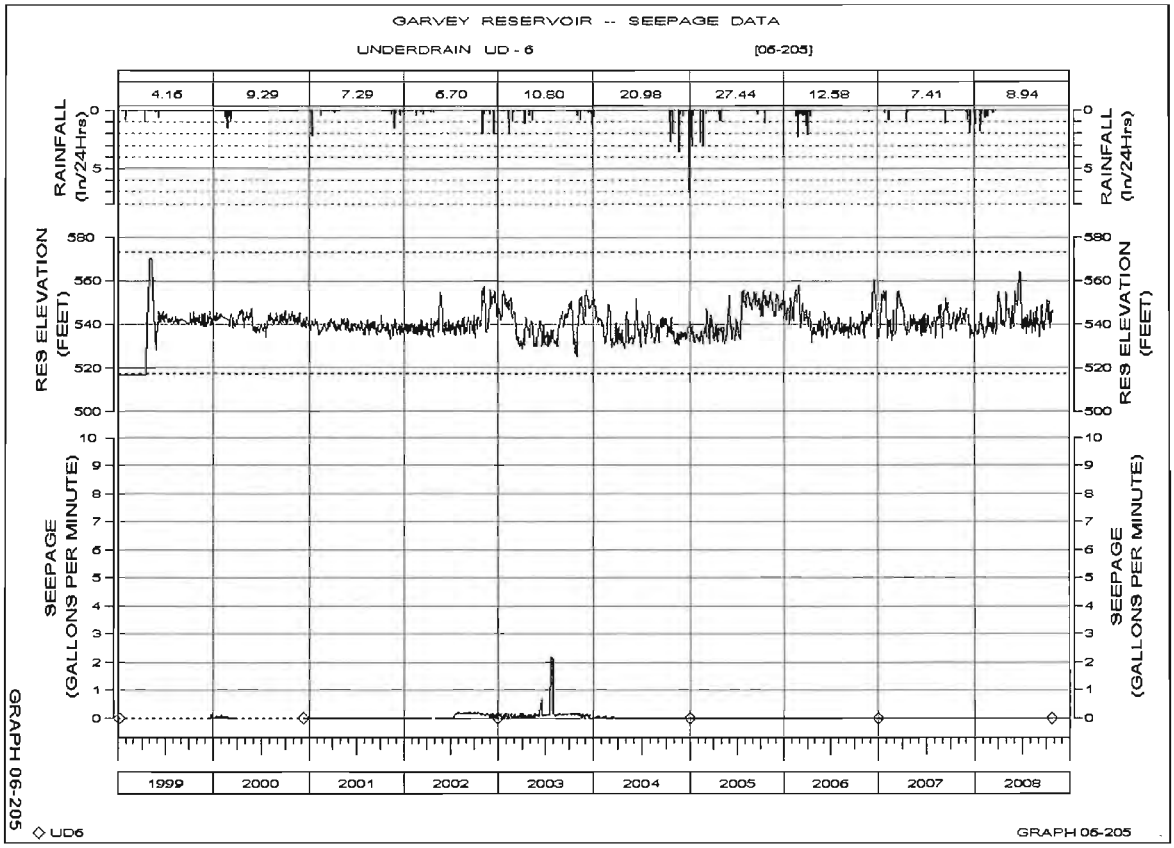
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



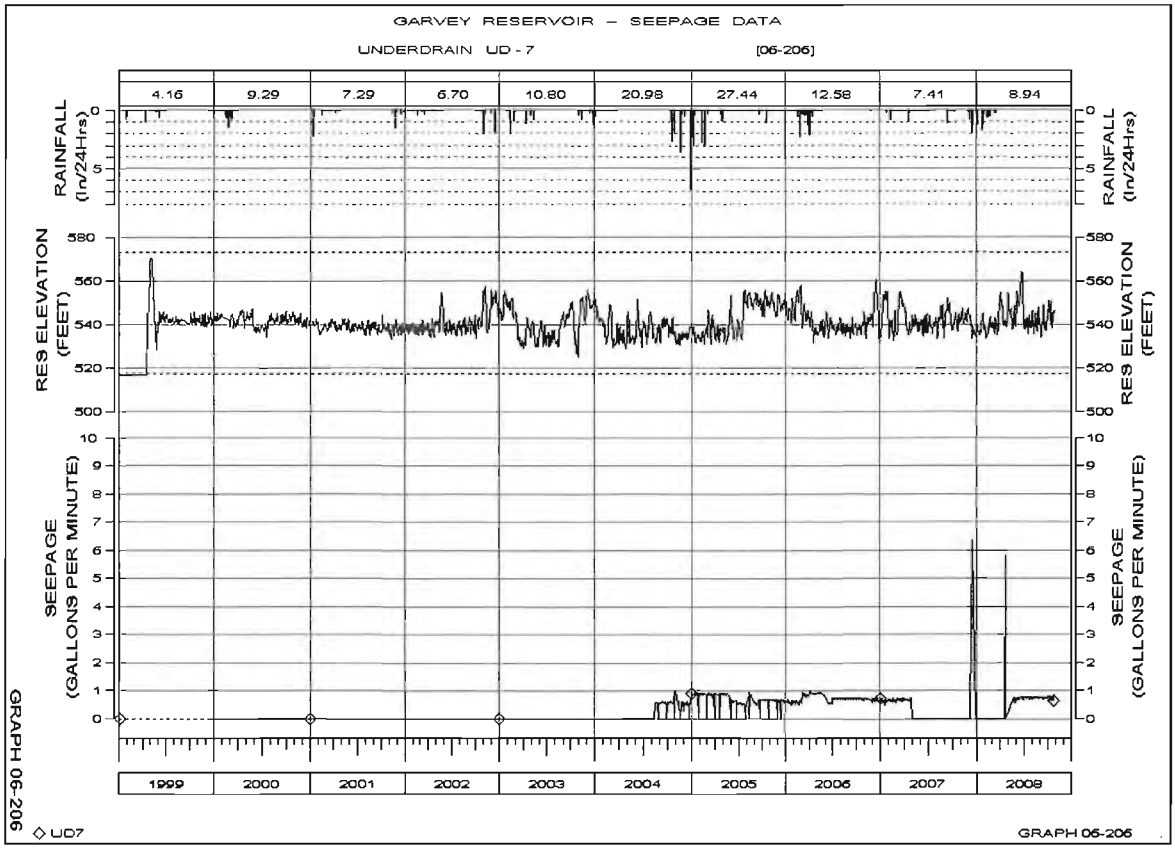

GARVEY RESERVOIR -- SEEPAGE DATA
UNDERDRAIN UD - 4
[06-203]
4.16
9.29
7.29
6.70
10.80
20.98
27.44
12.58
7.41
8.94
RAINFALL (In/24Hrs)
RES ELEVATION (FEET)
SEEPAGE (GALLONS PER MINUTE)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
GRAPH 06-203
◇ UD4
GRAPH 06-203


GARVEY RESERVOIR -- SEEPAGE DATA
UNDERDRAIN UD - 5
[06-204]
4.16
9.29
7.29
6.70
10.80
20.98
27.44
12.58
7.41
8.94
RAINFALL (In/24Hrs)
RES ELEVATION (FEET)
SEEPAGE (GALLONS PER MINUTE)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
GRAPH 06-204
◇ UD5
GRAPH 06-204

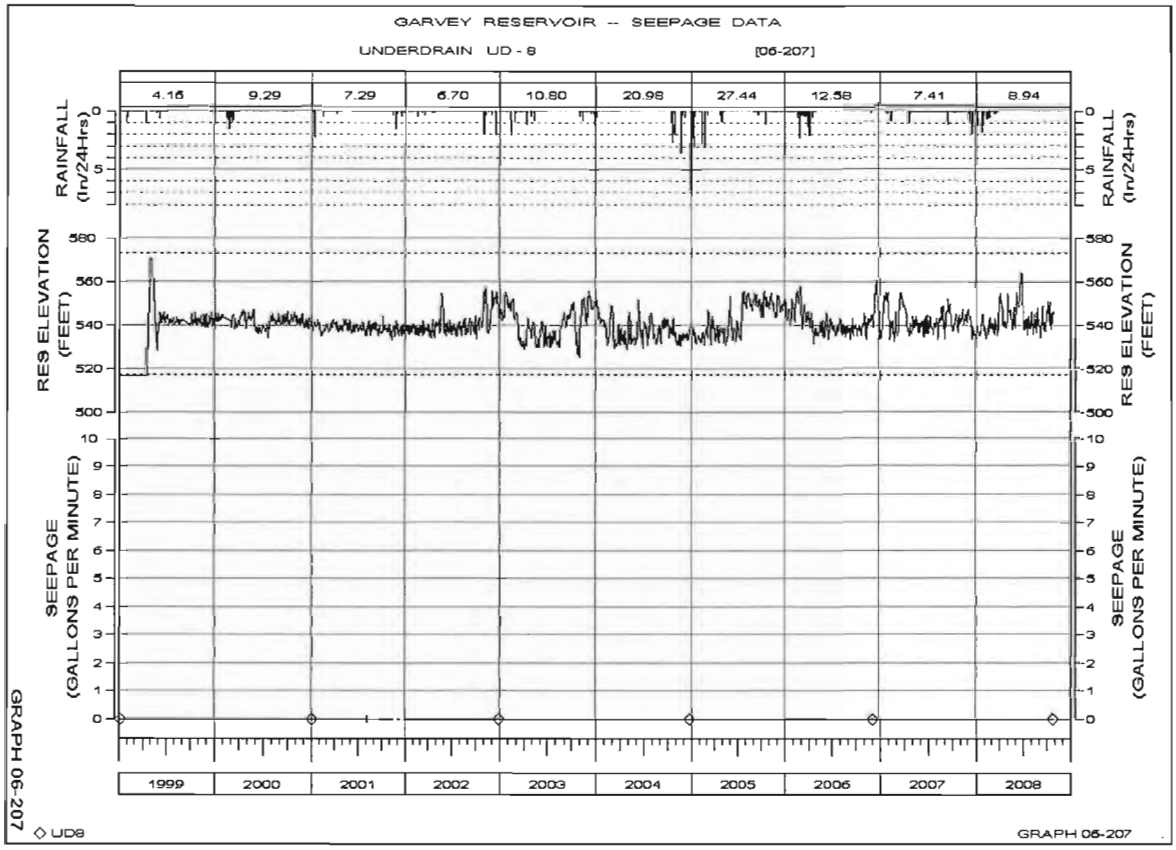
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



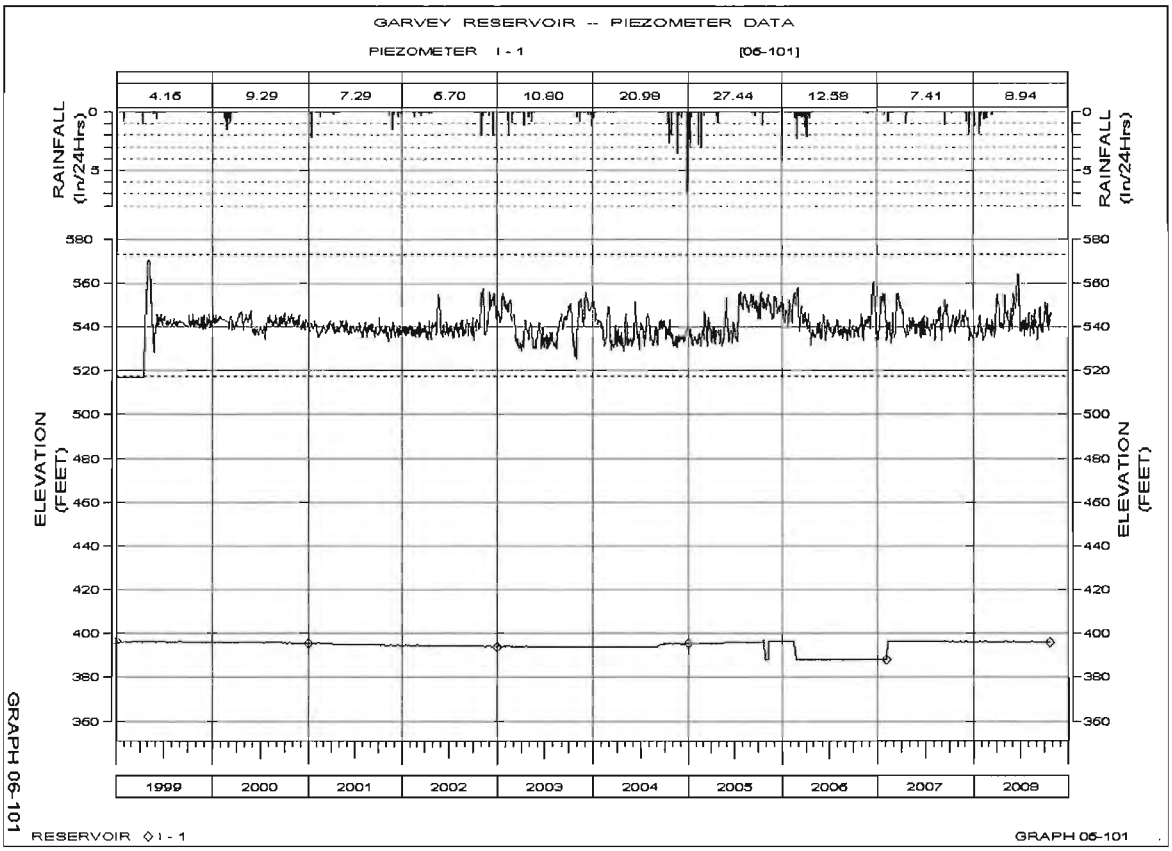
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



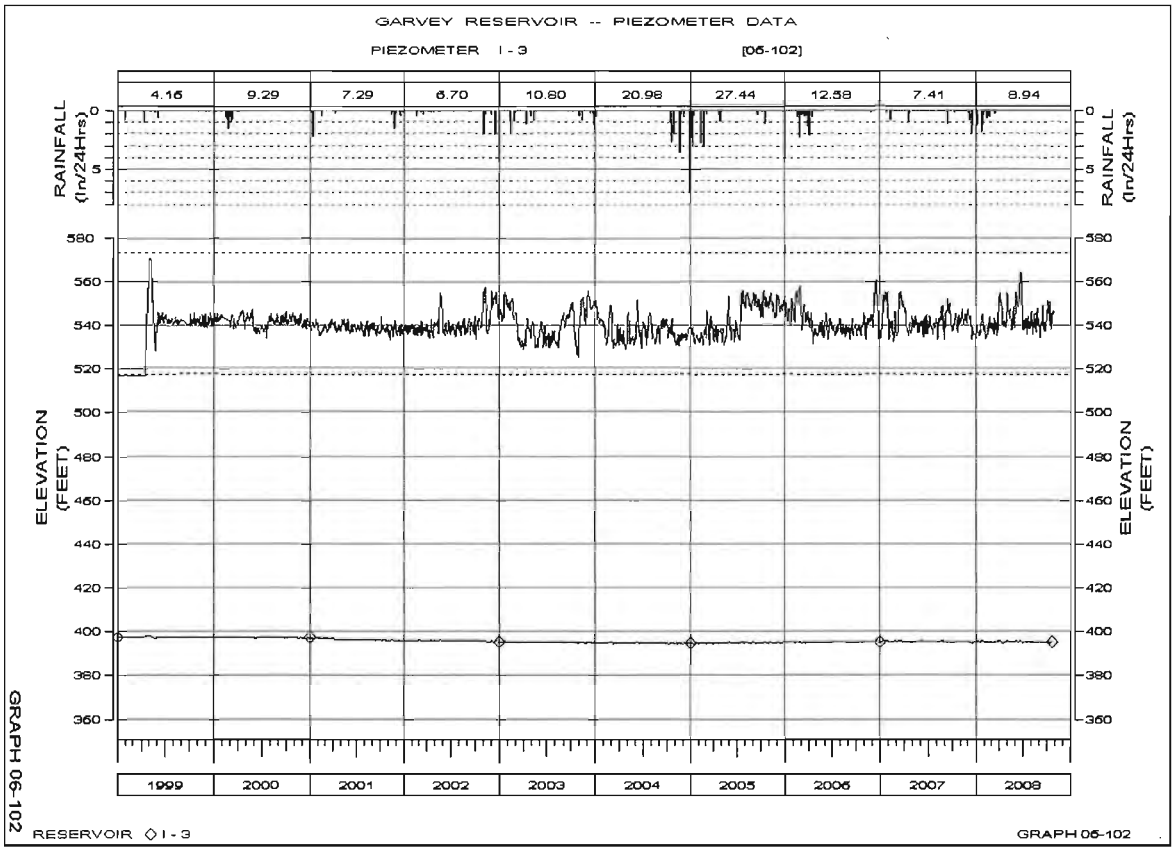
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2

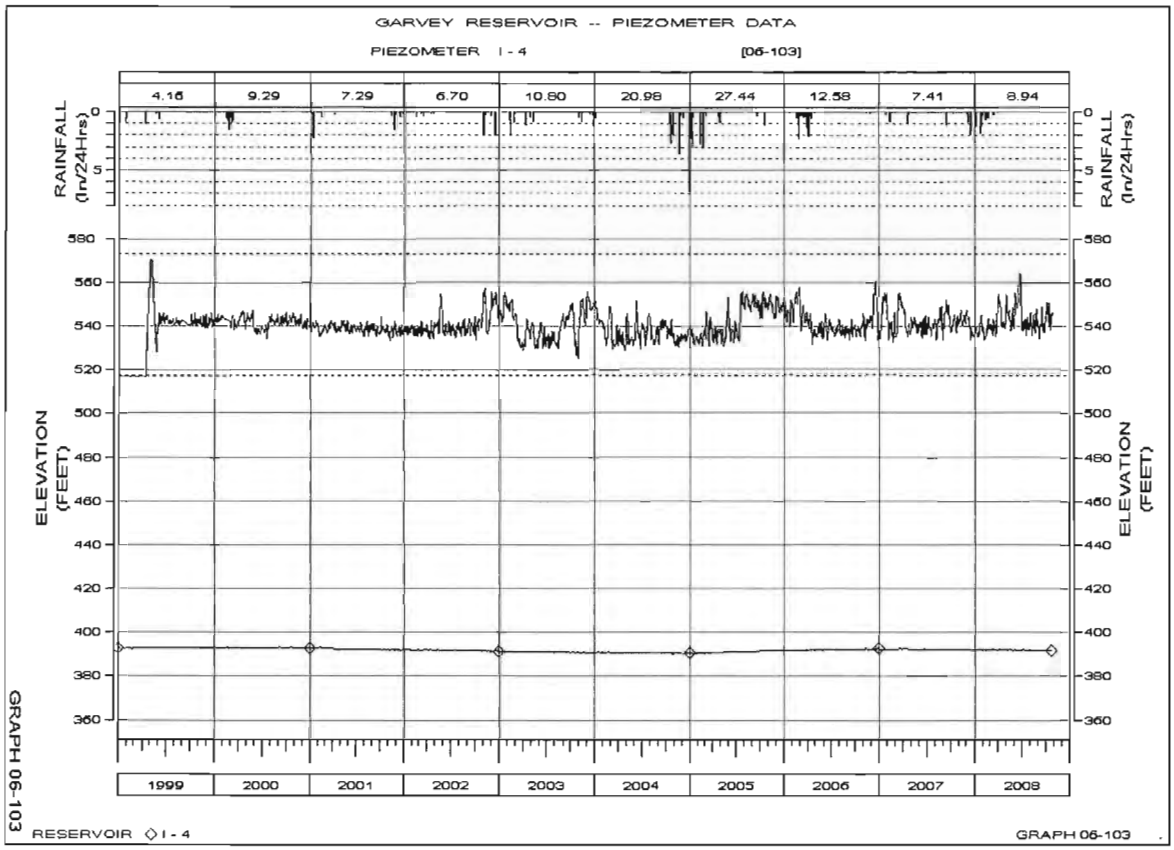


Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2

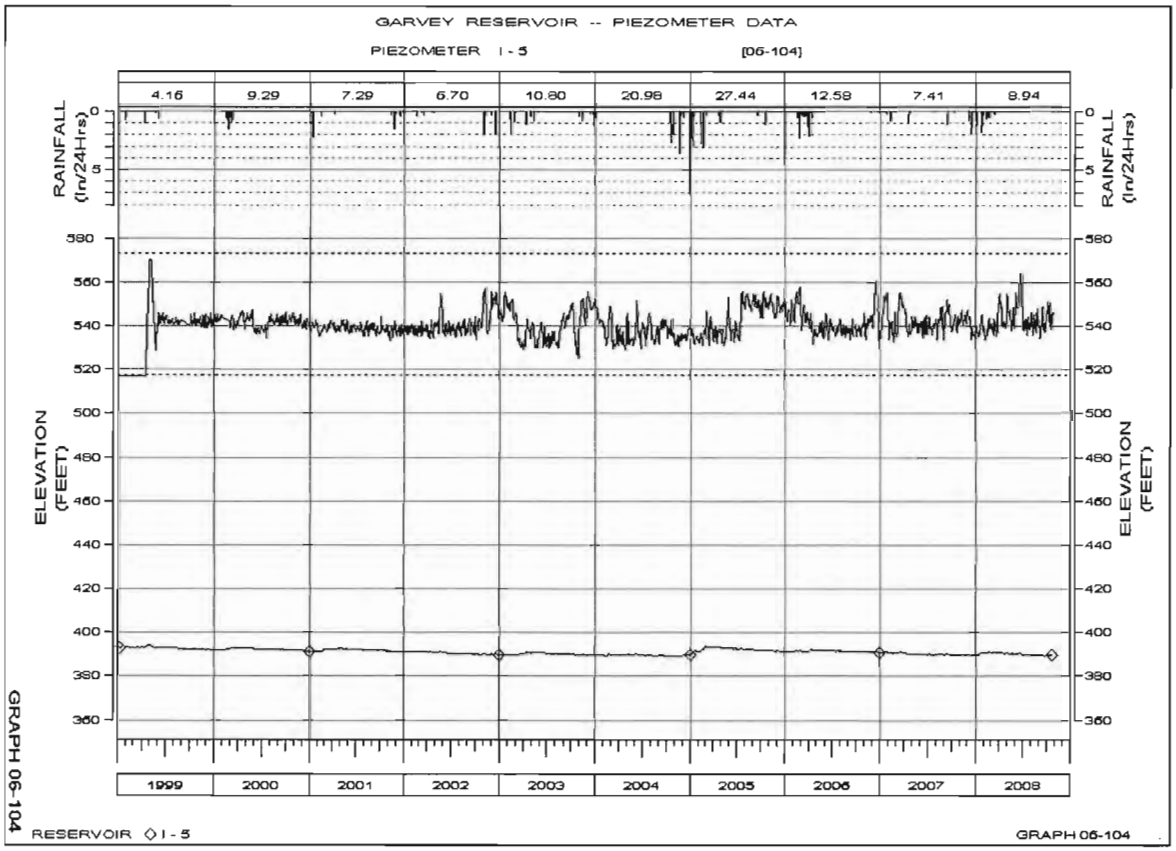


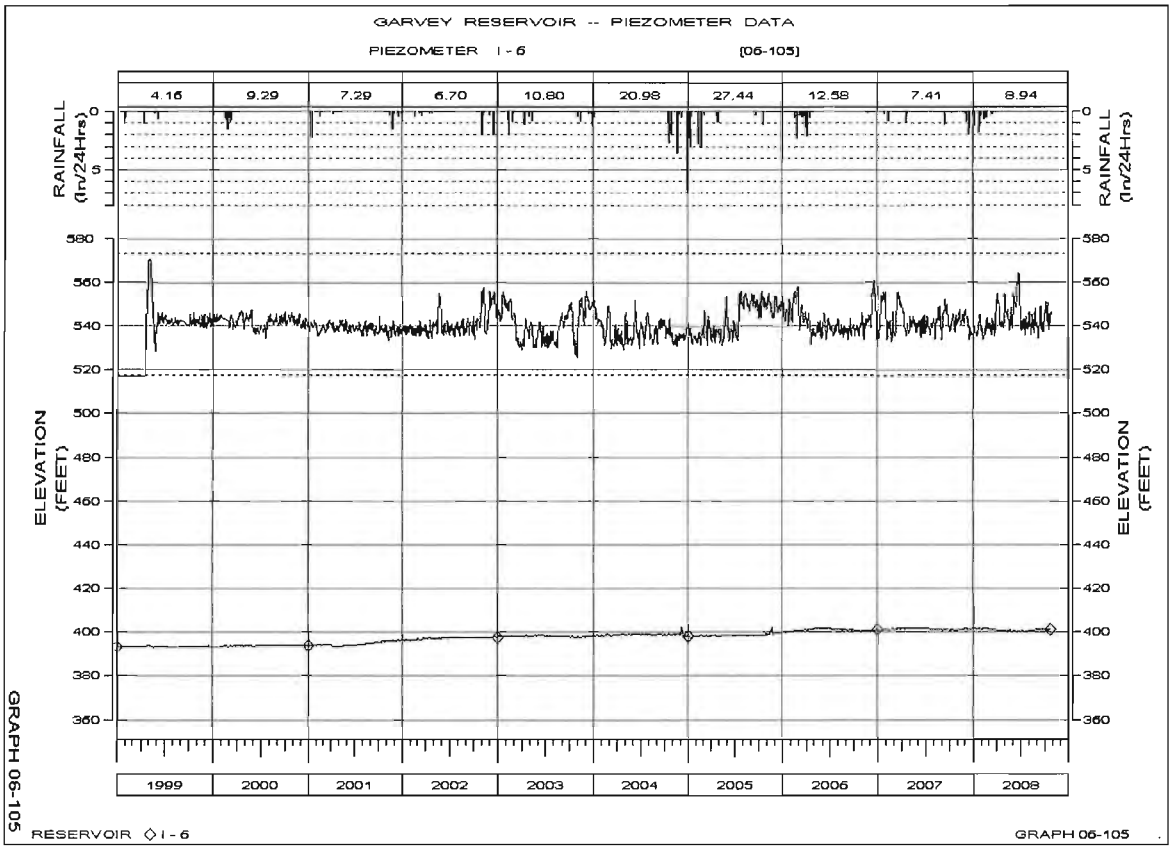
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



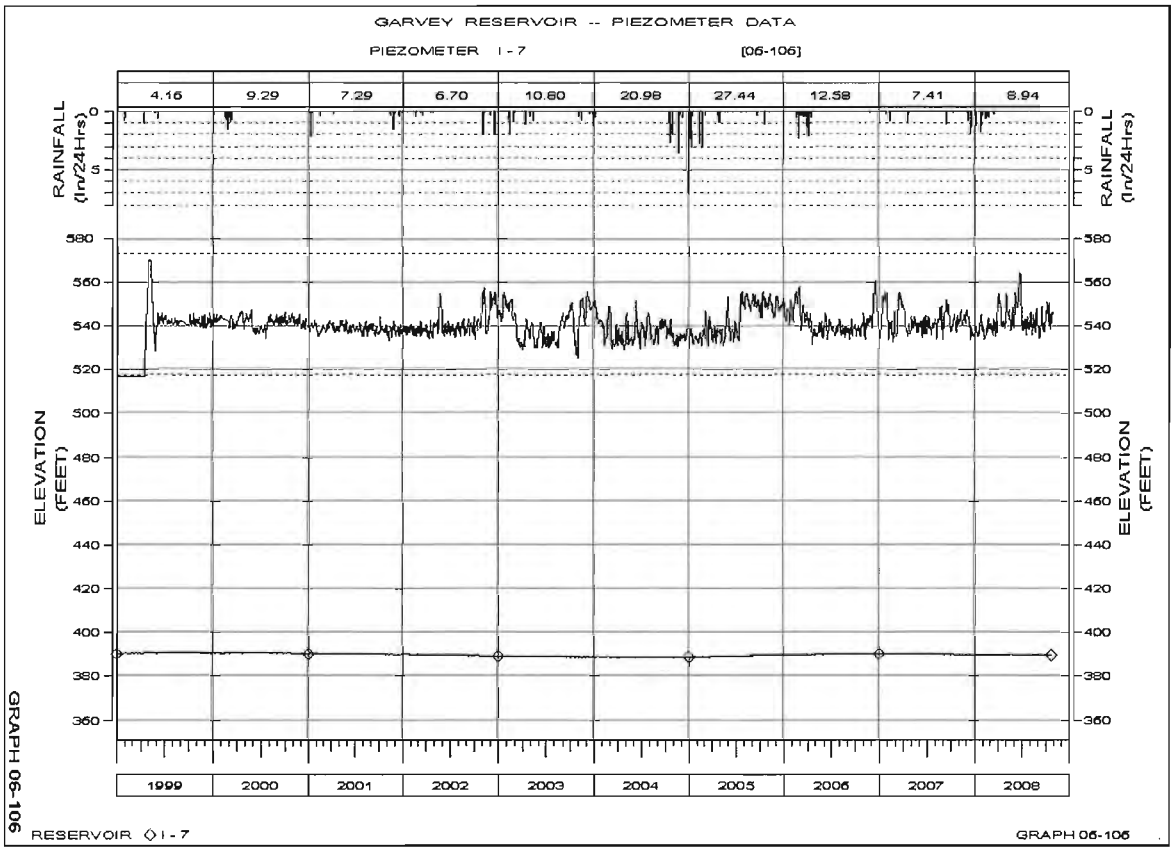


Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2

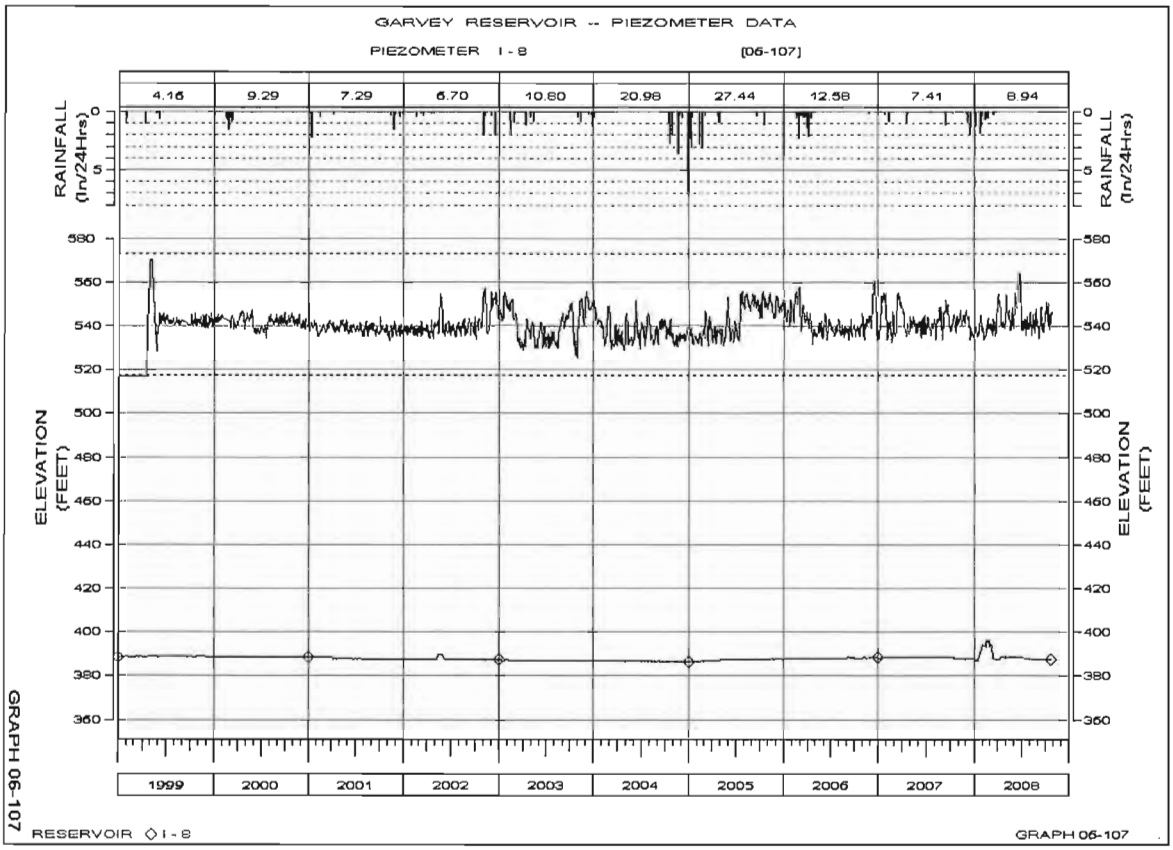




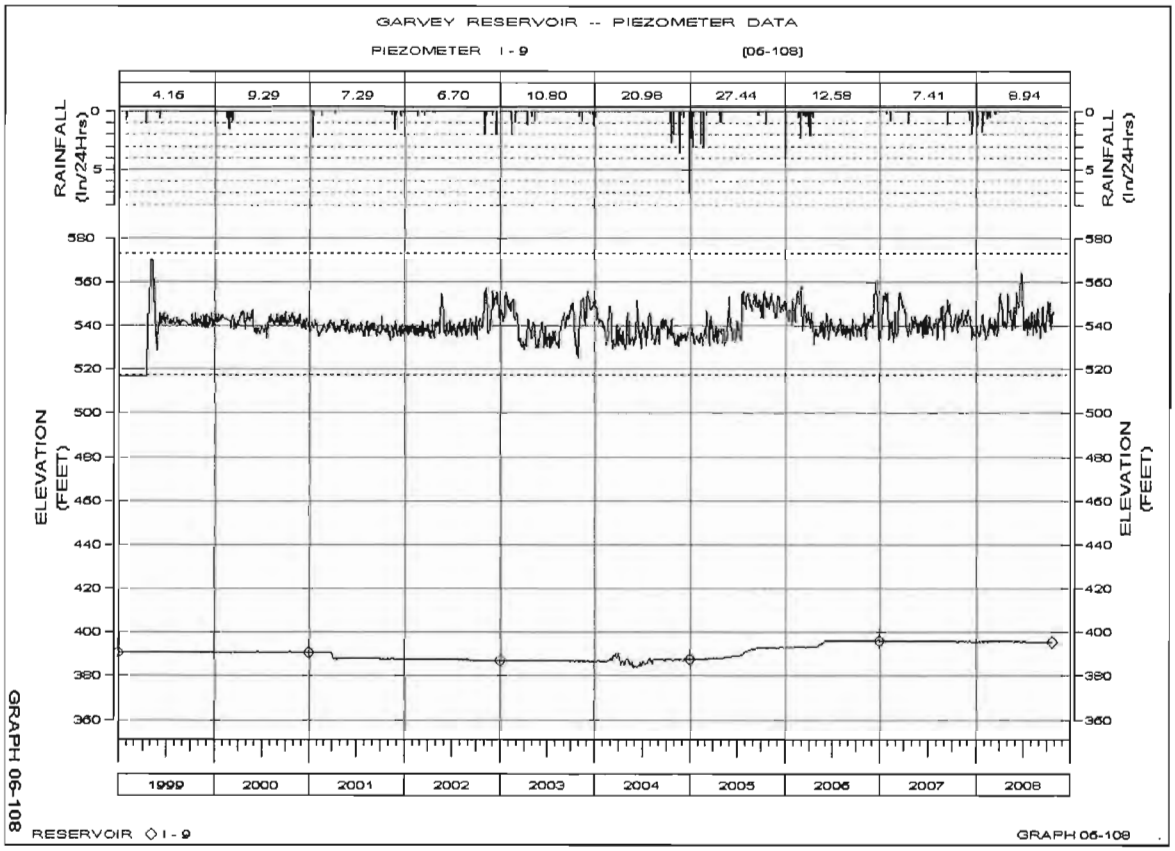
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



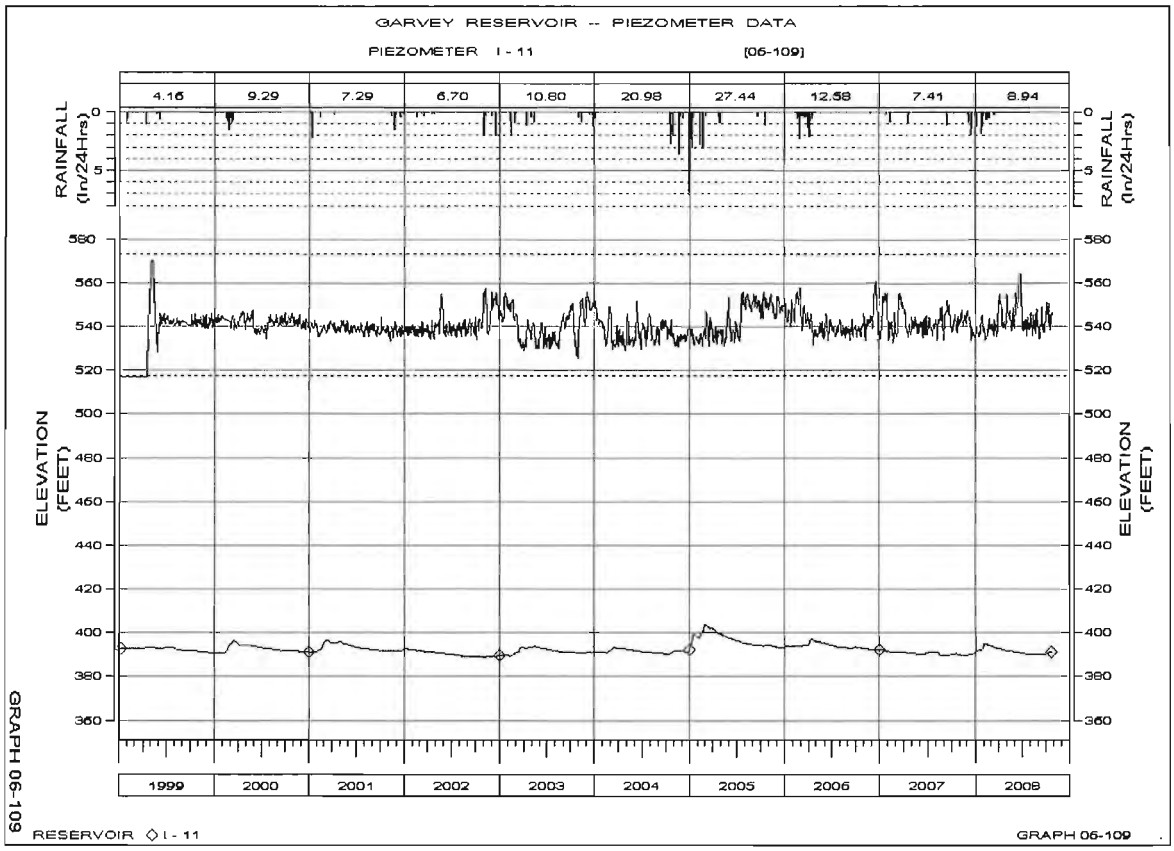
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



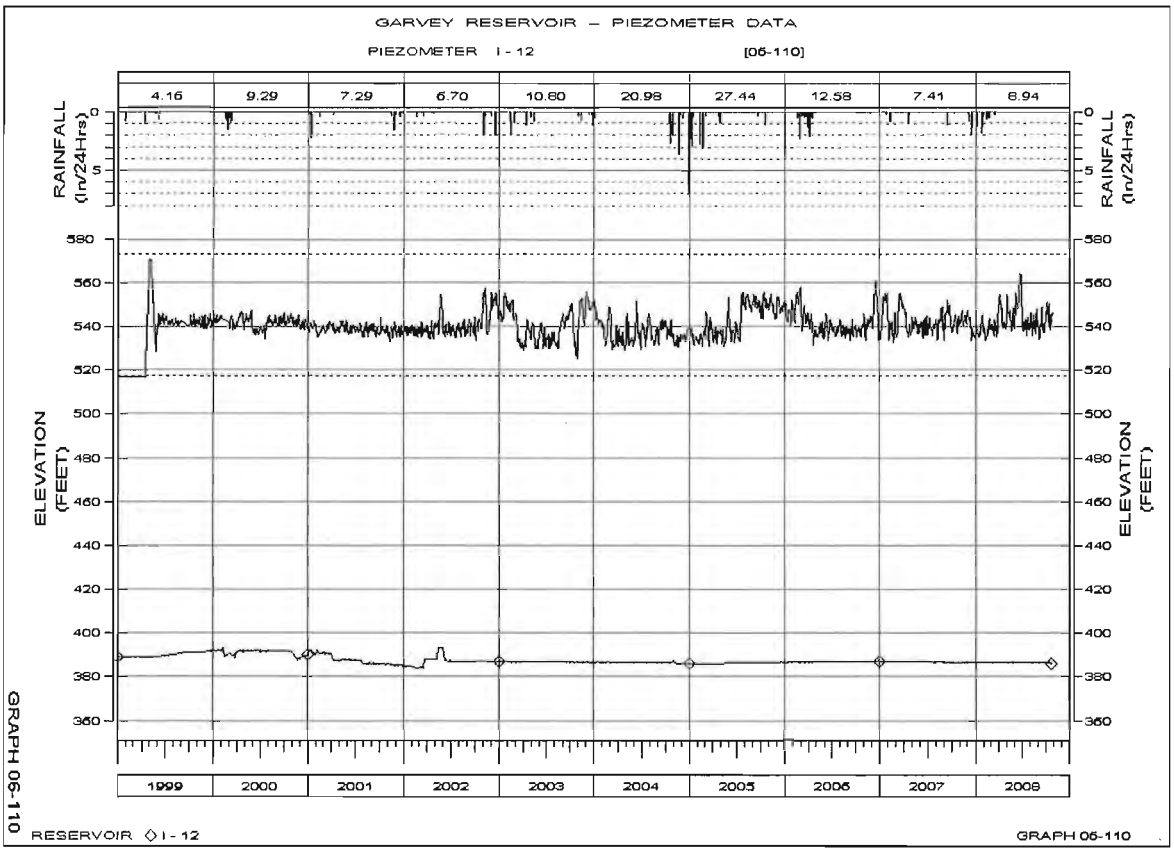
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



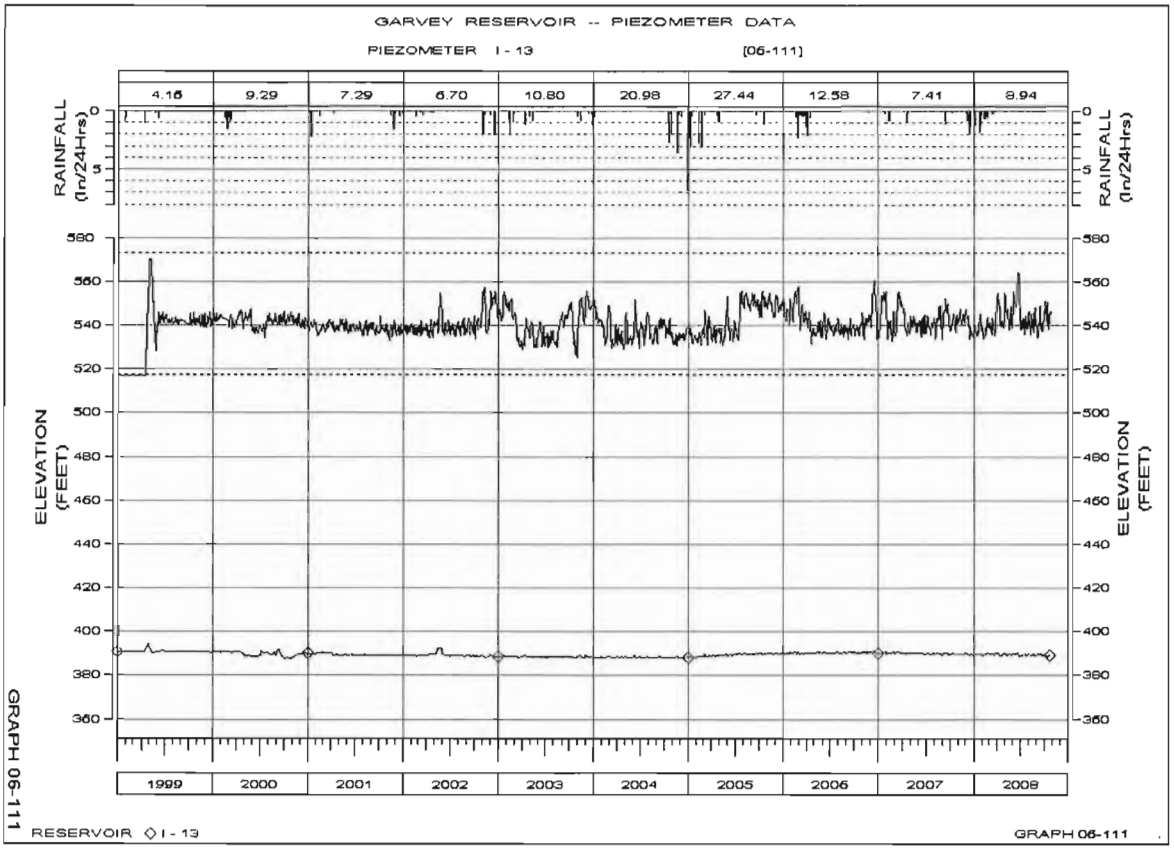
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



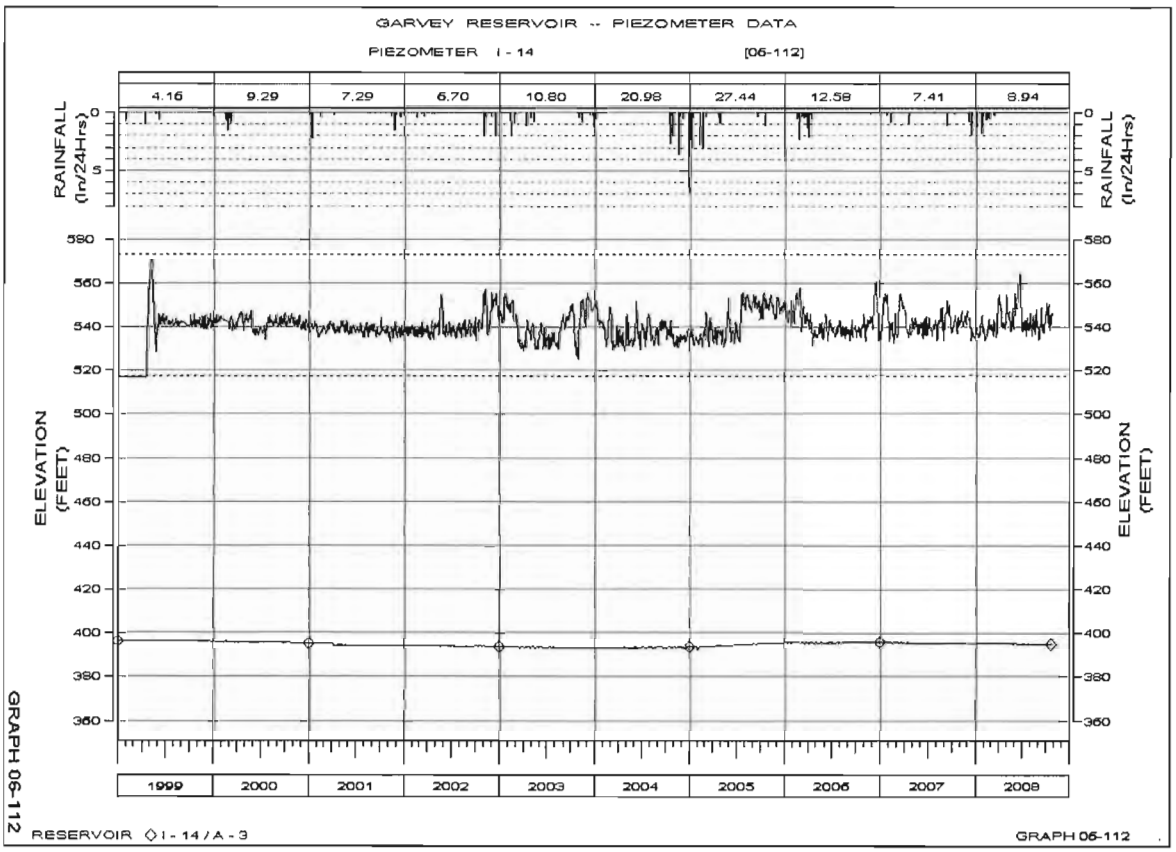
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



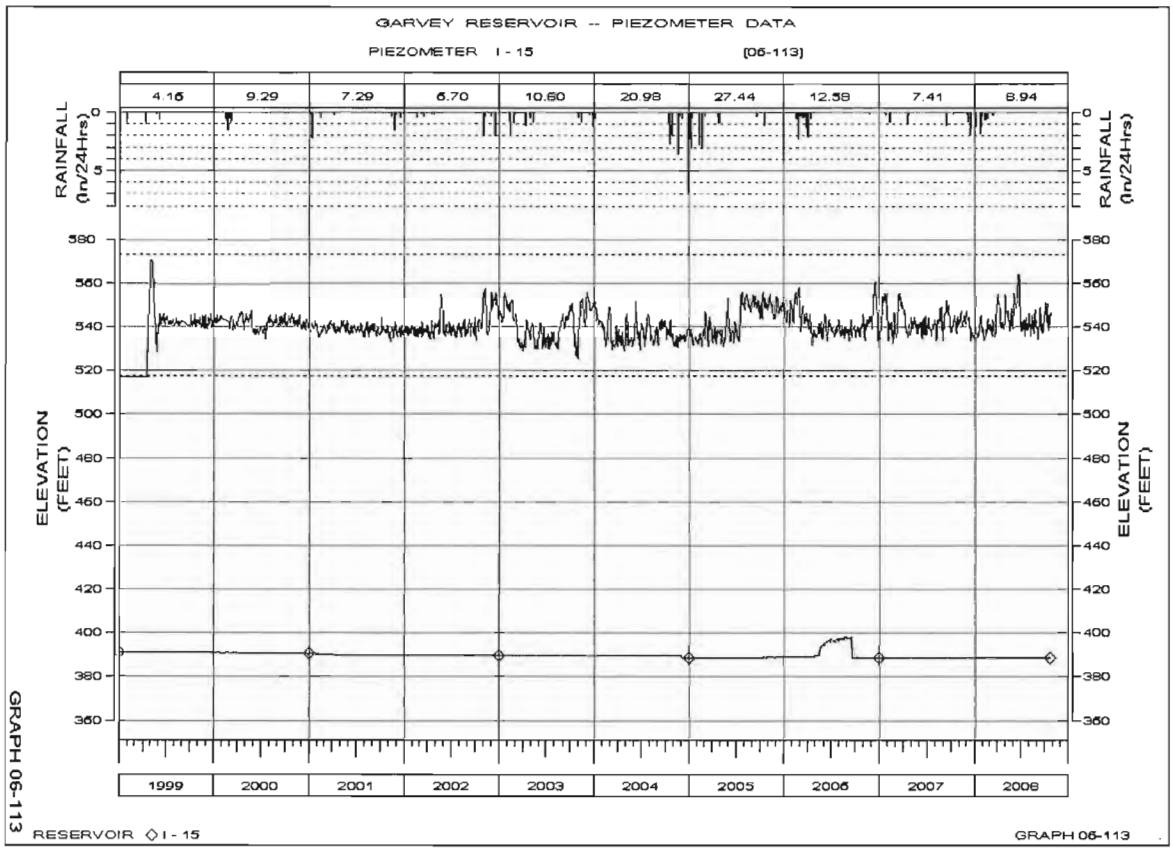
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



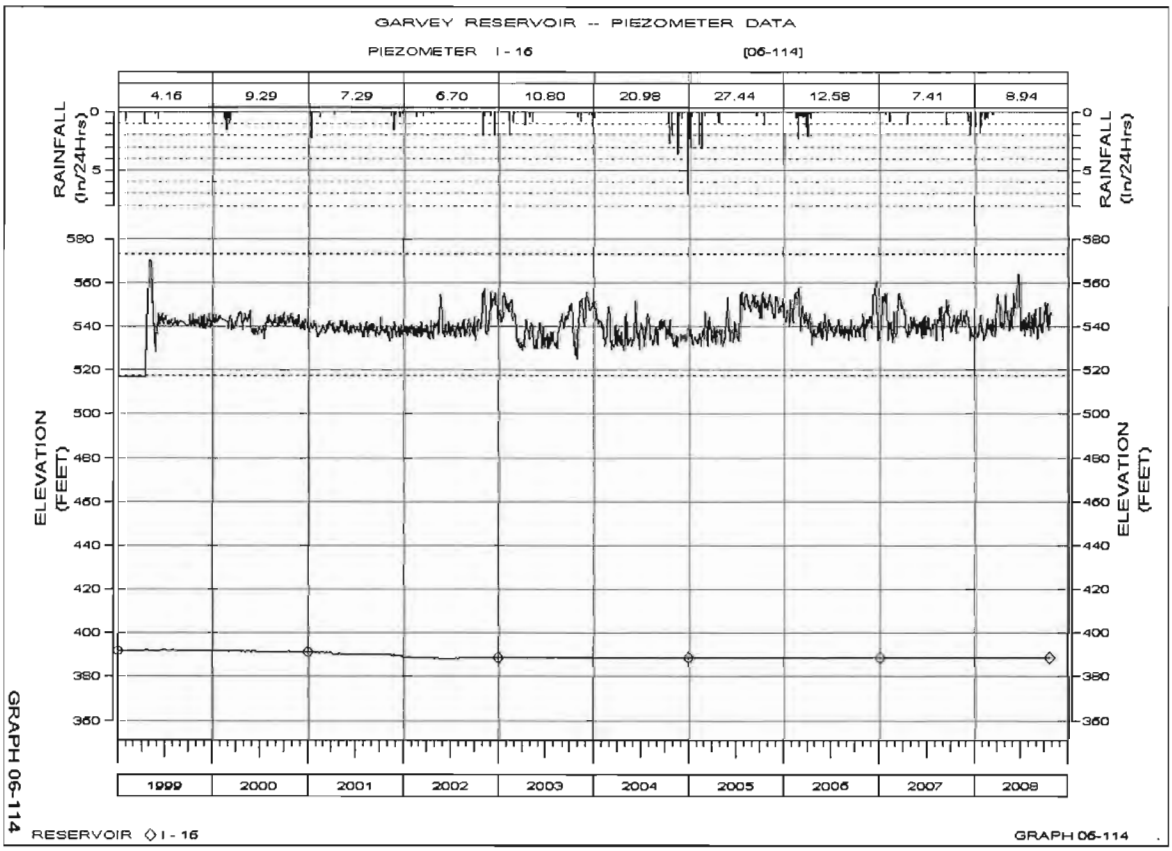
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



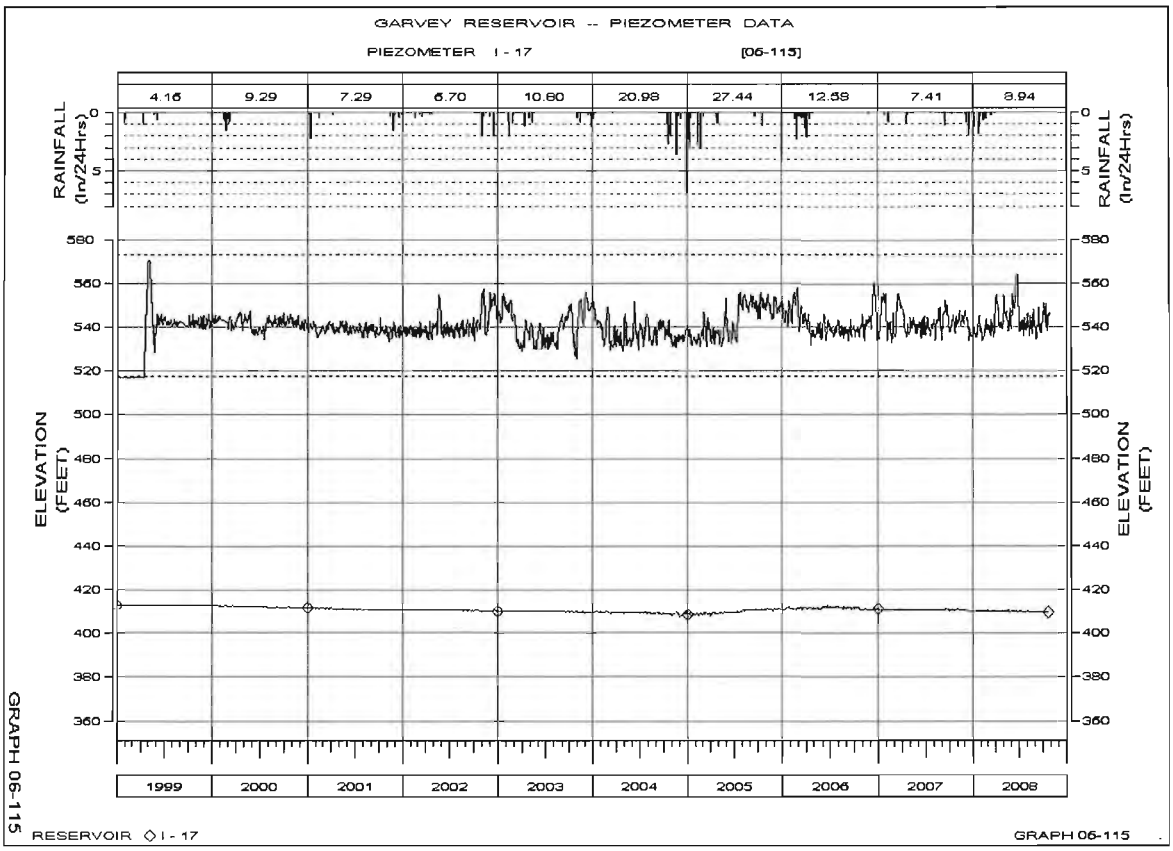
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



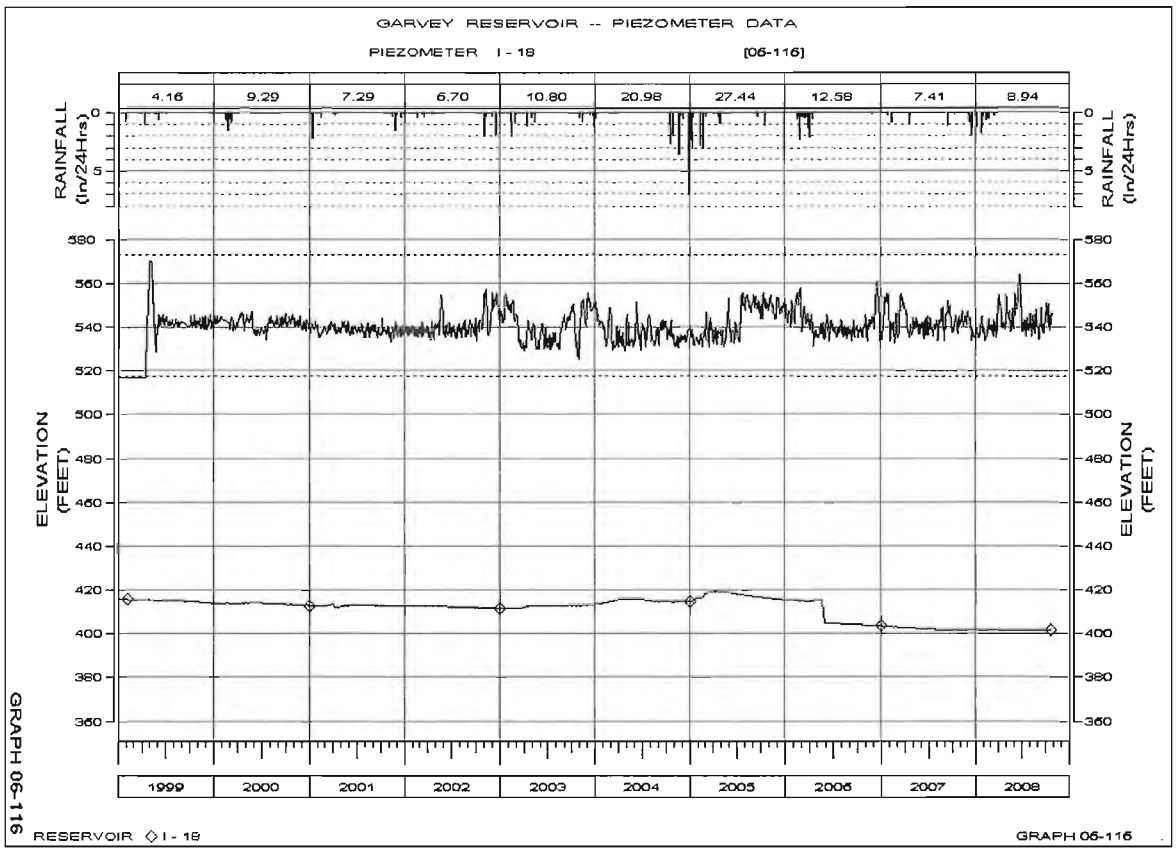
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2

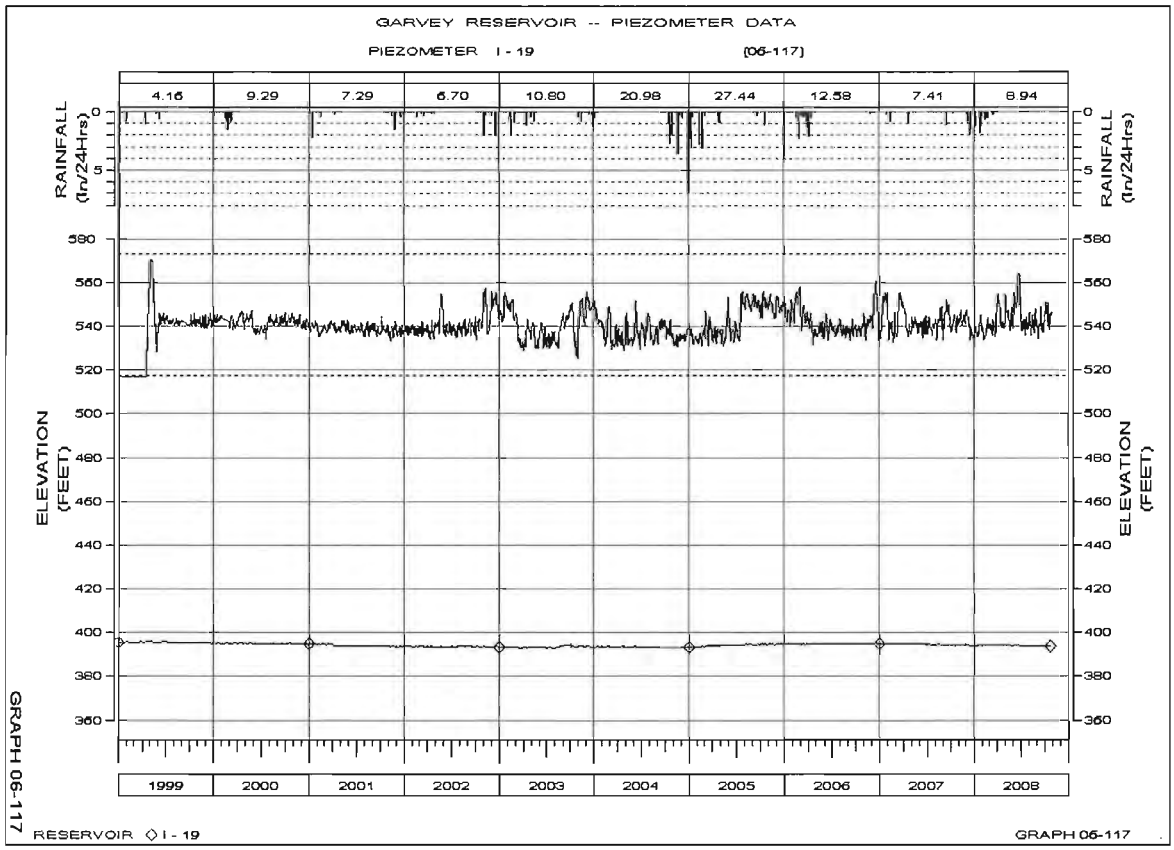


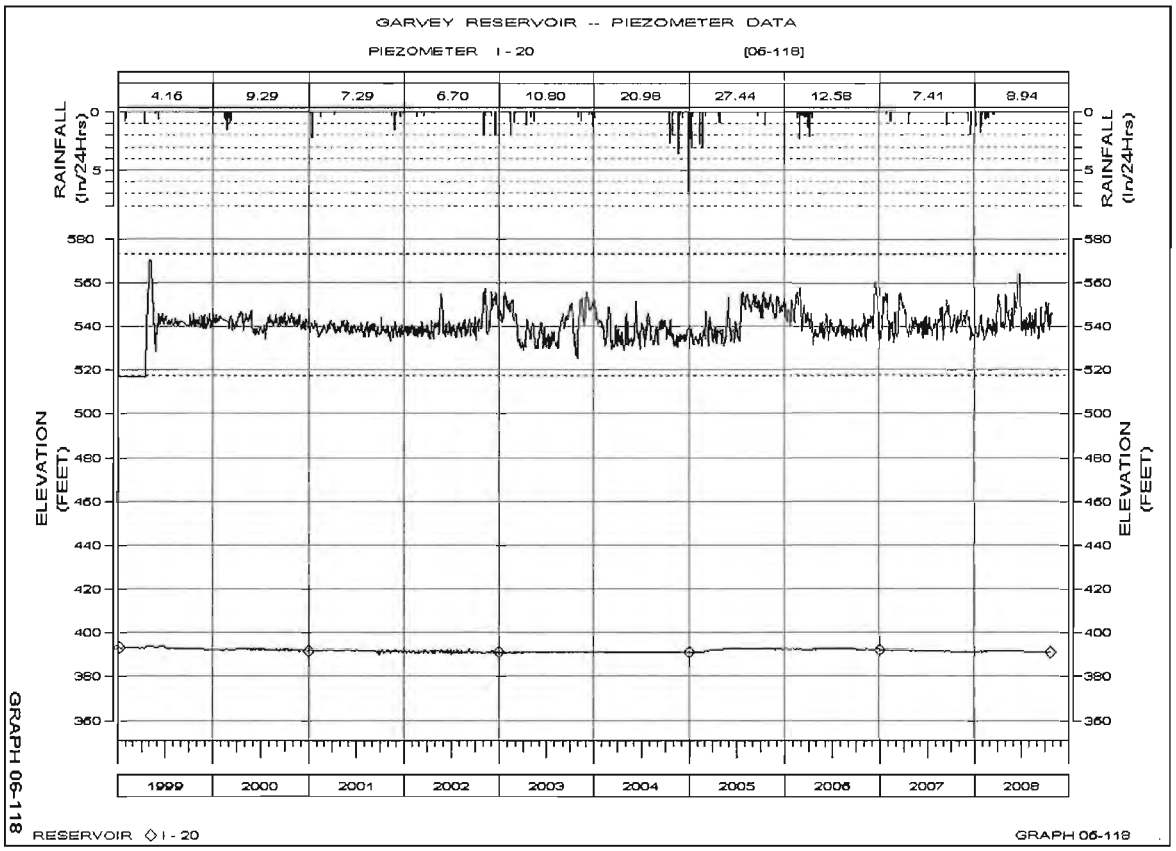
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



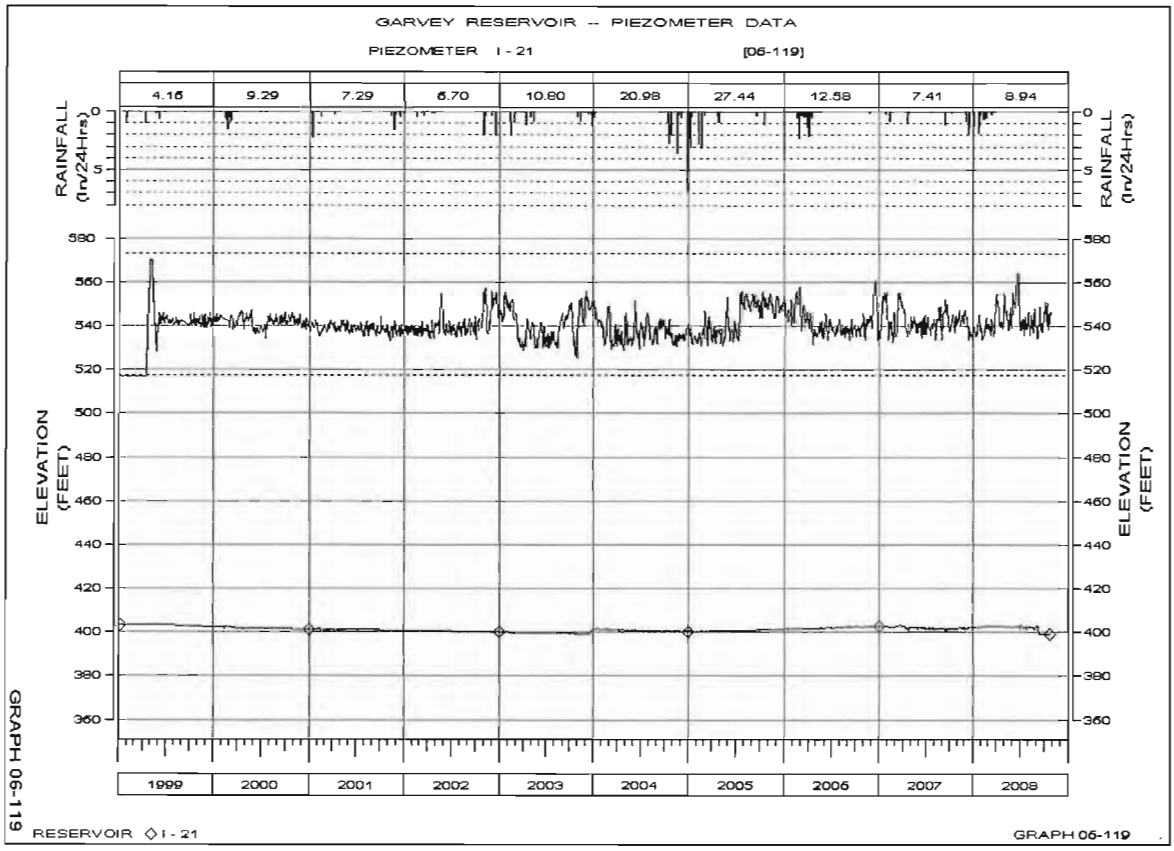
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



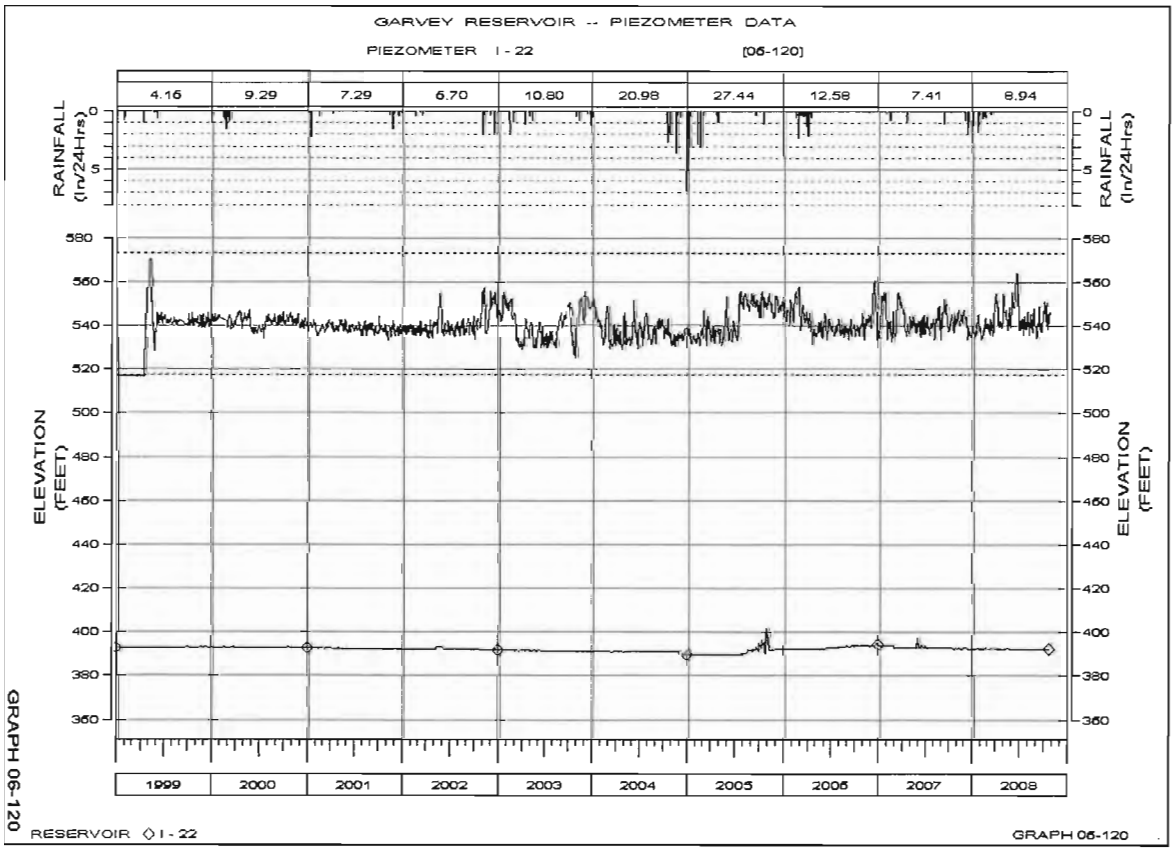

GARVEY RESERVOIR -- PIEZOMETER DATA
PIEZOMETER I - 19 [06-117]
4.16
9.29
7.29
6.70
10.80
20.98
27.44
12.58
7.41
8.94
RAINFALL (In/24Hrs)
ELEVATION (FEET)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
GRAPH 06-117
RESERVOIR ◇ I - 19
GRAPH 06-117


GARVEY RESERVOIR -- PIEZOMETER DATA
PIEZOMETER I - 20 [06-118]
4.16
9.29
7.29
6.70
10.80
20.98
27.44
12.58
7.41
8.94
RAINFALL (In/24Hrs)
ELEVATION (FEET)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
GRAPH 06-118
RESERVOIR ◇ I - 20
GRAPH 06-118

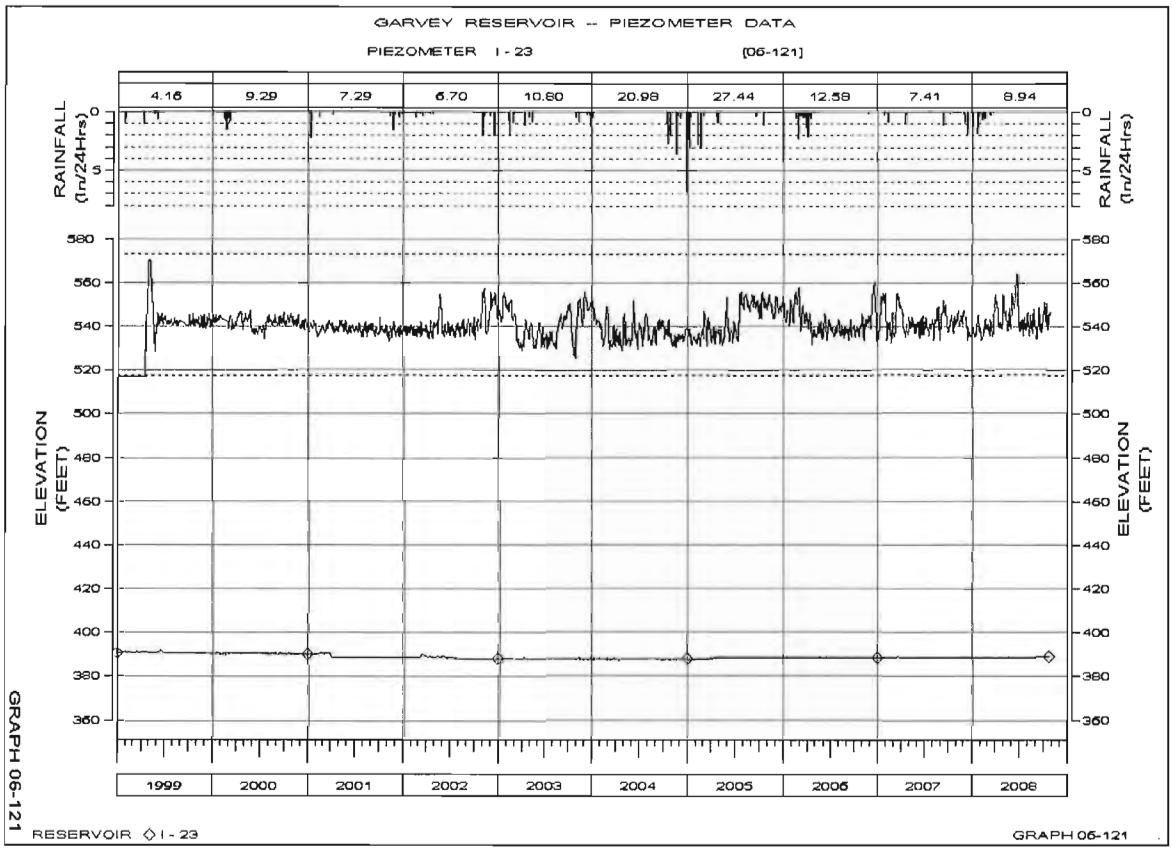
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



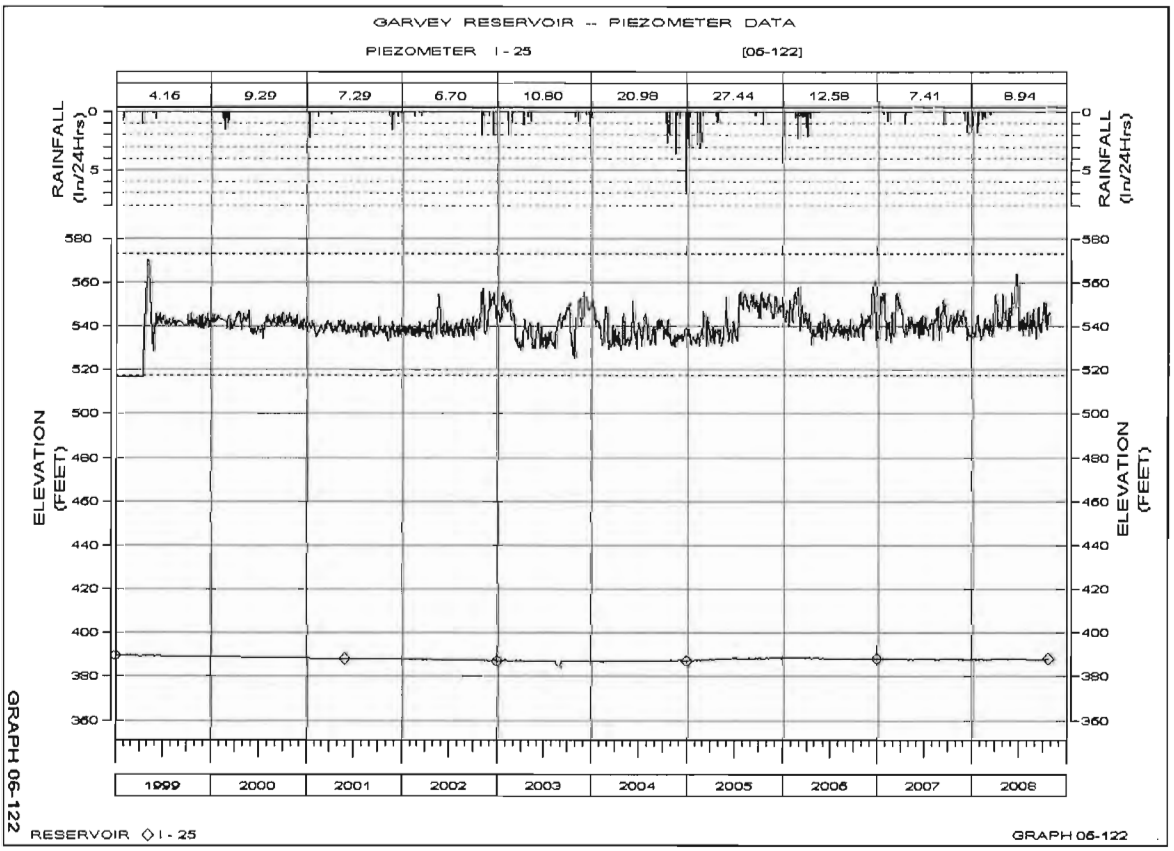
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2

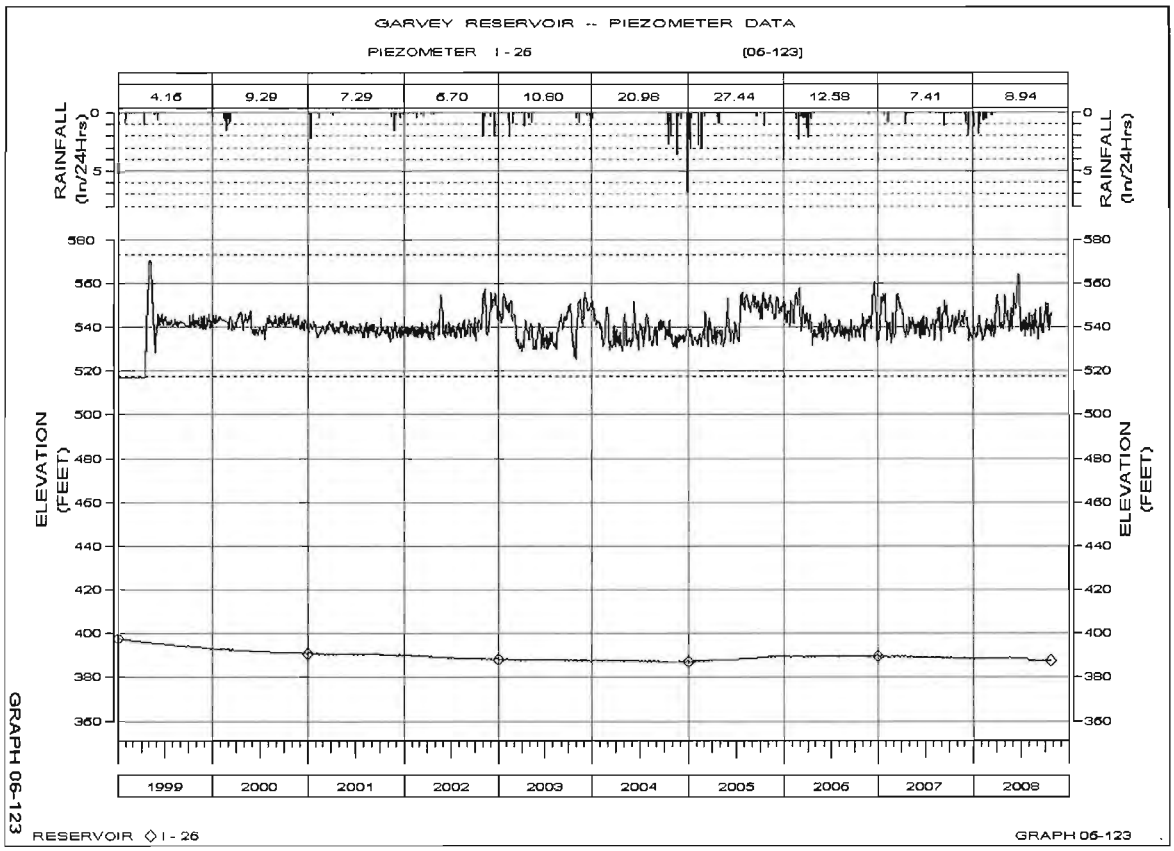


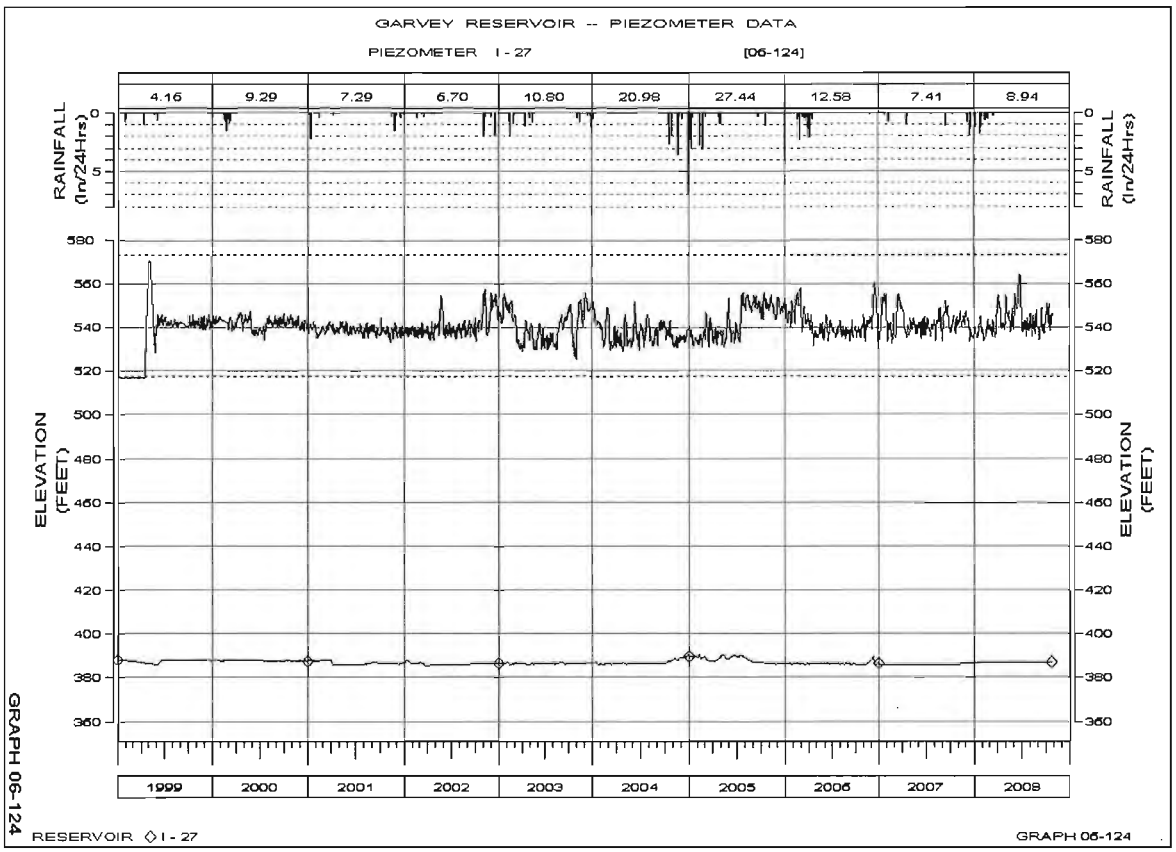
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



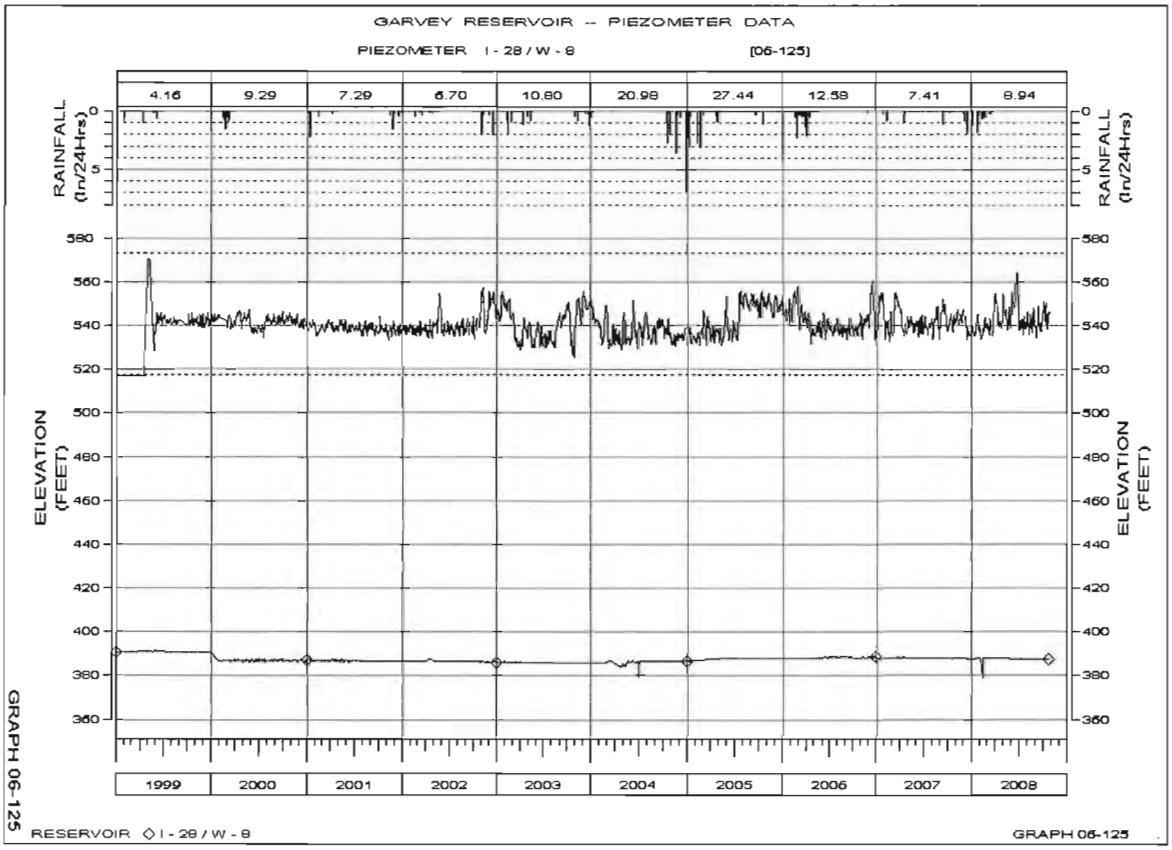
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



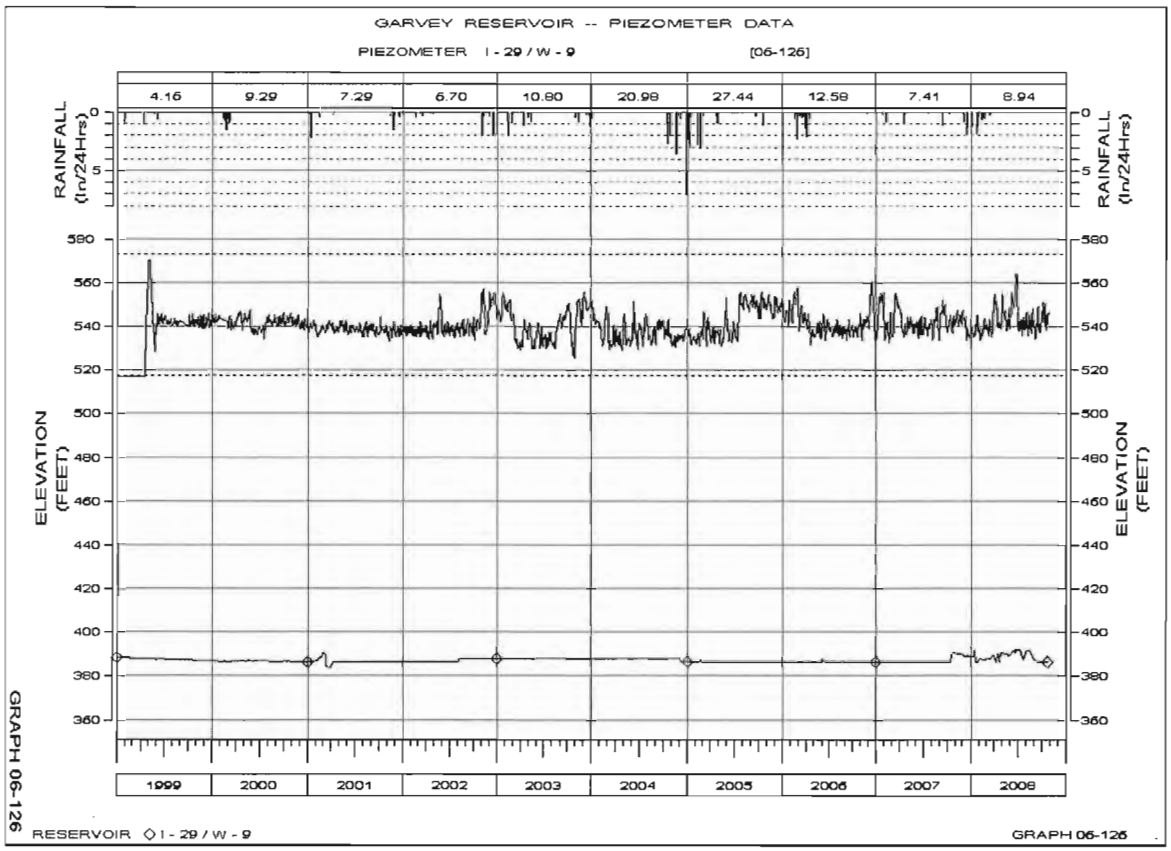

GARVEY RESERVOIR -- PIEZOMETER DATA
PIEZOMETER I - 26 [06-123]
4.16
9.29
7.29
6.70
10.80
20.98
27.44
12.58
7.41
8.94
RAINFALL (In/24Hrs)
ELEVATION (FEET)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
GRAPH 06-123
RESERVOIR ◇ I - 26
GRAPH 06-123


GARVEY RESERVOIR -- PIEZOMETER DATA
PIEZOMETER I - 27 [06-124]
4.16
9.29
7.29
6.70
10.80
20.98
27.44
12.58
7.41
8.94
RAINFALL (In/24Hrs)
ELEVATION (FEET)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
GRAPH 06-124
RESERVOIR ◇ I - 27
GRAPH 06-124

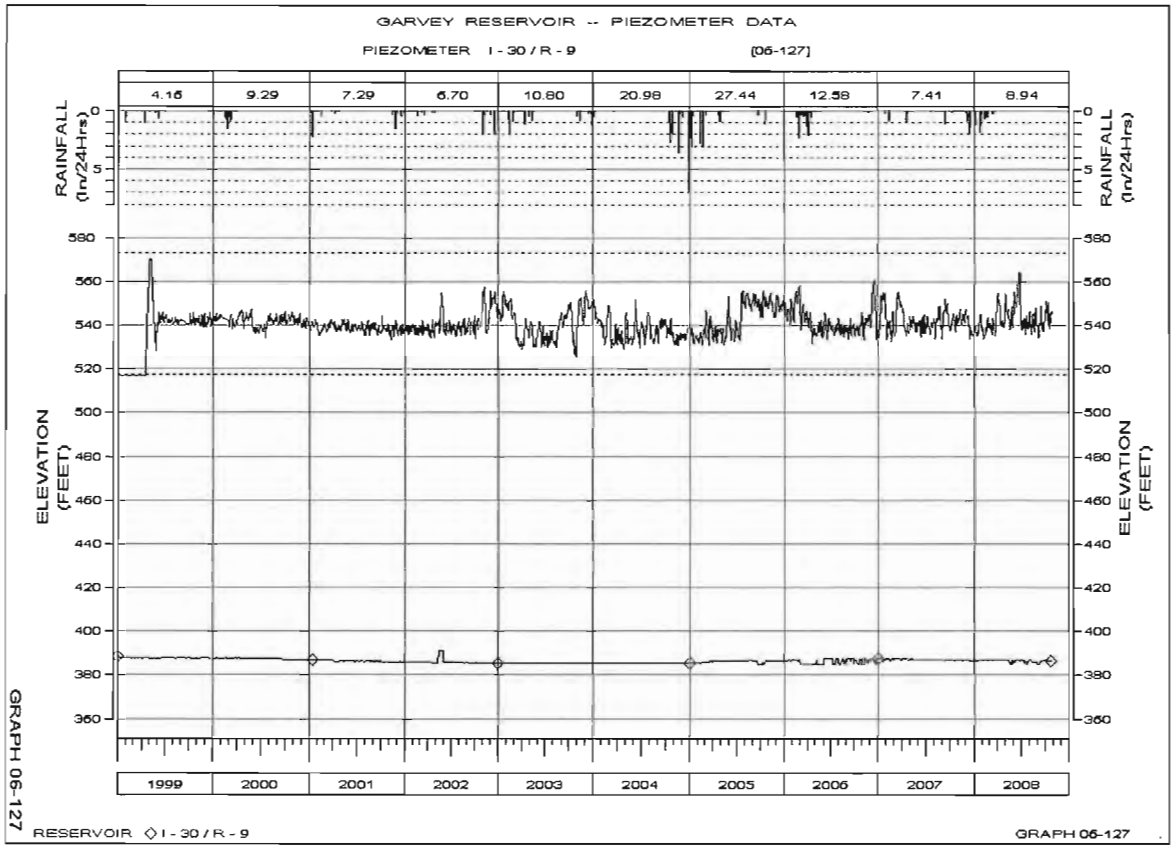
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



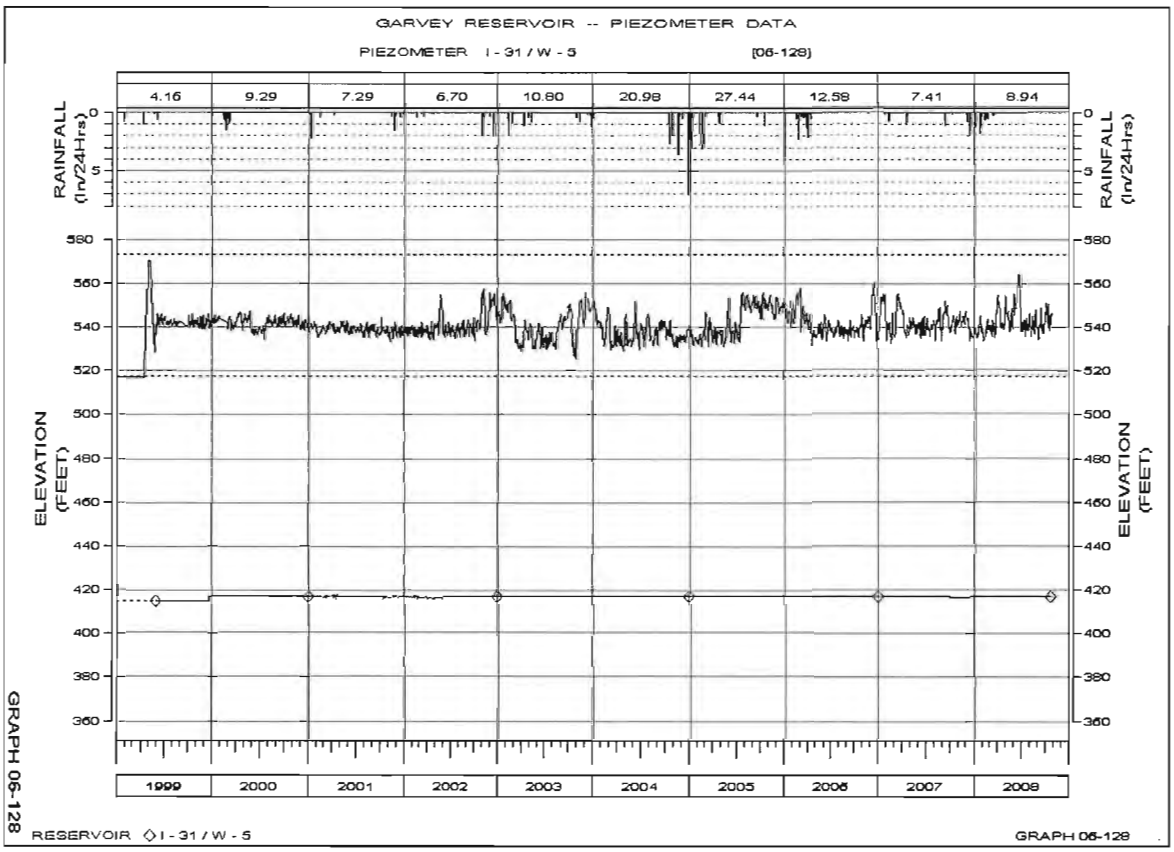
Run: 11-13-08 14:49 The Metropolitan Water District of Southern California G95 000106 T2



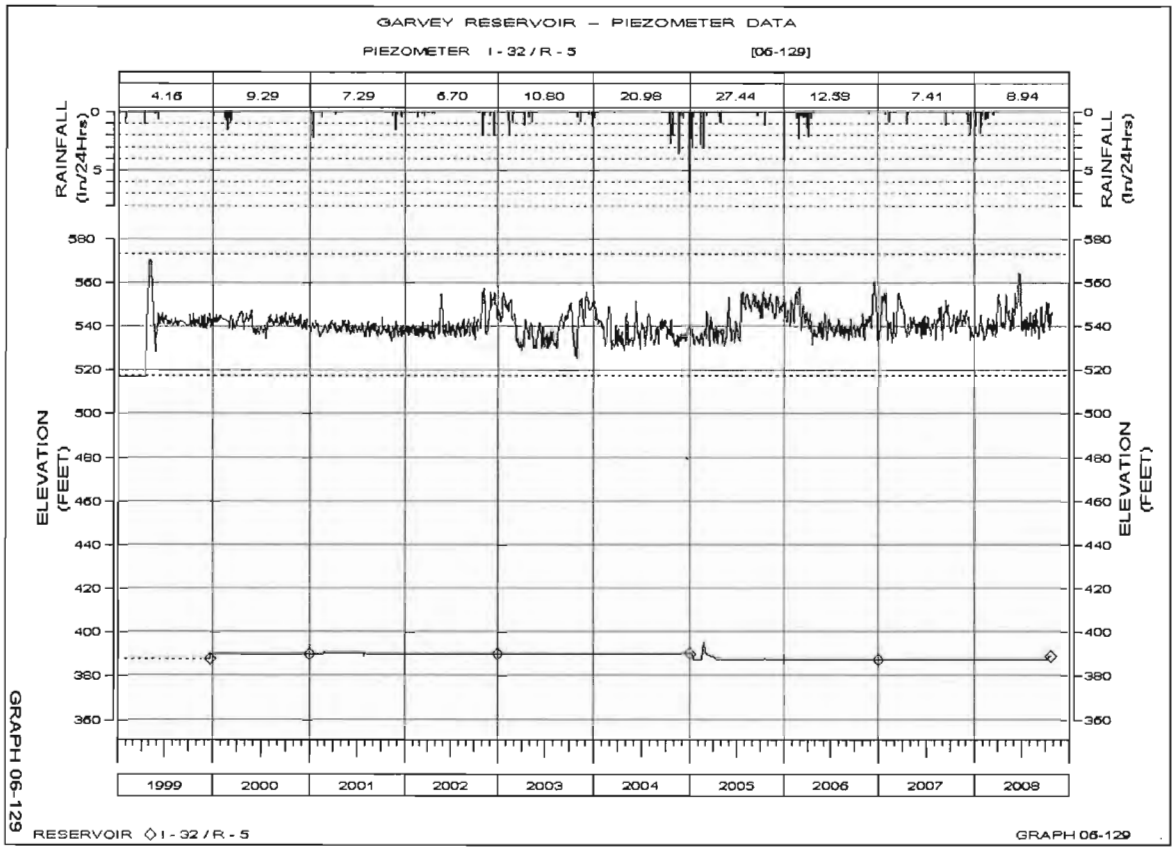
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



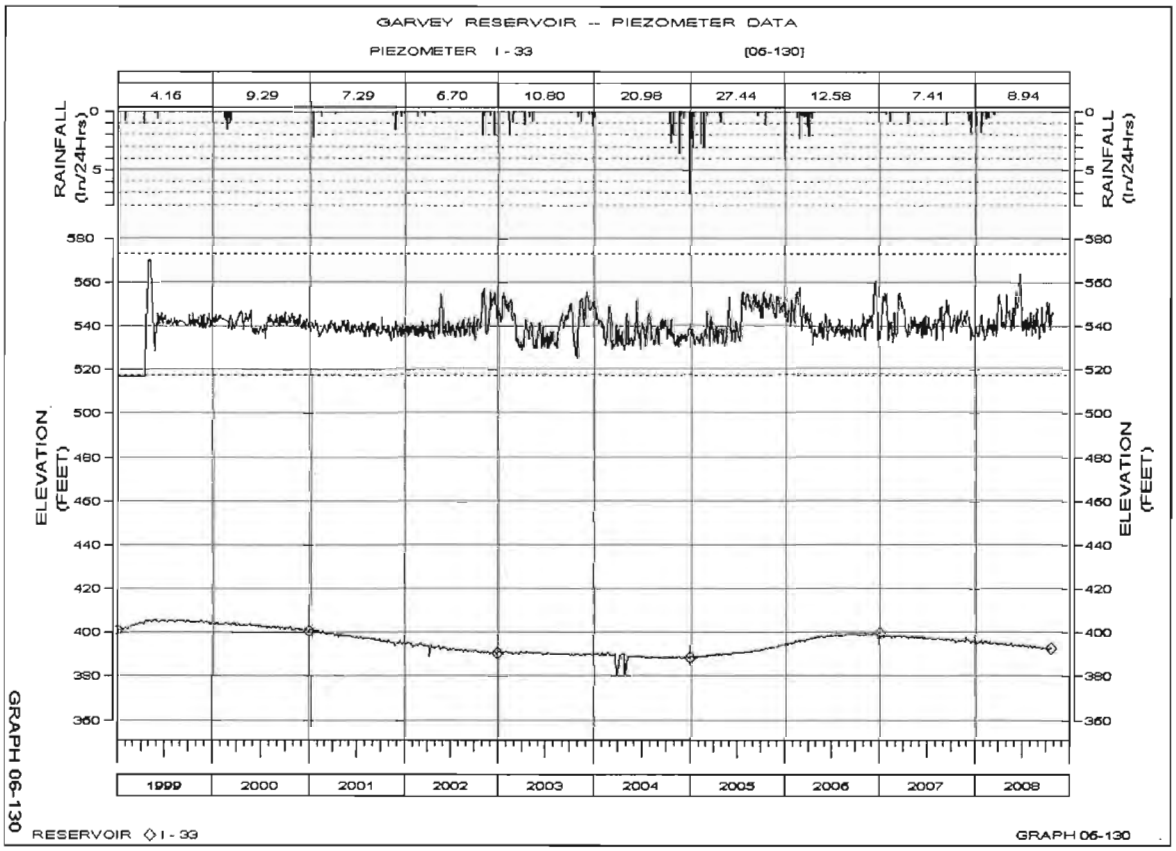
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



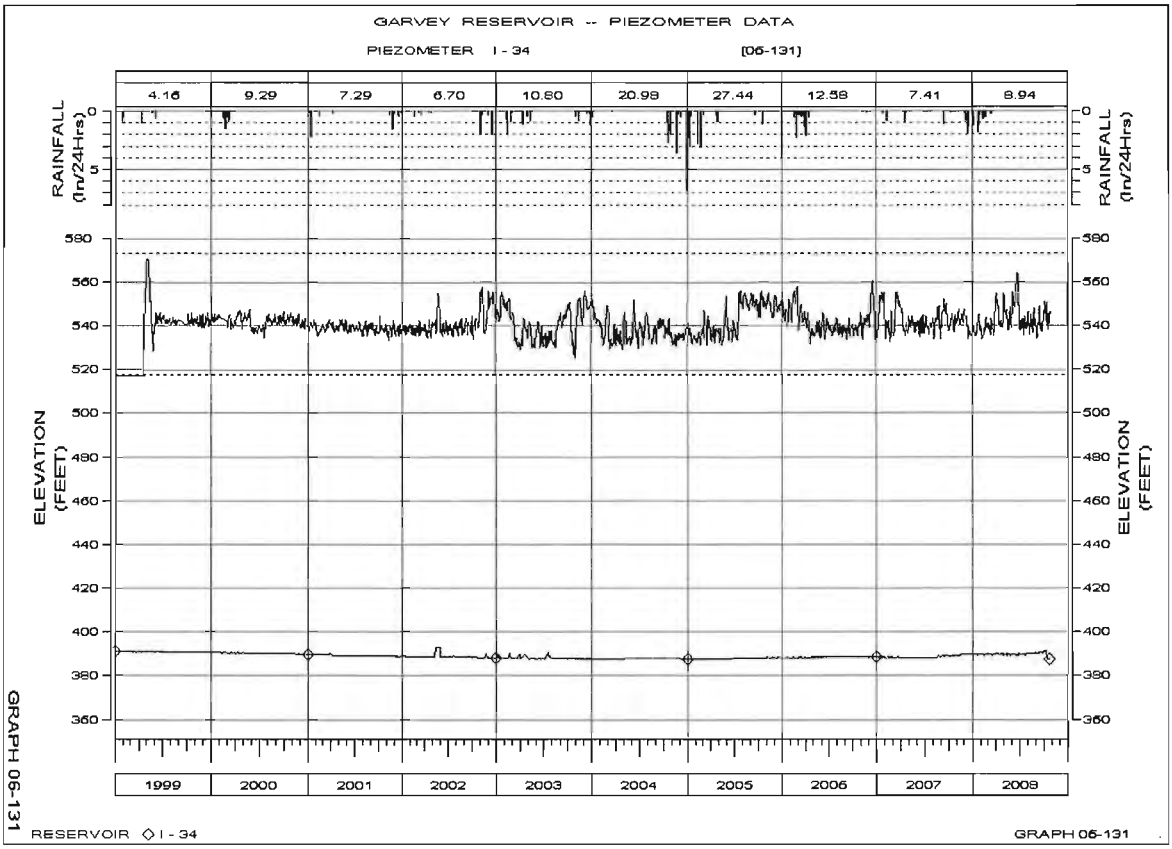
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



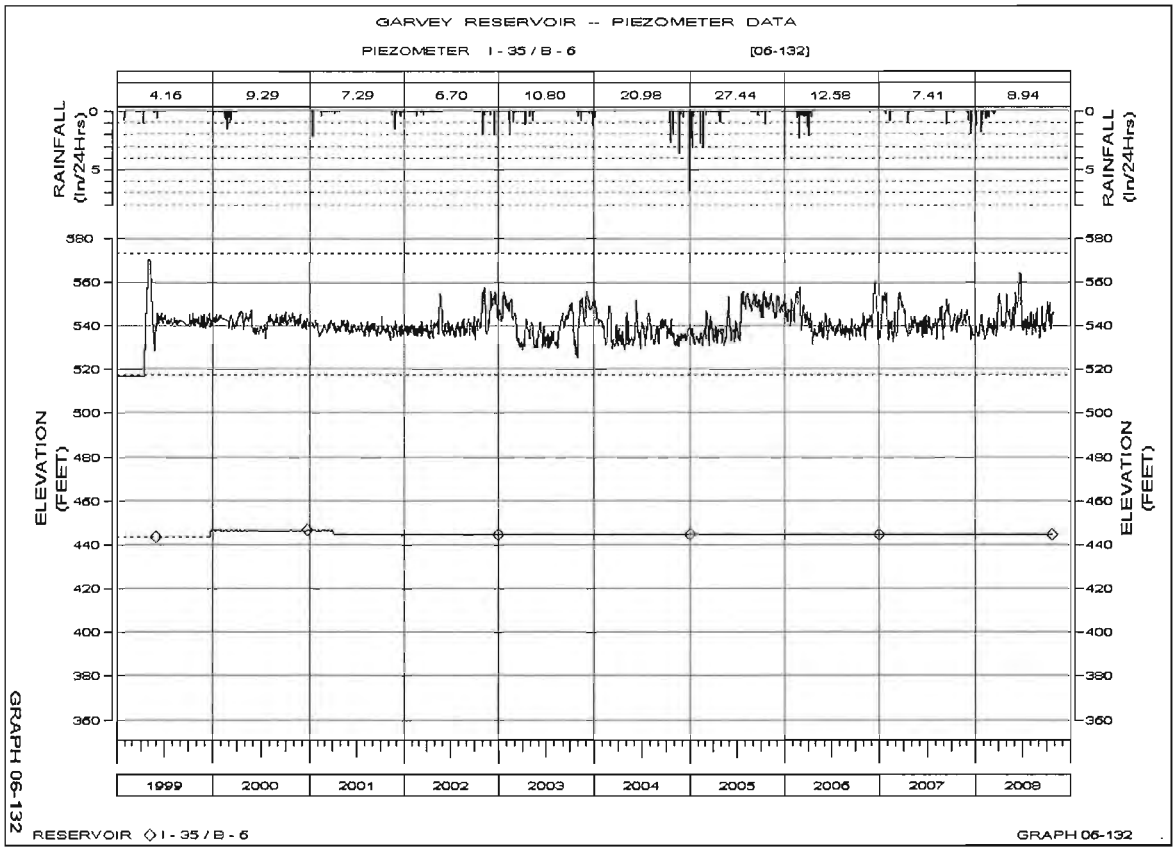
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2

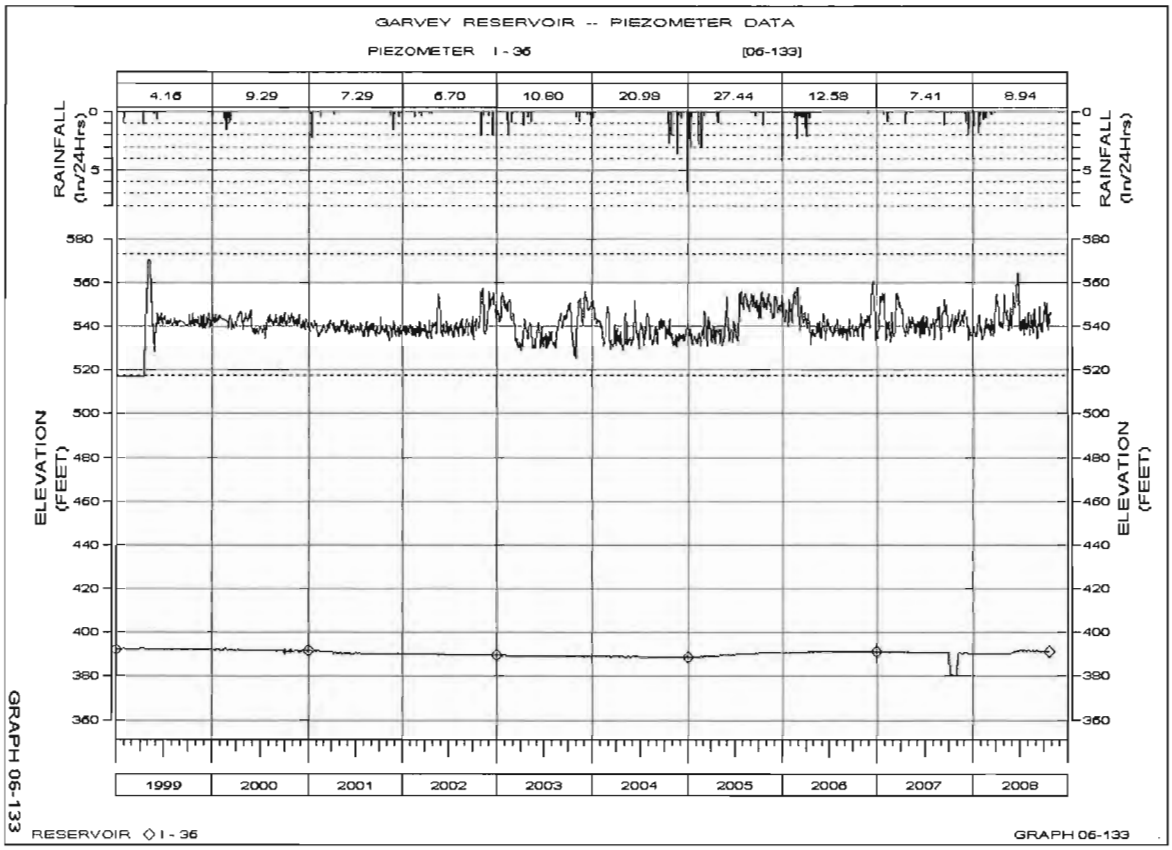


Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2

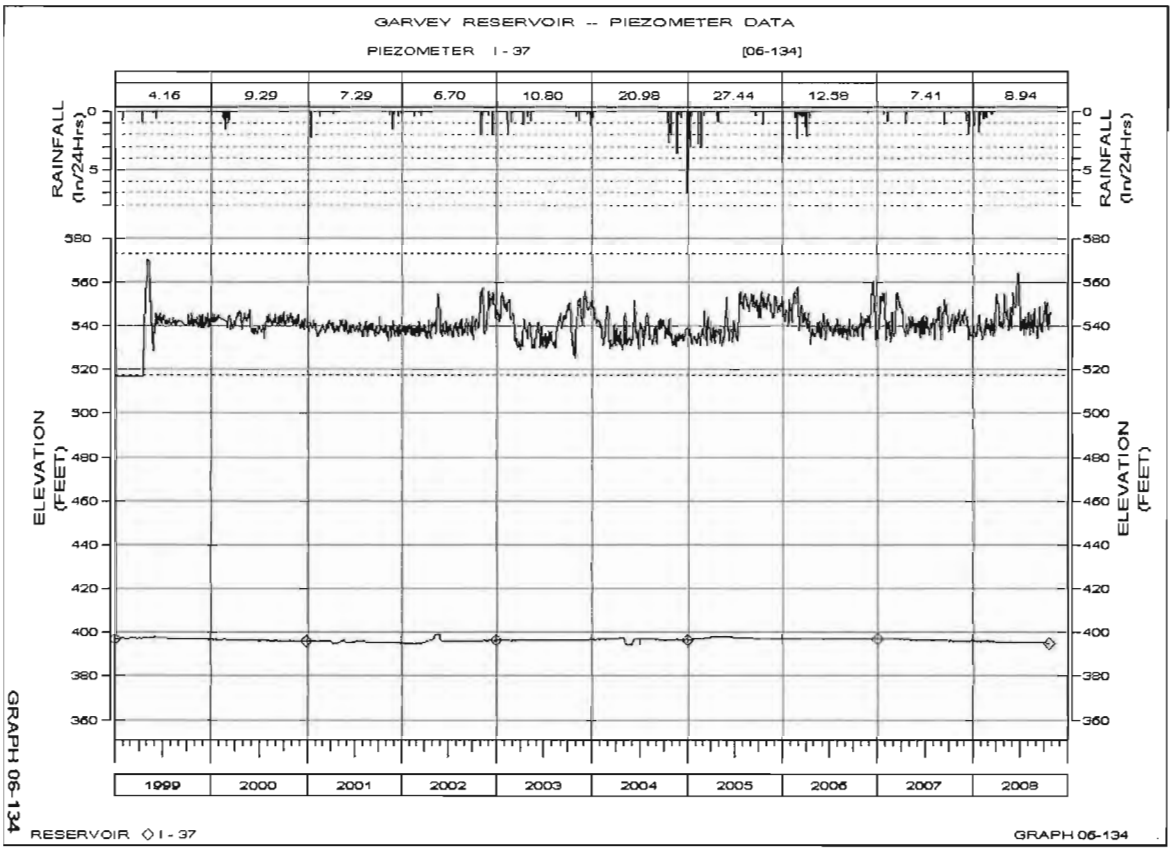


Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2

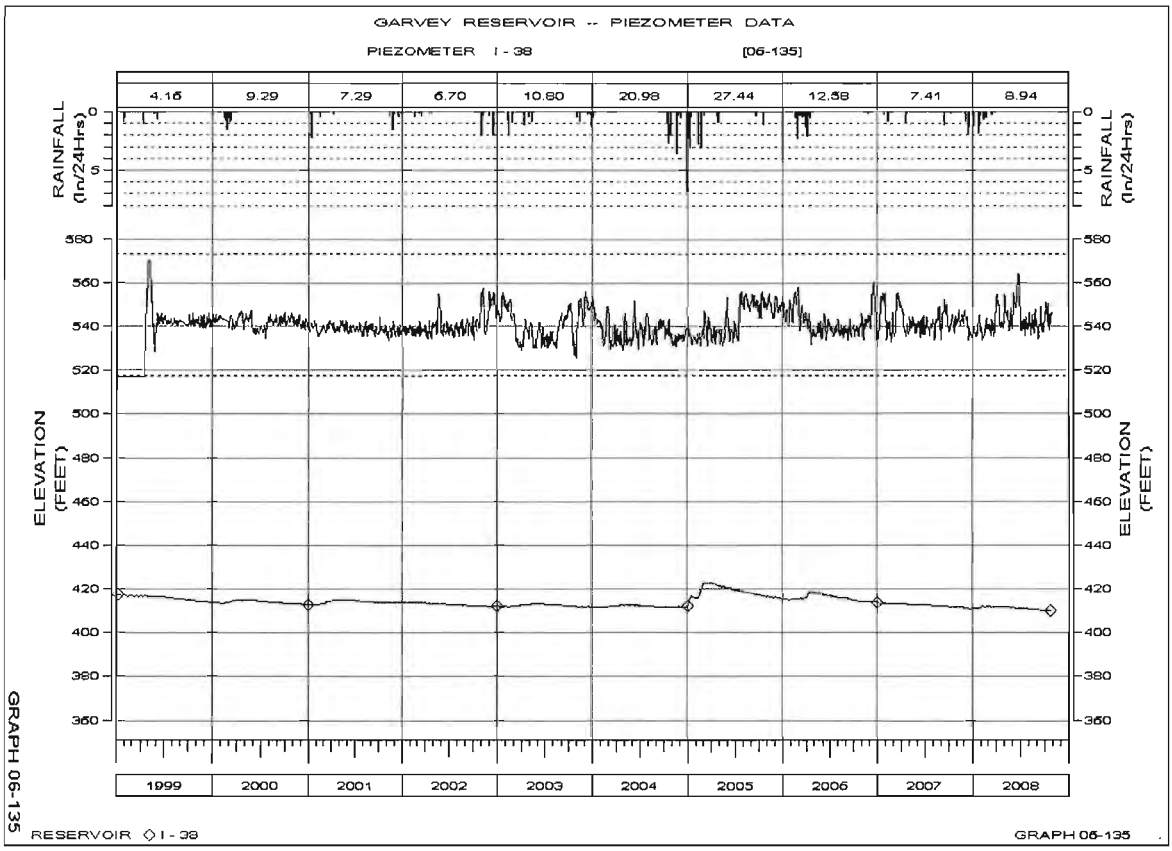




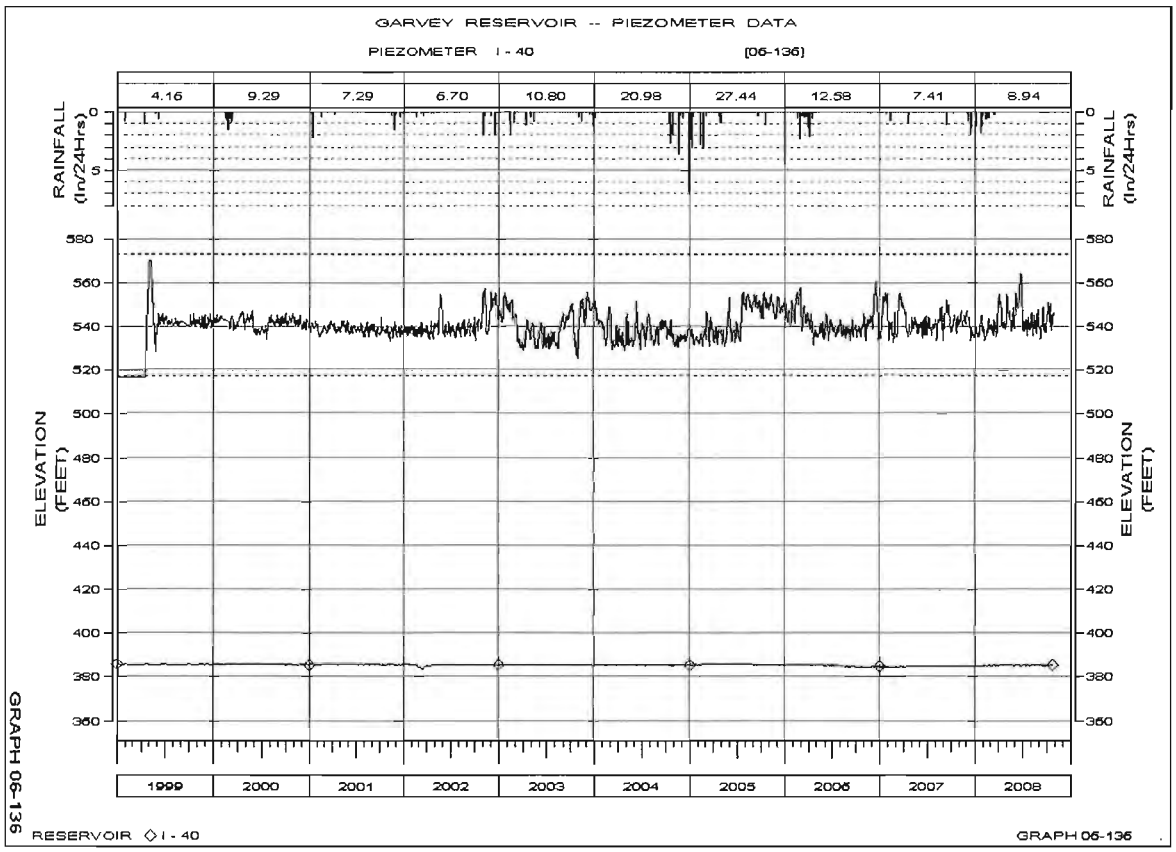
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2



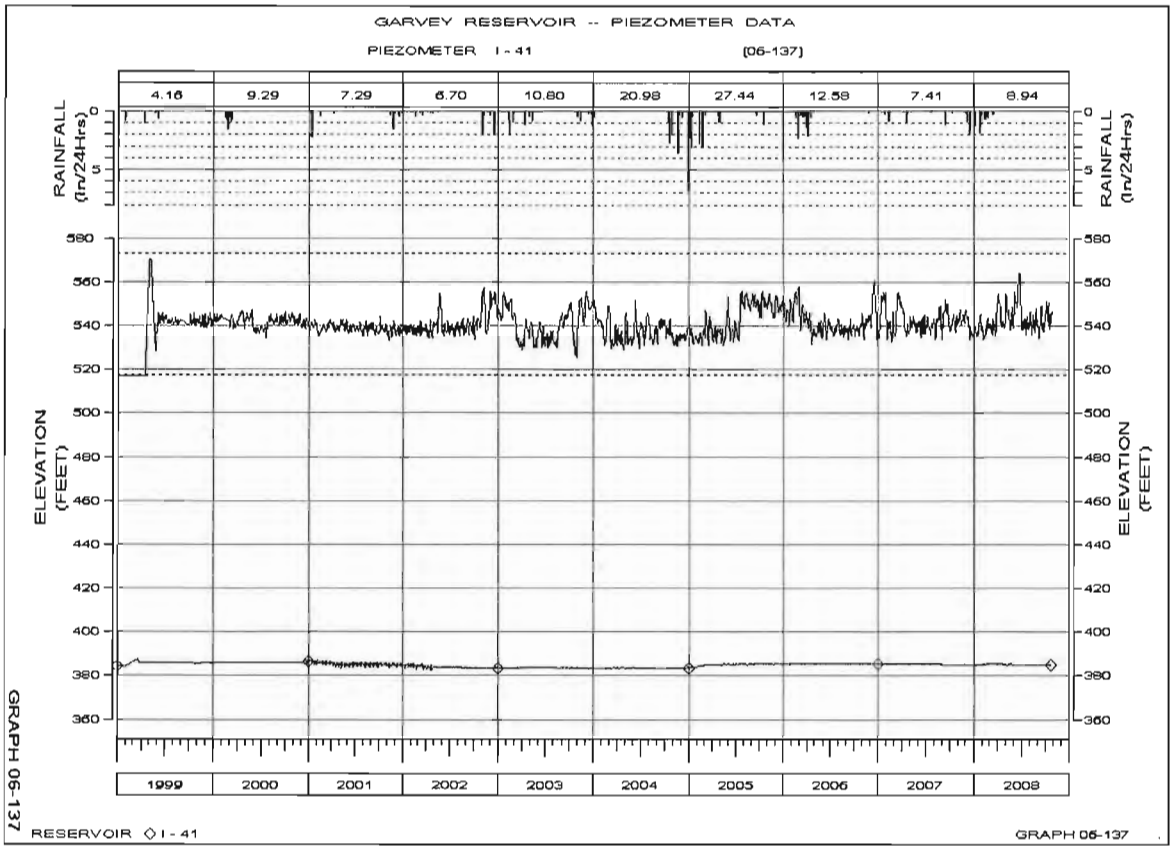
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000105 T2



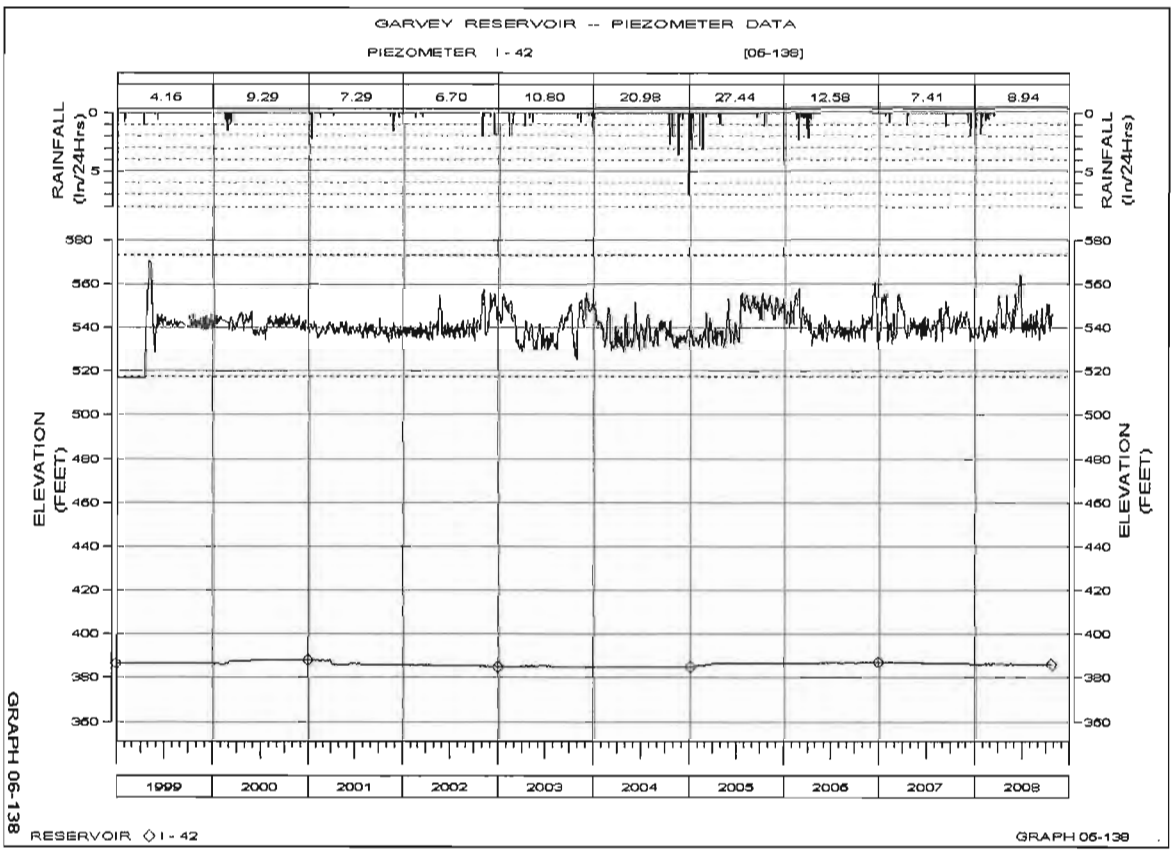
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000105 T2

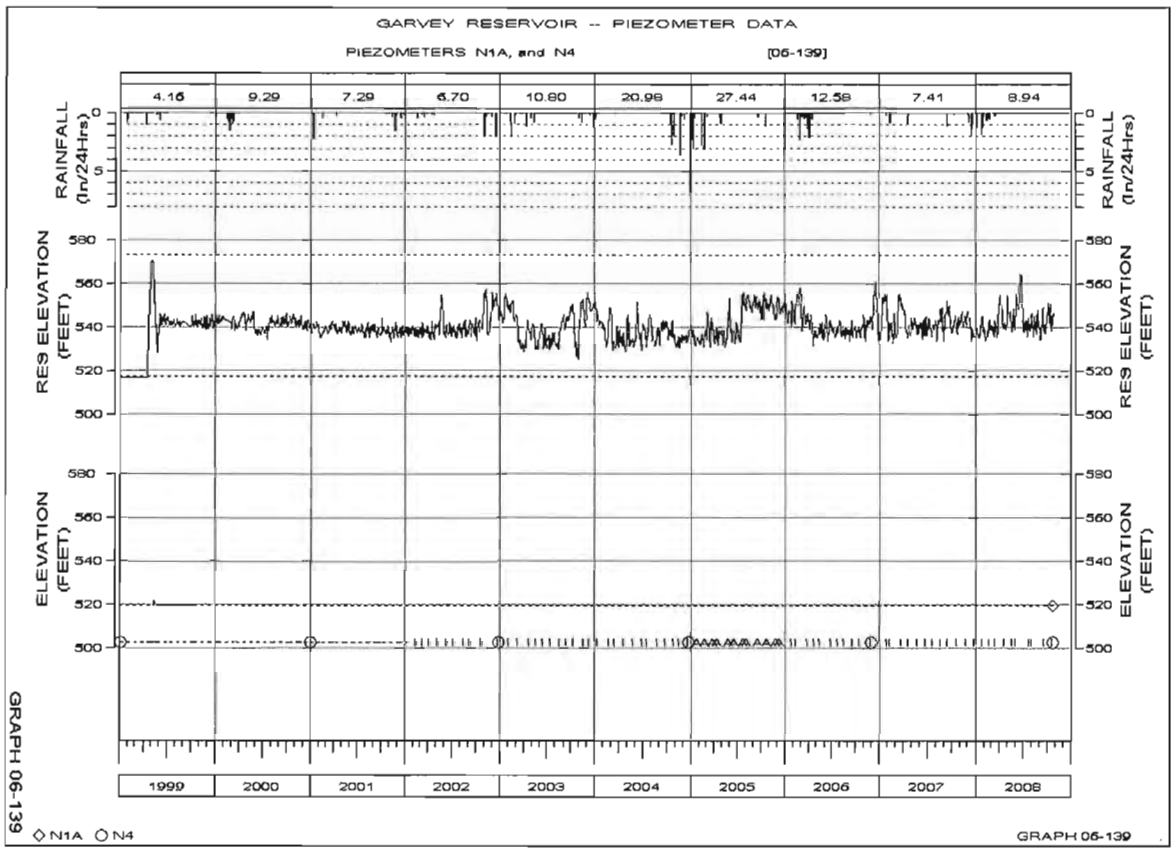


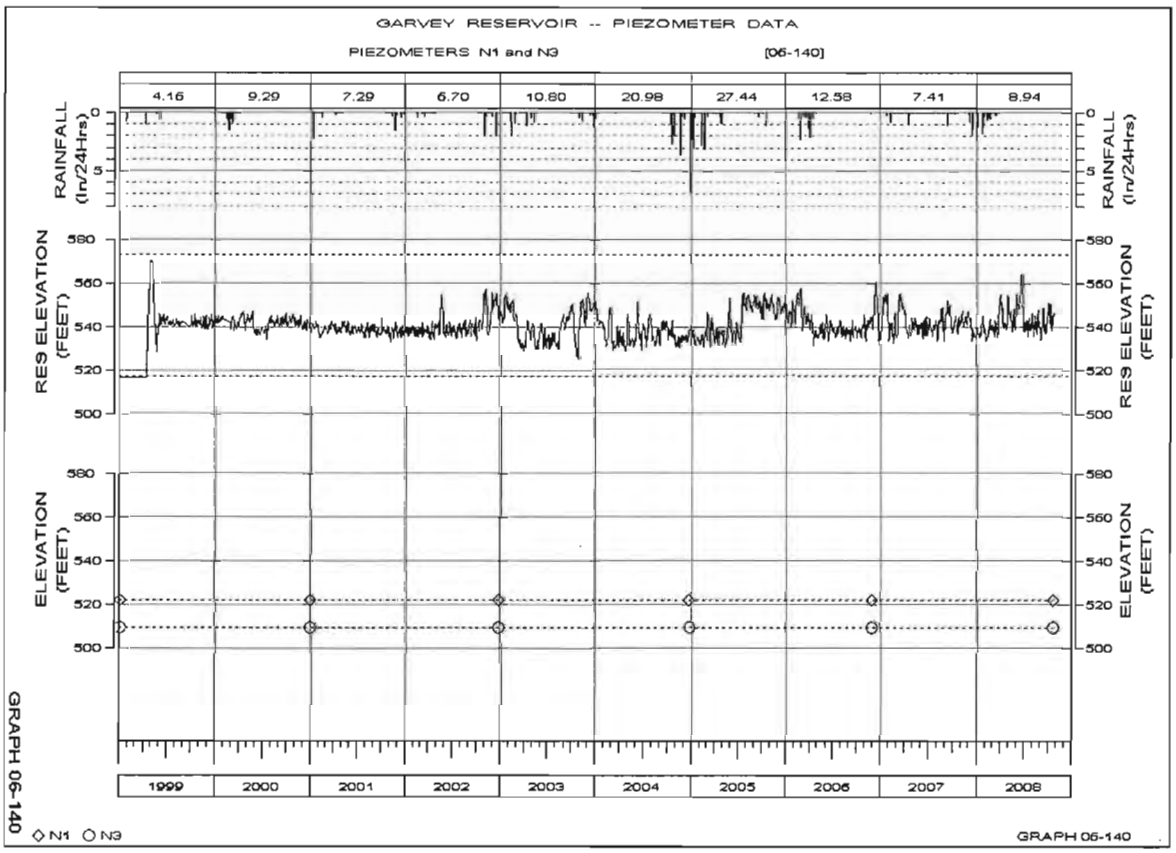
Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2

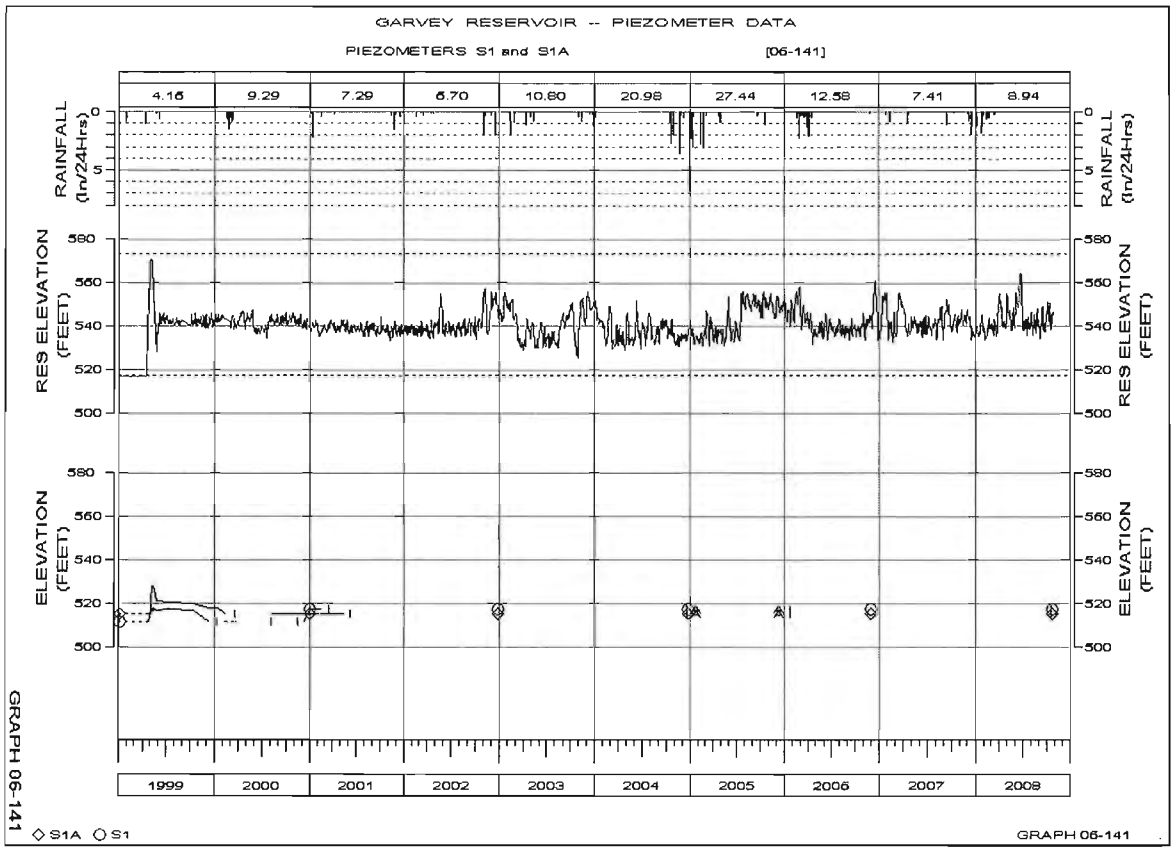


Run: 10-27-08 15:12 The Metropolitan Water District of Southern California G95 000106 T2




GARVEY RESERVOIR -- PIEZOMETER DATA
PIEZOMETERS N1A, and N4
[06-139]
4.16
9.29
7.29
6.70
10.80
20.98
27.44
12.58
7.41
8.94
RAINFALL (In/24Hrs)
RES ELEVATION (FEET)
ELEVATION (FEET)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
GRAPH 06-139
◇ N1A ○ N4
GRAPH 06-139

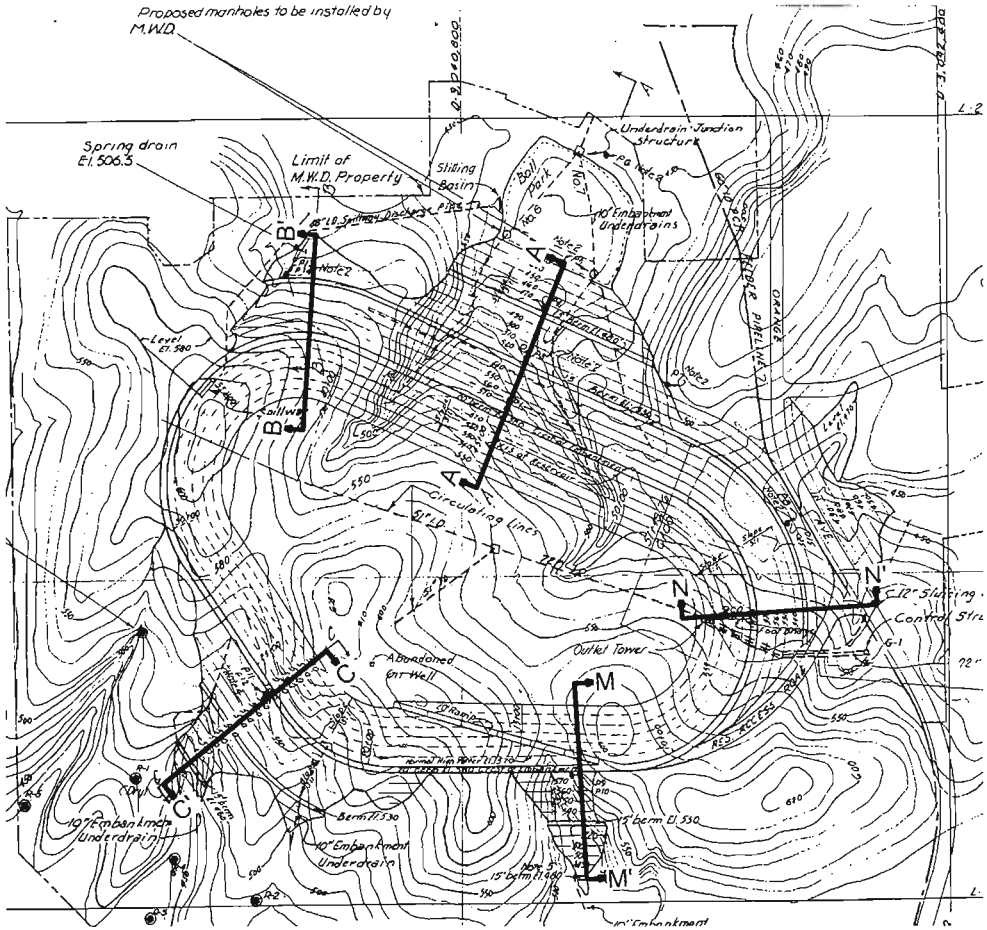

GARVEY RESERVOIR -- PIEZOMETER DATA
PIEZOMETERS N1 and N3
[06-140]
4.16
9.29
7.29
6.70
10.80
20.98
27.44
12.58
7.41
8.94
RAINFALL (In/24Hrs)
RES ELEVATION (FEET)
ELEVATION (FEET)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
GRAPH 06-140
◇ N1 ○ N3
GRAPH 06-140


GARVEY RESERVOIR -- PIEZOMETER DATA
PIEZOMETERS S1 and S1A [06-141]
4.16
9.29
7.29
6.70
10.80
20.98
27.44
12.58
7.41
8.94
RAINFALL (In/24Hrs)
RES ELEVATION (FEET)
ELEVATION (FEET)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
GRAPH 06-141
◇S1A ○S1

APPENDIX G

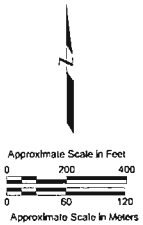
Geologic Cross Sections

DRAFT



Explanation

A A' Cross section line

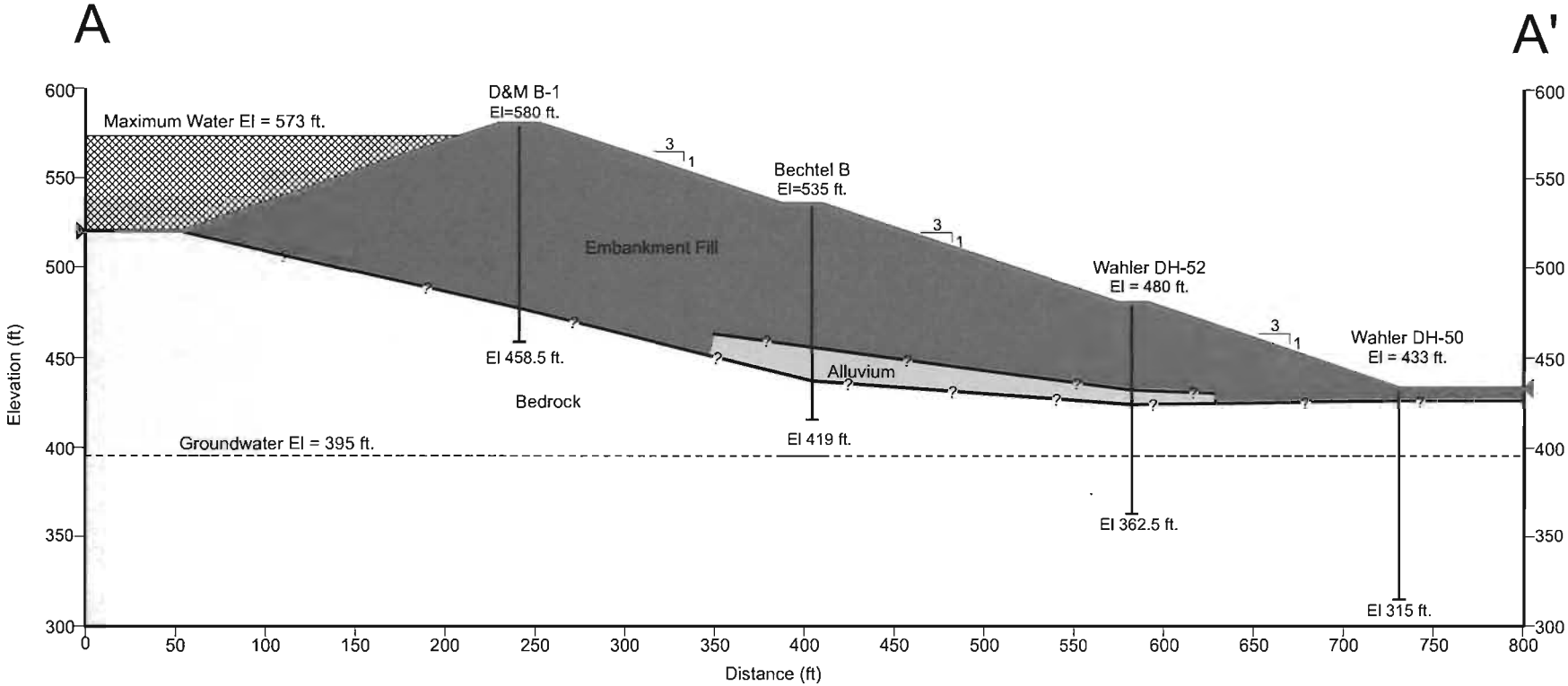


Basemap modified from J.P. Buwalda, Garvey Reservoir Site - Geology, dated June 1950

CROSS SECTION PLAN
Garvey Reservoir
Los Angeles, California

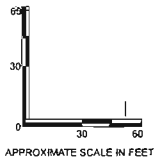
By: BRP	Date:12/31/09	Project No. 12153.001.0
AMEC Geomatrix		Figure G-1

Plot Date: 12/31/09 - 12:17pm. Plotted by: bernadette.salirona
Drawing Path: Y:\12153.001 Oxkcal\. Drawing Name: _TB-cross_section_plan.dwg



Notes:

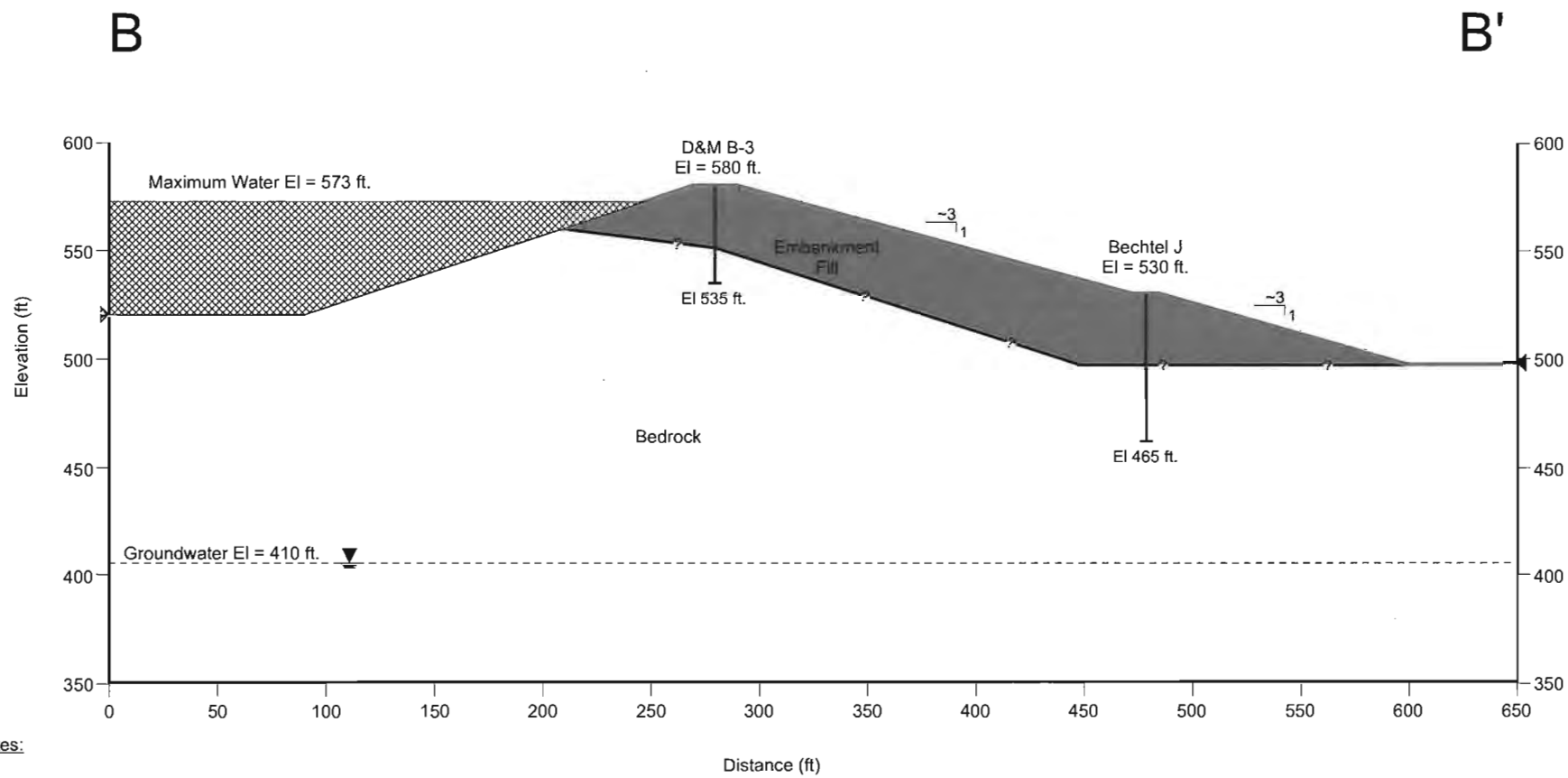
1. Boring locations are shown for reference but may be offset from actual cross-section (refer to Figure 2 for boring locations).
2. Top of Bedrock is estimated based on previous boring log information and preconstruction topographic contour map.



GEOLOGIC CROSS SECTION A-A'
Garvey Reservoir
Los Angeles County, California

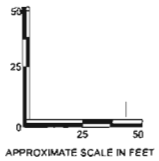
By: pah	Date: 12/31/09	Project No. 12153.001
AMEC Geomatrix		Figure G-2

y:\12153.001.0\other_figs\Geologic Cross Section.cdr



Notes:

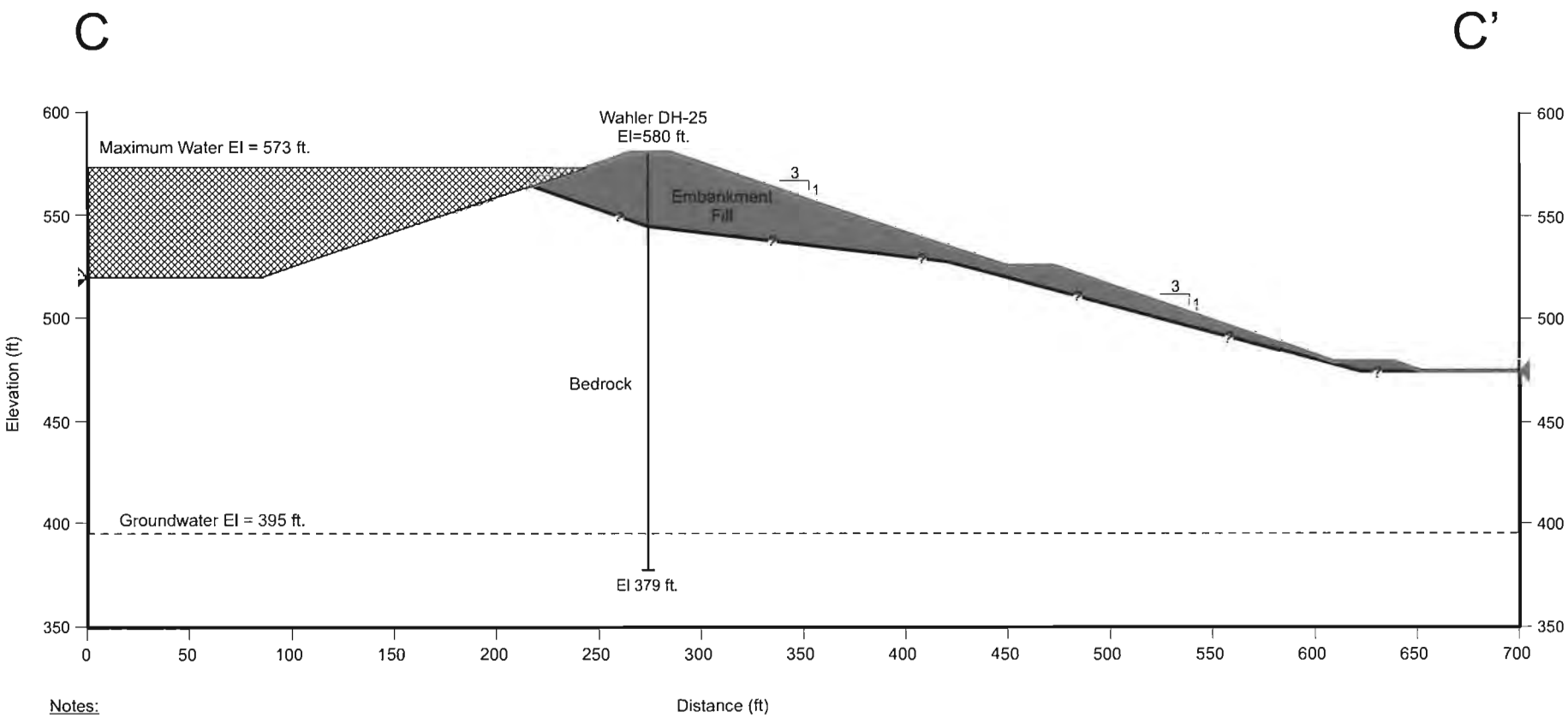
1. Boring locations are shown for reference but may be offset from actual cross-section (refer to Figure 2 for boring locations).
2. Top of Bedrock is estimated based on previous boring log information and preconstruction topographic contour map.



GEOLOGIC CROSS SECTION B-B'
Garvey Reservoir
Los Angeles County, California

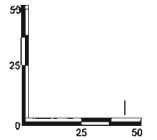
By: pah	Date: 12/31/09	Project No. 12153.001
AMEC Geomatrix		Figure G-3

y:\12153.001.0\other_figs\Geologic Cross Section.cdr



Notes:

1. Boring locations are shown for reference but may be offset from actual cross-section (refer to Figure 2 for boring locations).
2. Top of Bedrock is estimated based on previous boring log information and preconstruction topographic contour map.

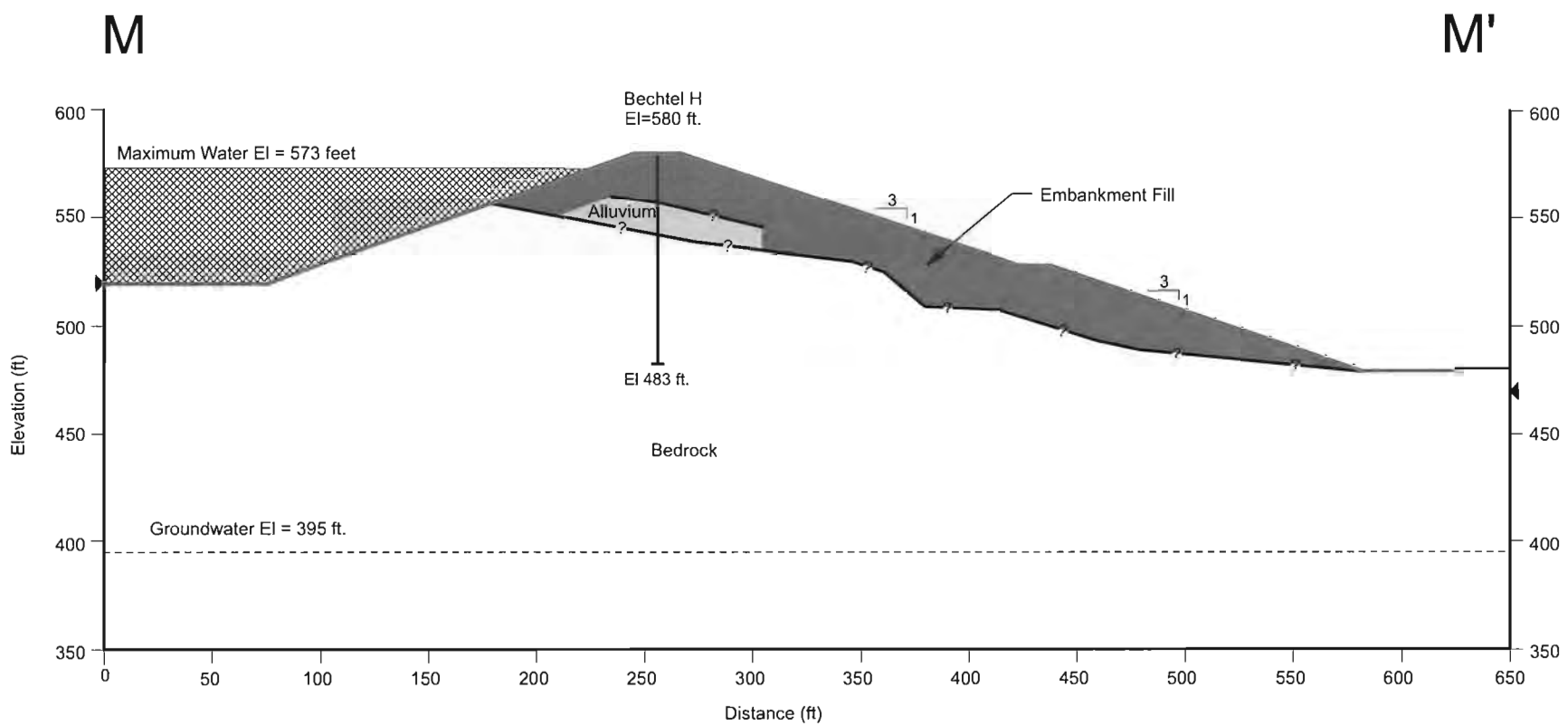


APPROXIMATE SCALE IN FEET

GEOLOGIC CROSS SECTION C-C'
Garvey Reservoir
Los Angeles County, California

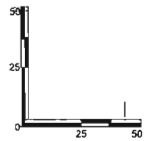
By: pah	Date: 12/31/09	Project No. 12153.001
AMEC Geomatrix		Figure G-4

y:\12153.001.0\other_figs\Geologic Cross Section.cdr



Notes:

1. Boring locations are shown for reference but may be offset from actual cross-section (refer to Figure 2 for boring locations).
2. Top of Bedrock is estimated based on previous boring log information and preconstruction topographic contour map.

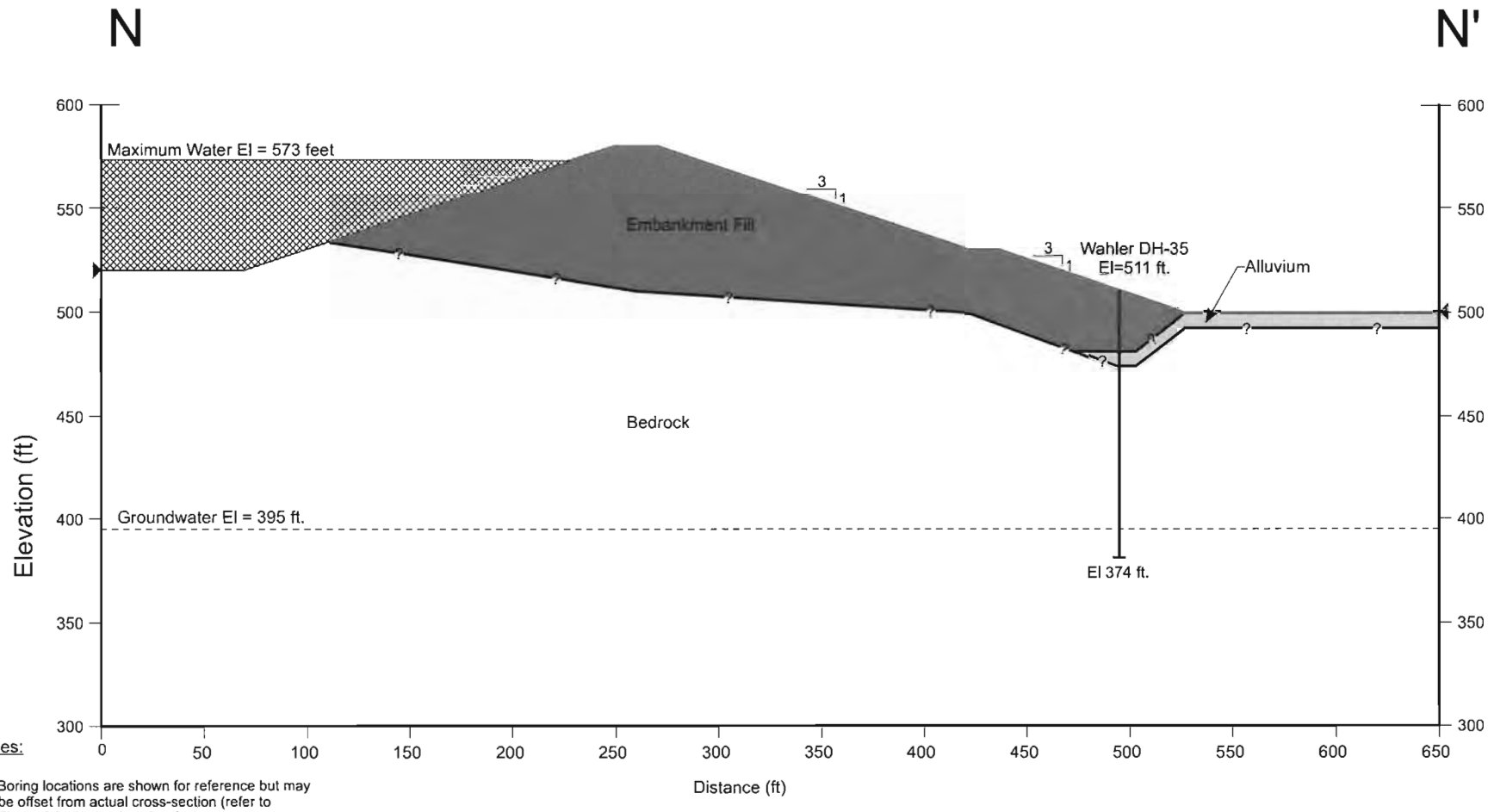


APPROXIMATE SCALE IN FEET

GEOLOGIC CROSS SECTION M-M'
Garvey Reservoir
Los Angeles County, California

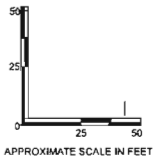
By: pah	Date: 12/31/09	Project No. 12153.001
AMEC Geomatrix		Figure G-5

y:\12153.001.0\other_figs\Geologic Cross Section.cdr



Notes:

1. Boring locations are shown for reference but may be offset from actual cross-section (refer to Figure 2 for boring locations).
2. Top of Bedrock is estimated based on previous boring log information and preconstruction topographic contour map.



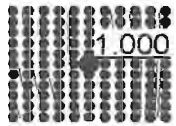
GEOLOGIC CROSS SECTION N-N'
Garvey Reservoir
Los Angeles County, California

By: pah	Date: 12/31/09	Project No. 12153.001
AMEC Geomatrix		Figure G-6

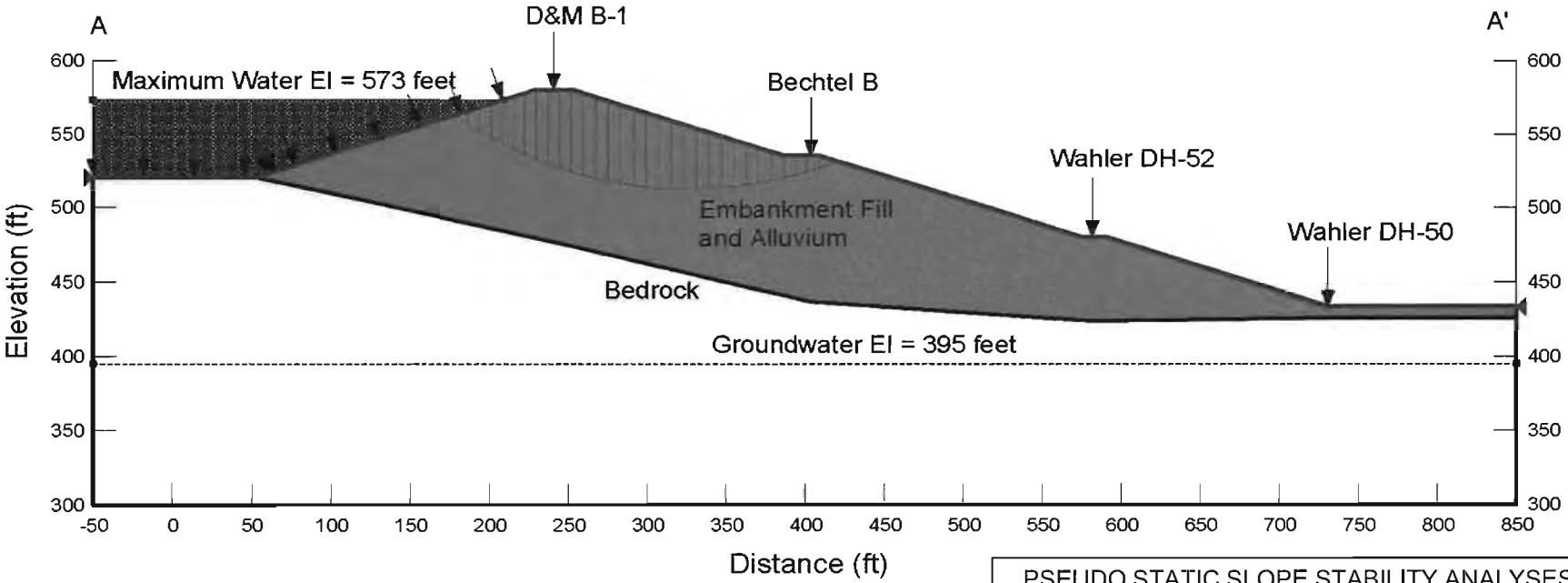
y:\12153.001.0\other_figs\Geologic Cross Section.cdr

APPENDIX H

Seismic Slope Stability Analyses



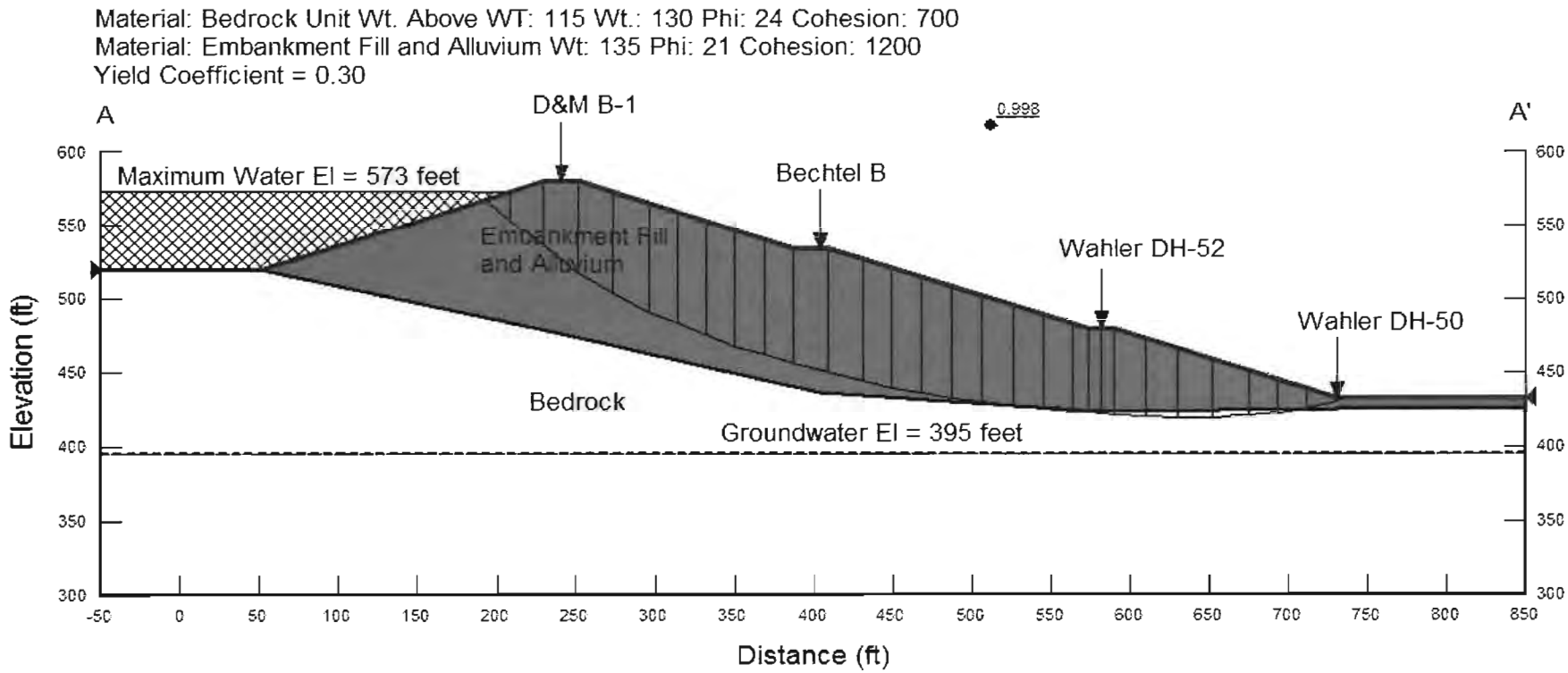
Material: Bedrock Unit Wt. Above WT: 115 Wt.: 130 Phi: 24 Cohesion: 700
Material: Embankment Fill and Alluvium Wt: 135 Phi: 21 Cohesion: 1200
Yield Coefficient = 0.55



Notes:
1. ft = feet.
2. El = elevation

PSEUDO STATIC SLOPE STABILITY ANALYSES
YIELD ACCELERATION CALCULATION
CROSS-SECTION A-A'
SHALLOW SLIP SURFACE
Garvey Reservoir
Los Angeles County, California

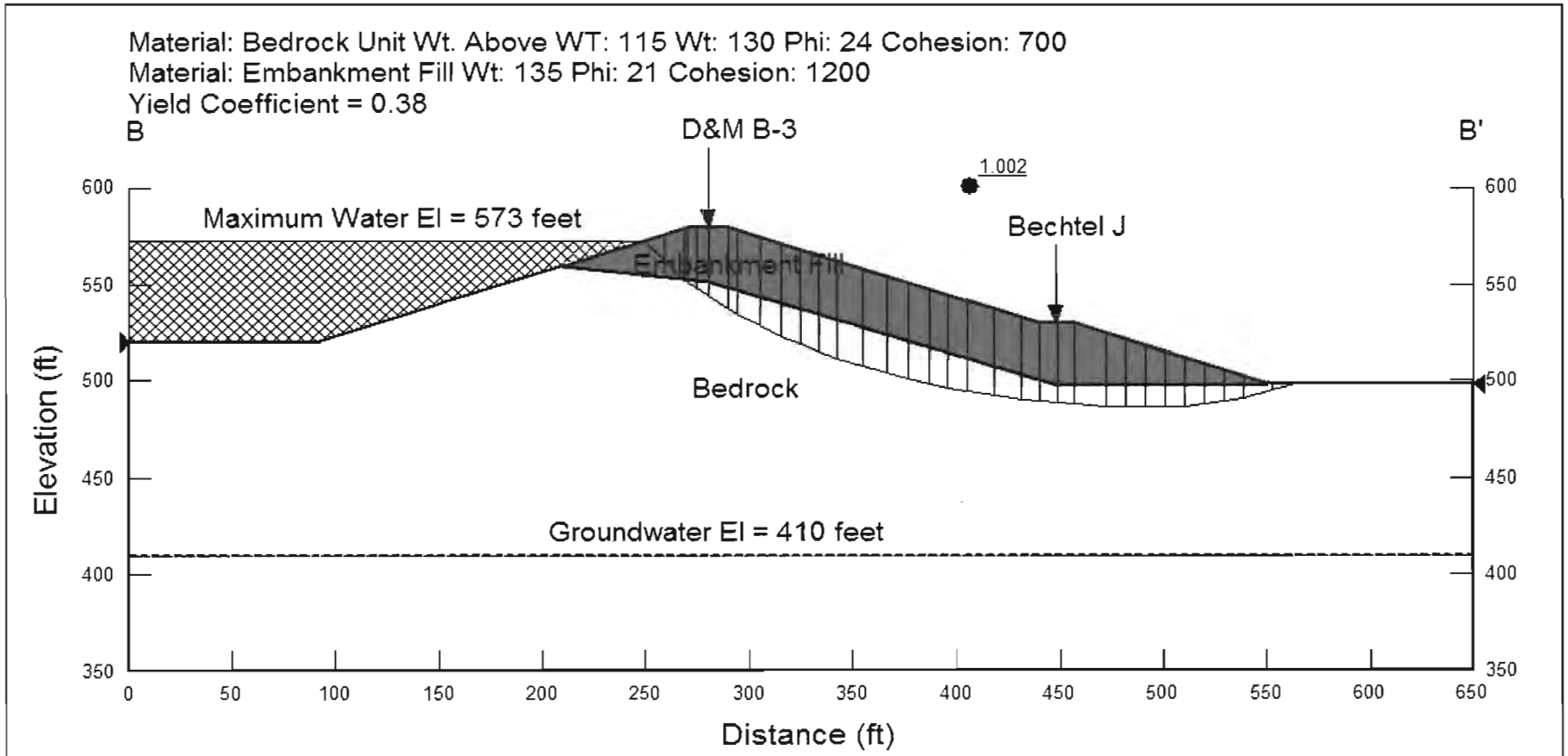
By: LH	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure **H-1**



Notes:
1. ft = feet.
2. El = elevation

PSEUDO STATIC SLOPE STABILITY ANALYSES
YIELD ACCELERATION CALCULATION
CROSS-SECTION A-A'
DEEP SLIP SURFACE
Garvey Reservoir
Los Angeles County, California

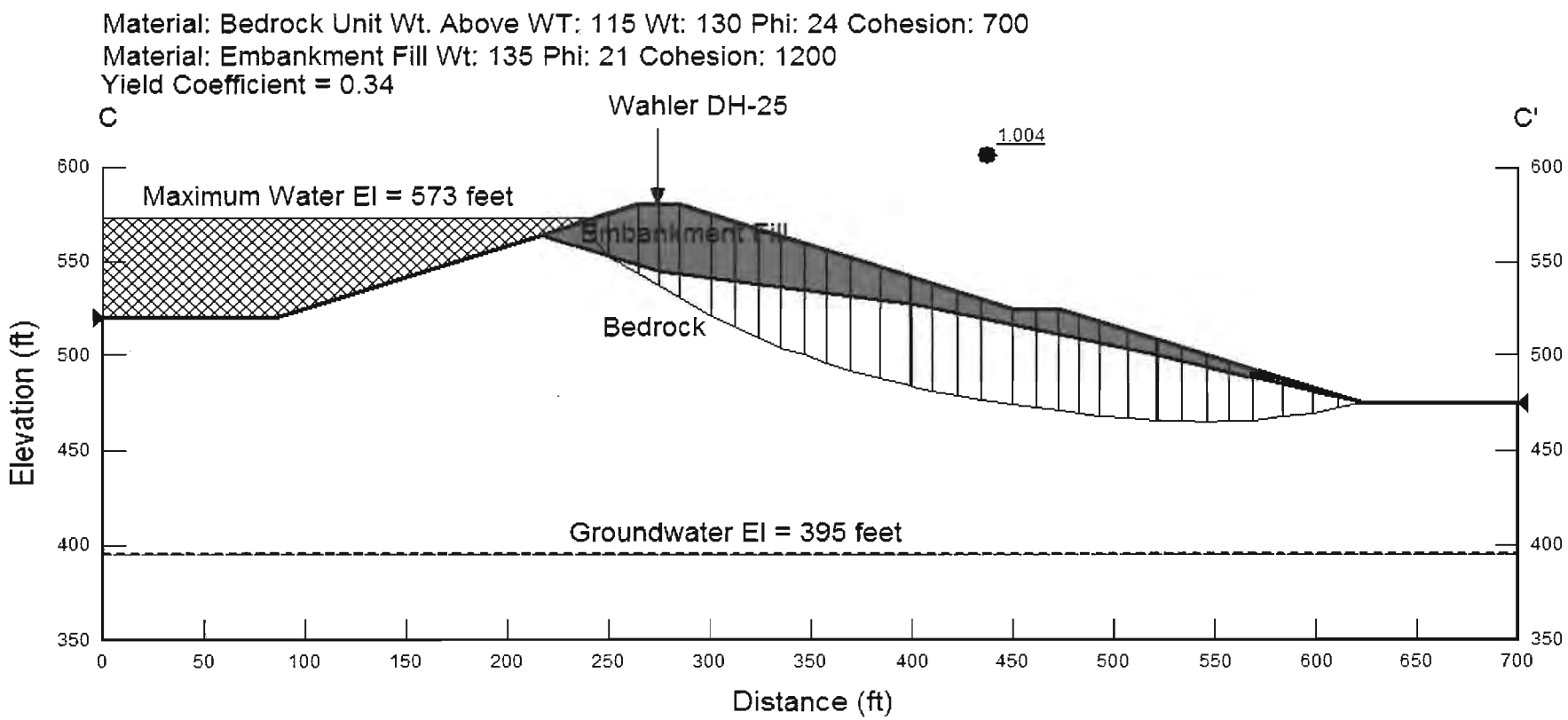
By: LH	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure **H-2**



Notes:
1. ft = feet.
2. El = elevation

PSEUDO STATIC SLOPE STABILITY ANALYSES
YIELD ACCELERTION CALCULATION
CROSS-SECTION B-B'
DEEP SLIP SURFACE
Garvey Reservoir
Los Angeles County, California

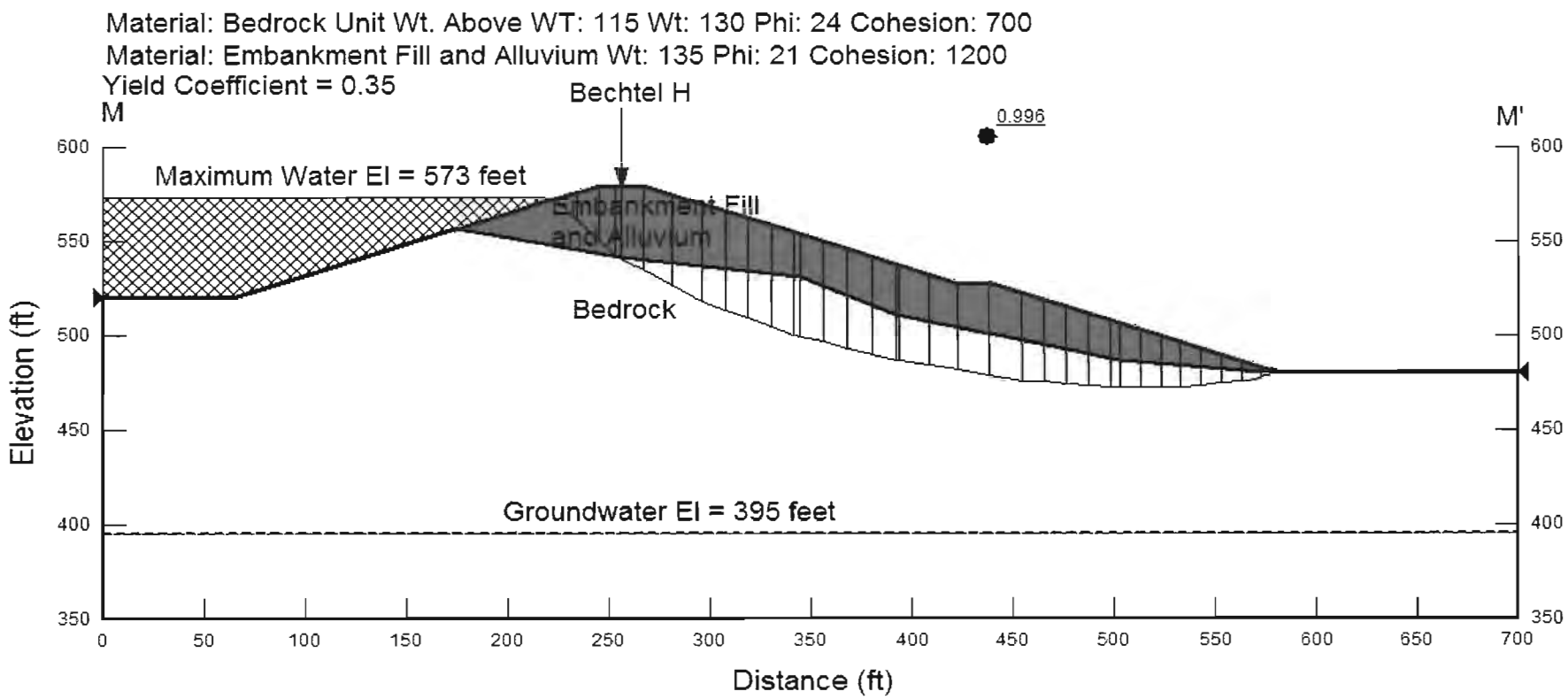
By: LH	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure **H-3**



Notes:
1. ft = feet.
2. El = elevation

PSEUDO STATIC SLOPE STABILITY ANALYSES
YIELD ACCELERATION CALCULATION
CROSS-SECTION C-C'
DEEP SLIP SURFACE
Garvey Reservoir
Los Angeles County, California

By: LH	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure **H-4**

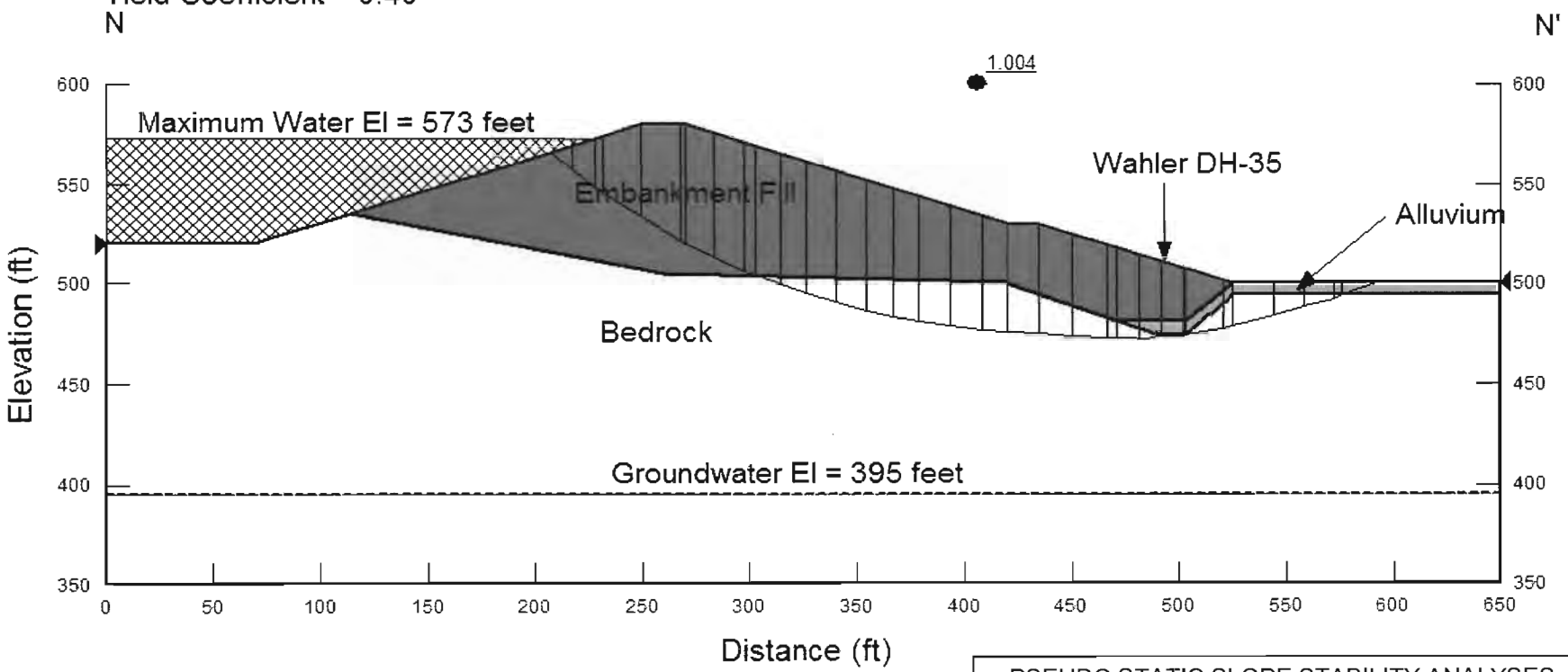


Notes:
1. ft = feet.
2. El = elevation

PSEUDO STATIC SLOPE STABILITY ANALYSES
YIELD ACCELERATION CALCULATION
CROSS-SECTION M-M'
DEEP SLIP SURFACE
Garvey Reservoir
Los Angeles County, California

By: LH	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure H-5

Material: Bedrock Unit Wt. Above WT: 115 Wt: 130 Phi: 24 Cohesion: 700
Material: Alluvium Wt: 120 Phi: 21 Cohesion: 1200
Material: Embankment Fill Wt: 135 Phi: 21 Cohesion: 1200
Yield Coefficient = 0.40



Notes:
1. ft = feet.
2. El = elevation

PSEUDO STATIC SLOPE STABILITY ANALYSES
YIELD ACCELERATION CALCULATION
CROSS-SECTION N-N'
DEEP SLIP SURFACE
Garvey Reservoir
Los Angeles County, California

By: LH	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure **H-6**

SEISMIC ASSESSMENT, PHASE 3 STUDY

Garvey Reservoir

Los Angeles, California

Prepared for:

The Metropolitan Water District of Southern California
Los Angeles, California

Prepared by:

AMEC Geomatrix, Inc.
510 Superior Avenue, Suite 200
Newport Beach, California 92663
(949) 642-0245

March 4, 2010

Project No. 12153.001

SEISMIC ASSESSMENT, PHASE 3 STUDY
Garvey Reservoir
Los Angeles County, California

March 4, 2010
Project No. 12153.001

This report was prepared by the staff of AMEC Geomatrix, Inc., under the supervision of the Engineer whose signature appears hereon.

The findings, recommendations, specifications, or professional opinions are presented within the limits described by the client, in accordance with generally accepted professional engineering and geologic practice. No warranty is expressed or implied.

M. Bora Baturay, PhD, PE
Senior Geotechnical Engineer

Faiz I. Makdisi, PhD, PE
Principal Engineer

James J. Weaver, GE
Vice President and
Principal Geotechnical Engineer

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 3

2.0 DATA REVIEW 4

3.0 FIELD EXPLORATION AND LABORATORY TESTING 5
- 3.1 SITE RECONNAISSANCE 5
- 3.2 PREVIOUS SUBSURFACE EXPLORATIONS 6
  - 3.2.1 Buwalda (1950) 6
  - 3.2.2 Bechtel (1965) 6
  - 3.2.3 Dames and Moore (1981) 7
  - 3.2.4 Wahler Associates (1990) 7
  - 3.2.5 LeRoy Crandall and Associates (1991) 8
  - 3.2.6 Wahler Associates (1993) 8
- 3.3 LABORATORY TESTING 8
  - 3.3.1 Bechtel (1965) 8
  - 3.3.2 Dames and Moore (1981) 8
  - 3.3.3 Dames and Moore (1991) 8

4.0 SITE CONDITIONS 8
- 4.1 GEOLOGIC SETTING 8
- 4.2 SUBSURFACE CONDITIONS 8
- 4.3 GROUNDWATER CONDITIONS 8

5.0 EVALUATION OF SEISMIC HAZARDS 8
- 5.1 REGIONAL TECTONIC SETTING 8
- 5.2 DETERMINATION OF MAXIMUM CREDIBLE EARTHQUAKE (MCE) 8
- 5.3 DETERMINATION OF MAXIMUM CREDIBLE EARTHQUAKE (MCE) USING THE NEXT GENERATION ATTENUATION RELATIONSHIPS 8
- 5.4 FAULT RUPTURE 8

6.0 EVALUATION OF MATERIAL PROPERTIES 8
- 6.1 BEDROCK 8
- 6.2 ALLUVIUM 8
- 6.3 EMBANKMENT FILL 8

7.0 SIMPLIFIED SEISMIC ANALYSES 8
- 7.1 SEISMIC SLOPE STABILITY AND SEISMIC DEFORMATIONS 8
- 7.2 SEISMICALLY INDUCED SETTLEMENT 8
- 7.3 LIQUEFACTION POTENTIAL 8
- 7.4 SEISMIC SEICHE 8
- 7.5 SUMMARY OF FINDINGS AND RECOMMENDATIONS 8

8.0 LIMITATIONS 8

9.0 REFERENCES 8

TABLE OF CONTENTS
(Continued)

TABLES

Table 1 Summary of Previous Drilling Explorations
Table 2 Summary of Previous Laboratory Test Results
Table 3 Summary of Corrected SPT Blowcounts from Previous Investigations
Table 4 Summary of Strength Parameters
Table 5 Summary of Seismic Deformation Analyses

FIGURES

Figure 1 Site Location Map
Figure 2 Previous Field Exploration Map
Figure 3 Atterberg Limits Tests on Embankment Fill and Alluvium
Figure 4 Atterberg Limits Tests on Foundation Bedrock Materials
Figure 5 Atterberg Limits Tests on Compacted Liner Fill
Figure 6 Groundwater Contour Map
Figure 7 Fault Source and Independent Seismicity Map
Figure 8 Median Horizontal Acceleration Response Spectra (5% Damped)
Figure 9 84th Percentile Horizontal Acceleration Response Spectra (5% Damped)
Figure 10 Direct Shear Test Results of Bedrock
Figure 11 Total Stress Strength Envelope
Figure 12 Effective Stress Strength Envelope
Figure 13 Variation of "Maximum Acceleration Ratio" with Depth of Sliding Mass
Figure 14 Variations of Normalized Permanent Displacement with Yield Acceleration

APPENDICES

Appendix A Summary of Reviewed Documents
Appendix B Previous Subsurface Exploration Logs
Appendix C Previous Laboratory Tests
Appendix D Corrected SPT Blowcount Spreadsheet Calculations
Appendix E Previous Groundwater Elevation Contour Map (RUST, 1997)
Appendix F Garvey Reservoir Piezometer Data
Appendix G Geologic Cross Sections
Appendix H Seismic Slope Stability Analyses

SEISMIC ASSESSMENT, PHASE 3 STUDY
Garvey Reservoir
Los Angeles County, California

1.0 INTRODUCTION

AMEC Geomatrix, Inc. (AMEC) is pleased to present the results of our Geotechnical Analyses as part of the Seismic Assessment, Phase 3 Study for the Garvey Reservoir located in the City of Monterey Park, California (Figure 1). This report combines the Technical Document Review (Task 1A) report submitted on November 25, 2009 with the Geotechnical Analysis Results (Task 1B). The review and analyses were performed on behalf of the Metropolitan Water District of Southern California (MWD) under Agreement No. 83612, Project No. 103380.

The Seismic Assessment Study was authorized by MWD to provide an overall evaluation of seismic performance and safety of MWD's dams and appurtenant structures. Phases 1 and 2 of the Seismic Assessment Study were completed by URS Corporation Americas (URS). Phase 1A included compiling, reviewing, and summarizing previous reports and other data relevant to the sites, whereas Phase 1B consisted of performing probabilistic and deterministic seismic hazard assessments for each site. During Phase 2, URS and MWD worked jointly to review and evaluate 25 MWD reservoir facilities to determine whether further Phase 3 studies were needed at each site. The assessment resulted in a ranking of the facilities in order of perceived risk of failure and life safety and lifeline consequences of hypothetical failure.

Garvey Reservoir was one of the facilities that was identified as needing a Phase 3 study and this report presents the results of that study. The objective of the study was to evaluate the overall seismic performance of the earth fill embankments at Garvey Reservoir using simplified analysis methods. The scope of the study included the following:

1. Determination of the location and magnitude of the earthquake for which the dam must be evaluated, referred to herein as the Maximum Credible Earthquake (MCE);
2. Determination of appropriate ground-motion time histories and/or other ground-motion parameters to represent the MCE;
3. Determination of the properties of the embankment and foundation materials;
4. Determination of the liquefaction potential of embankment and foundation materials;
5. Determination of the stability of the embankment if liquefaction would cause loss of strength; and

6. Evaluation of the extent of deformation resulting from earthquake shaking and/or loss of strength of materials.

The Phase 3 study was divided into the following two tasks, Task 1A and Task 1B. The scope of work for Task 1A consisted of reviewing technical documents provided by MWD, performing a site reconnaissance, and characterizing the site materials for subsequent seismic analyses. The scope of work for Task 1B consisted of simplified seismic analyses to assess and evaluate the structural integrity and adequacy of the reservoir in terms of deformations and their effect on the performance of the embankment dam.

This report presents the findings of the technical document review, site reconnaissance, and the recommended material parameters completed as part of Task 1A; and the findings of the simplified seismic analyses that represent Task 1B of the Phase 3 study.

2.0 DATA REVIEW

AMEC reviewed the following reports which were provided by MWD. A summary of each report is provided in Appendix A.

- Buwalda, John P. (1950). "Geology of the Garvey Reservoir Site, A report to the Metropolitan Water District of Southern California," June 20, 1950.
- The Metropolitan Water District of Southern California (1952). "Colorado River Aqueduct Distribution System, Specifications No. 412, Garvey Reservoir Parts 1 and 2."
- The Metropolitan Water District of Southern California (1953). "Earthwork Specifications" pp. S-23 to S-43.
- Morrison-Knudsen and R.A. Westbrook Contractor (1954). "Historical Record, Garvey Reservoir, Contract No. 565."
- Bechtel Corporation (1965). "Review of Metropolitan Water District Dams, Garvey Reservoir," January 1965.
- Dames and Moore (1981). "Report – Phase II, Seismic Stability Investigation, Garvey Reservoir, Monterey Park, California," December 28, 1981.
- Dames and Moore (1991). "Seismic Stability Investigation, Garvey Reservoir for the Metropolitan Water District," January 30, 1991.
- Wahler Associates (1991). "Investigation and Evaluation of Cracking, Garvey Reservoir, Monterey Park, California, Volumes I through III," January 31, 1991.

- LeRoy Crandall and Associates (1991). "Geologic, Hydrogeologic, and Well Completion Report, Northwest Area, Garvey Reservoir, Monterey Park, California," March 28, 1991.

- The Metropolitan Water District of Southern California (1994). "Garvey Reservoir Repair Specifications Number 1217A and 1217B," March 1994.

- The Metropolitan Water District of Southern California (1996). "Garvey Reservoir Composite Lining Construction, Specifications Number 1254 Parts 1 and 2," May 14, 1996.

- RUST Environment and Infrastructure (1996). "As-Constructed Grouting Report for Garvey Reservoir, Monterey Park, California," July 19, 1996.

- RUST Environment and Infrastructure (1997). "Supplemental Geotechnical Investigation and Piezometer Installation for Garvey Reservoir, Monterey Park, California," July 2, 1997.

- The Metropolitan Water District of Southern California (2008). "Inspection and Surveillance Report, Garvey Reservoir," December 18, 2008.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our scope of work included performing a site reconnaissance to observe and document the existing physical conditions of the reservoir embankments, as well as reviewing previous field exploration and laboratory testing programs. A summary of each of the previous field exploration and laboratory testing programs is provided in Tables 1 and 2, respectively.

3.1 SITE RECONNAISSANCE

Drs. Faiz Makdisi and Daniel Whang of AMEC visited the site on September 23, 2009. During the site inspection, they were accompanied by Christopher Hill and Dennis Godfirnon of MWD. The purpose of the site inspection was to observe and document the physical condition of the reservoir embankments as seen from the surface, and look for any evidence of existing or potential distress. The team walked the crest of the reservoir embankment and the slopes. During the site inspection, surface erosion and minor gullies were observed along the southwest embankment slopes. The erosion appears to be related to surface run-off flowing outside the collection ditches. It appeared that in some cases the capacity of the ditches are exceeded and in others the ground around the ditches are lower than the ditches and therefore the run-off is not collected by the ditches. The downstream slope of the embankment at the maximum section appeared uniform with no evidence of settlement. No evidence of piping or gross instability was observed.

3.2 PREVIOUS SUBSURFACE EXPLORATIONS

The initial geologic mapping of the Garvey Reservoir site was done in 1950 and the reservoir was constructed between 1952 and 1954. In the following years, the performance of the reservoir (in 1965) and the seismic stability of the reservoir (in 1981) were evaluated and additional investigations were performed related to seepage and liner crack issues. Initial and additional field exploration programs at the site included drilling borings, excavating test pits and trenches, collecting relatively undisturbed soil samples, performing Standard Penetration Tests (SPT), and installing piezometers. The approximate locations of the previous test borings, exploratory trenches and test pits, and piezometers are shown on Figure 2, and individual logs of each test hole are provided in Appendix B. A brief summary of the reviewed reports is provided in the following subsections.

3.2.1 Buwalda (1950)

Buwalda conducted a geologic investigation of the subject site prior to construction of the earthen embankments. As part of the investigation, Buwalda investigated the subsurface conditions by advancing twenty-five (25) borings to depths ranging from 25 to 107 feet below ground surface. The boring locations are plotted on the geologic map, and the soil information obtained from the test borings was used to generate four geologic cross sections. However, boring logs are not provided in the original report, and therefore, copies of the logs are not included in Appendix B of this report. The report states that samples were collected for laboratory testing, but there is no documentation of how the samples were collected or what tests were performed.

3.2.2 Bechtel (1965)

The study consisted of a review of Garvey Reservoir for MWD as part of a general survey of MWD's important storage facilities and was not related to any defect at the reservoir.
The subsurface exploration program consisted of drilling ten (10) borings (A through J in Figure 2) with a truck mounted rotary drill rig to depths ranging from 31.5 to 153 feet. Three of the borings (A, H, I) were drilled along the crest of the reservoir embankment, and the remaining borings were drilled along the slope of the north embankment. Relatively undisturbed samples were obtained using either a Pitcher sampler or a thin-walled Shelby tube. Six of the borings were converted into piezometers with one well screen either in bedrock or in embankment material, and the remaining four borings were converted into piezometers with two well screens each; one in embankment, and one in bedrock.

3.2.3 Dames and Moore (1981)

The exploration was performed as part of a seismic stability investigation, and the results are described in their 1981 report. The subsurface exploration program consisted of drilling six (6) borings (Borings 1, 3 through 7) with a mud rotary drill rig to depths ranging from 15 to 121.5 feet. All borings, except for Boring 7, were drilled along the crest of the reservoir embankment.

Relatively undisturbed samples were obtained using a Dames and Moore (D&M) Type U sampler. The sampler was driven into the soil using slip jars falling 18-inches. A 530 pound weight was used to drive the slip jars for all borings, except for the samples obtained in Boring 6, where a 320 pound weight was used. SPTs were performed in all borings per ASTM International Standard (ASTM) D 1586-84 except for Boring 7. Disturbed samples were obtained with an SPT sampler in Boring 7 using a 140-pound hammer falling a shortened drop of 18 inches, rather than the standard 30 inches.

3.2.4 Wahler Associates (1990)

Wahler Associates performed an extensive field exploration program in the early part of 1990 to evaluate reservoir liner cracking, and the results of this investigation are described in their 1991 report. The field exploration program consisted of drilling twenty-three (23) borings (DH-1 through DH-21, DH-4A, and DH-7A) to depths ranging from 16.5 to 141 feet, drilling four (4) 30-inch diameter bucket auger holes to depths ranging from 45 to 84 feet, and excavating twenty-three (23) exploratory trenches to a maximum depth of about 20 feet. The trenches were excavated with a rubber-tired JD710 turbo backhoe equipped with a 36-inch wide bucket. All drill holes, except for DH-18 through DH-21 and the bucket auger holes, were advanced with either a truck-mounted Failing 750 or crawler-mounted Failing 250 rotary wash rig. Drill holes DH-18 through DH-21 were advanced with a crawler-mounted Texoma rig equipped with 12-inch diameter augers for the purpose of installing borehole tiltometers. Nine of the drill holes were converted into W-series piezometers (screened in bedrock).

Relatively undisturbed samples were obtained with Pitcher Barrel samplers ranging from 3 to 6 inches in diameter by 36-inch long liners. The samples were wax-sealed. Disturbed samples were obtained using the SPT in some of the borings at selected depths. Disturbed bulk samples were also obtained from the borings and test pits.

Wahler Associates conducted a subsequent subsurface exploration program in the latter part of 1990, and the results are described in the 1997 RUST Environmental and Infrastructure (RUST) report as well as in the D&M (1991) report. The subsurface exploration program consisted of drilling sixteen (16) borings (DH-22 through DH-37) to depths ranging from 34 to 202 feet, and four 30-inch diameter bucket auger holes to depths ranging from 56 to 90.5 feet.

All drill holes, except for the bucket auger holes, were advanced with a truck-mounted Failing 1500 rotary wash drill rig. The rotary wash drilling was facilitated using either polymer drill fluid or water. Eight of the borings were drilled on the crest of the reservoir embankment. The four 30-inch diameter bucket auger borings were drilled on the northwest side of the reservoir to depths ranging from 56 to 90.5 feet.

Eleven of the borings (DH-22 through DH-25 and DH-31 through DH-37) were converted into deep I-series piezometers, and four (DH-27 through 30) were converted into shallow W-series piezometers, all of which are screened within bedrock. The I-series piezometers were constructed with dual well casings (two 2-inch diameter polyvinyl chloride pipes) screened at the same depth intervals for separate water level measurements to be taken manually and by transducers, and the W-series piezometers were constructed as shallow single casing piezometers that monitor shallow perched groundwater.

Most soil samples were obtained using a wireline coring system with a 2-inch diameter by 5-foot long split core barrel. Relatively undisturbed samples were obtained from three borings (DH-23 through DH-25) using a Pitcher Barrel sampler with a 3-inch diameter by 36-inch long steel liner. The steel liner samples were wax-sealed. Continuous SPT sampling was performed in Boring DH-26 between depths of approximately 20 and 39 feet, and very limited SPT sampling was performed at discrete depth intervals in Borings DH-23 and DH-24.

3.2.5 LeRoy Crandall and Associates (1991)

The purpose of the investigation was to collect additional geologic data and to evaluate the groundwater conditions in the area northwest of the reservoir. The LeRoy Crandall and Associates (LCA) subsurface exploration program consisted of drilling seven (7) borings with a rotary wash drill rig to depths ranging from 141 to 201 feet, drilling one 24-inch diameter bucket auger to a depth of 25 feet, and excavating six (6) exploratory test pits to depths ranging from 4 to 8 feet. The results of the LCA (1990) field investigation are described in their 1991 report, and are summarized in the RUST (1997) report. The borings and bucket auger hole were converted to piezometers, and three of these piezometers (I-16, I-36, and I-37) were installed by Wahler Associates. Based on the information provided, it is not clear what sampling method was used to obtain undisturbed samples. SPT sampling was not performed.

3.2.6 Wahler Associates (1993)

The 1993 Wahler Associates subsurface program consisted of drilling eighteen (18) borings to depths ranging from 102 to 334.5 feet in order to install piezometers, and the results are described in the RUST (1997) report. The results of this field exploration program are presented in the RUST (1997) report. All borings, except for DH-50 and DH-52, were drilled using the same rig and methods used in the 1990 exploration program. DH-50 and DH-52

were drilled using a CME 550 all-terrain drill rig. All piezometers, except for I-9, were constructed in the same manner as the 1990 piezometers. Separate borings were advanced to accommodate each well casing for I-9E and I-9W. One of the piezometers (I-2) was abandoned, and the boring, DH-54, at this location was not logged. All piezometers were screened within bedrock. Core samples were obtained using the same method used in the 1990 investigation. Pitcher Barrel and SPT samples were not obtained in this exploration.

3.3 LABORATORY TESTING

Laboratory tests were performed on bulk and relatively undisturbed soil samples to evaluate the engineering properties of the site soils. Laboratory tests were performed on soil samples which were collected from four of the Bechtel borings (B, H, I, J), all of the Dames and Moore borings, all of the LCA (1991) borings, and fifteen of the Wahler Associates' 1990 borings (DH-1 through DH-12, and DH-23 through DH-25). The laboratory test results for DH-1 through DH-12 are reported in Wahler (1991), and the laboratory test results for DH-23 through DH-25 are reported in D&M (1991). Copies of the individual laboratory test results are provided in Appendix C.

The LCA (1991) laboratory testing program consisted only of in-situ dry density and moisture content determination. The other laboratory tests generally included in-situ dry density and moisture content, percent passing No. 200 sieve, sieve analysis, Atterberg Limits, and triaxial strength. The results of the Atterberg Limits (Liquid Limit [LL] and Plasticity Index [PI]) tests for the fill and alluvium, bedrock foundation materials, and reservoir liner, are plotted on Figures 3 through 5 of this report. Bechtel performed limited constant head permeability and consolidation testing with time rate measurements, and D&M (1991) performed direct shear tests on bedrock samples. The results of the LCA laboratory tests are not summarized in Table 2, but are shown on the individual boring logs in Appendix B.

In order to determine strength characteristics of the embankment fill and foundation materials for stability analyses, triaxial strength testing was performed by Bechtel (1965), D&M (1981), and D&M (1991). A discussion of the triaxial strength testing program for each of the three studies is provided below.

3.3.1 Bechtel (1965)

Bechtel performed seven consolidated-undrained (CU) triaxial tests with pore pressure measurements on 2.8-inch diameter relatively "undisturbed" soil samples. Four of the tests were performed on soil samples (i.e., clayey sand with gravel) retrieved from the embankment fill, which were consolidated anisotropically prior to shearing (i.e., ACU triaxial tests). Three tests were performed on clay samples presumably retrieved from the alluvium, which were consolidated isotropically prior to shearing (i.e., ICU triaxial tests). The samples for ACU

tests were reconsolidated to approximately the same pressures they were subjected to in the embankment.

3.3.2 Dames and Moore (1981)

D&M (1981) performed both static and cyclic triaxial tests to evaluate the strength of the site materials. D&M performed two static consolidated-drained (CD) triaxial tests on unsaturated soil samples retrieved from Boring 6 at a depth of 44 feet. In addition, Dames and Moore performed seven cyclic triaxial tests followed by monotonic shearing to failure. Some of the cyclic tests were performed at field moisture contents, whereas others were performed under saturated conditions. All of the samples were isotropically consolidated to their approximate in situ overburden stress, and subjected to 14 uniform stress cycles equal to a cyclic stress ratio (*CSR*) at a peak ground acceleration, *PGA* = 0.5 g as follows:

$$CSR = 0.65 \cdot \frac{PGA}{g} \frac{\sigma_v}{\sigma_v'} \cdot r_d \qquad (1)$$

where σ_v is the total vertical stress, σ_v' is the total vertical effective stress, and r_d is the stress reduction coefficient which is based on the depth and earthquake magnitude.

A more detailed description of the cyclic testing method adopted by D&M is provided in Appendix C of this report. D&M determined that the residual undrained shear strength of the materials tested following cyclic loading did not show any sign of degradation, and exceeded the shear strength used in slope stability analyses by Bechtel (1965).

3.3.3 Dames and Moore (1991)

D&M (1991) performed eight isotropically consolidated-undrained (ICU) triaxial tests on embankment fill samples which were collected using Pitcher barrel steel liners. Prior to consolidation, a back pressure of 50 pounds per square inch (psi) was incrementally applied and Skempton's "B" parameter of at least 0.95 was measured. Following saturation and consolidation, the samples were sheared to failure under undrained loading with pore pressure measurements.

4.0 SITE CONDITIONS

The following discussion of findings is based on the site reconnaissance and data review performed for this project.

4.1 GEOLOGIC SETTING

The Garvey reservoir is situated on the northern flank of the Montebello Hills, which forms part of a bedrock high separating the Los Angeles Basin on the south with the San Gabriel Basin on the north and lies within the transition zone between the Transverse Ranges on the north and the Peninsular Ranges to the south. The Montebello Hills expose a block of folded, Pliocene to early Pleistocene-age marine and non-marine sedimentary rocks of which Pliocene-age sediments host the oil-bearing strata in the Montebello oil field.

The major geologic structure is expressed by the east-west-trending, westerly-plunging Montebello Anticline, located near the southern flank of the hills; and a broad, un-named subsidiary synclinal fold near the central portion of the hills. The Garvey reservoir is situated on the northern limb of the syncline and is directly underlain by non-marine sandstone and conglomerate assigned to the Plio-Pleistocene age Fernando formation. According to geologic mapping by Dibblee (1999), the southerly dipping contact with the underlying shale and claystone beds of the Pliocene-age Repetto member of the Fernando formation lies beneath the northern embankment of the reservoir. Bedding within these units strikes generally northeast and dips 8 to 24 degrees to the southeast. No faults or shear zones have been mapped within the footprint or the immediate vicinity of the reservoir. The closest documented fault is the East Montebello/ Workman Hill (extension) fault, located about 2 kilometers (km) east of the reservoir.

4.2 SUBSURFACE CONDITIONS

The Garvey Reservoir dam is an earthen embankment founded on alluvium and/or bedrock. The earthen embankment fill typically consists of silty to clayey sand with gravel, and the thickness of the earthen embankment fill varies between 0 to about 102 feet. Based on the Buwalda (1950) geologic map, it appears that two relatively deep swales were backfilled along the north side of the reservoir during construction. Hence, the fill thicknesses are greatest in these former swales. The fill thickness in the northwest section of the embankment is generally less than a few feet.

Based on the previous D&M (1981) boring information, the fill is mostly very dense and appears to have been placed with a high compactive effort. The field SPT blowcounts of the fill (D&M, 1981) range from 30 to greater than 100 with an approximate mean value of 85 (excluding blowcounts greater than 150 for 12 inches). The field blowcounts were corrected to

$N_{1(60)}$ blowcounts based on the methods outlined by Idriss and Boulanger (2008). A summary of the corrected ($N_{1(60)}$) SPT blowcounts from the previous investigations is provided in Table 3, and the actual calculations are provided in Appendix D. As shown on Figure 3, the previous laboratory tests of the embankment fill indicate that the mean PI is 8, and ranges from non plastic to 14. The fines content is generally between 15 to 20 percent.

The alluvium, where encountered, consists of clayey sand to sandy clay and sandy silt. Two Atterberg Limits tests were performed and they showed PI values of 9 and 22, and a fines content of approximately 65 to 75 percent. The Bechtel consolidation test on the sandy clay indicates that the compression index (C_c) and recompression index (C_r) values are approximately 0.12 and 0.05, respectively. Very limited SPT information is available for the alluvium.

A layer of sandy silt overlying silty sand was encountered in Wahler's Boring DH-26 near the interface of the embankment fill and foundation. The SPT field blowcounts within this 6- to 8-foot thick layer indicate a range between 32 and 40 blows per foot. The normalized $(N_1)_{60}$ blowcounts (D&M, 1991) indicate that this material is mostly medium dense. Laboratory testing was not performed on soil samples obtained from this layer.

Based on the Wahler (1991) drill holes that were advanced in the liner area, the reservoir liner previously consisted of 3 inches of asphalt concrete underlain mainly by silty sand with gravel down to bedrock. The silty sand with gravel is between 8 and 11 feet thick. The previous laboratory tests indicate that the PI of the liner fill beneath the asphalt ranges from 2 to 8. We understand that a composite hypalon liner system was later installed along the inside of the reservoir circa 1996-97.

The bedrock is described by Bechtel (1965) as mostly consisting of "loosely cemented conglomerate". D&M (1991) describes the bedrock as consisting mostly of "poorly cemented sandstone and conglomerate, with some interbedded siltstone". As shown on Figure 4, the limited previous laboratory tests indicate that the PI of the foundation siltstone generally ranges from about 5 to 9.

4.3 GROUNDWATER CONDITIONS

As shown in Appendix E, a regional groundwater contour map was generated by RUST (1997), and is based on piezometer readings which were recorded on November 20, 1990. RUST concluded that the "overall groundwater gradient is relatively flat to gently sloping to the southwest, and also that groundwater flows through the permeable sandstone and conglomerate beds, while less permeable siltstone beds act as confining layers." The highest regional groundwater elevation in the general reservoir area (approximate El = 460 feet) is

located to the northwest, and the lowest groundwater elevation (approximate El = 330 feet) is located to the south. The northwest area acts as a zone of groundwater recharge with flow occurring under the reservoir. Based on the RUST contour map, the overall flow gradient is estimated to be 0.2 to 0.25.

The highest regional groundwater elevation (approximate El = 430 feet) beneath the actual reservoir footprint is in the vicinity of piezometer I-1 (RUST, 1997) on the north side, and is described by RUST as a groundwater mound. RUST concludes that the groundwater mound is either "a natural occurrence related to some unknown natural recharge source or is a remnant groundwater mound directly associated with long-term saturation of the embankment and foundation materials by reservoir waters." Based on the RUST contour map, the flow gradient beneath the reservoir in the area of the groundwater "mound" is approximately 0.3.

Data provided by MWD (Appendix F) includes regional groundwater elevation measurements recorded from thirty-eight of the I-series piezometers, and six of the gallery piezometers between 1999 and 2008. The groundwater elevations for the I-series piezometers overall are generally between 390 and 400 feet, and except for a few piezometers, the groundwater elevations generally did not fluctuate significantly over the 10-year (approximate) monitoring period. Higher groundwater elevations were recorded at five piezometers (I-17, I-18, I-31, I-35, I-38), which are located on the west, southwest, and northwest sides of the reservoir. The groundwater elevations at these locations generally range from approximately 402 to 420 feet over the monitoring period. The highest groundwater elevation (approximate El = 444 feet) was recorded at I-35 on the west side of the reservoir. Lower groundwater elevations were generally recorded at piezometers which are located on the southwest side of the reservoir. The lower groundwater elevations are about 385 feet.

In order to evaluate the current regional groundwater conditions, a current groundwater contour map (Figure 6) was generated using the October 2008 piezometer data provided by MWD. Based on our review of the previous and current groundwater contour maps, it appears that the groundwater conditions in the area have changed significantly from those presented in the RUST (1997) report. It appears that the regional groundwater elevations and gradients overall have dropped since 1990 by up to approximately 35 feet in some areas. The greatest drops in groundwater elevations are in areas on the north and northwest sides of the reservoir. However, groundwater elevations on the southwest sides of the reservoir appear to have dropped only slightly, and in some cases, the groundwater elevations at a few discrete locations, namely at I-31 and I-35, may have risen.

Based on the current regional groundwater conditions, the northwest side of the reservoir is no longer acting as a zone of groundwater recharge. The current flow gradient is not well defined, although the lower groundwater elevation readings in the southwest area suggest that flow direction is towards the southwest. The current flow gradient appears to be in the range of 0.05 to 0.1. Additionally, there is no longer a groundwater mound which exists in the area of piezometer I-1. However, the groundwater elevations at two of the piezometers on the west side (I-31 and I-35) are significantly higher than others in the nearby areas. The higher groundwater elevations at these piezometer locations could be due to geologic factors, well construction methods, surface and perched groundwater infiltration or a combination of these. Logs of the borings for I-31 and I-35 were not provided in the reviewed reports, and therefore, it is difficult to assess why the groundwater elevations at these locations are significantly higher than the surrounding areas.

The recent piezometer data indicates that the regional groundwater elevations and flow gradients have dropped over the last 20 years, and regional groundwater elevations are still well below the elevation of the reservoir bottom (520 feet). The permeability of the embankment is believed to be low, but the low amount of water infiltration through the embankment is likely attributed to the relatively new composite hypalon reservoir liner which is acting as an "impermeable" barrier.

MWD read the piezometers installed by Bechtel which were screened within the embankment from 1993 through 1997 (MWD, 1997). Piezometer P-13 showed some response to rainfall, but Piezometers P-1, P-2, P-4, P-9, and P-11 were indicated as "dry" throughout the entire period. Because the piezometers were essentially always dry, MWD reportedly stopped reading them after 1997. As a result of concerns raised during preparation of this report regarding the potential for saturation of the embankment and foundation alluvium, MWD read these piezometers again on February 8, 2010 and found that they were dry.

Based on the review of boring logs and laboratory moisture test data there is no indication of high moisture content in embankment soils immediately overlying the foundation bedrock. Assuming the ground was stripped and graded prior to construction of the underdrain and embankment to provide positive drainage towards the underdrain pipes, it is not expected that perched groundwater exists over the bedrock beneath the embankment. Also, it is anticipated that the embankment and underlying foundation materials will remain unsaturated provided that the liner continues to function in its present adequate working condition.

5.0 EVALUATION OF SEISMIC HAZARDS

5.1 REGIONAL TECTONIC SETTING

Garvey Reservoir is located in the Montebello Hills at the juncture of Peninsular and Transverse Ranges in Southern California, which contains a complex system of active thrust and strike-slip faults (Figure 7). This complex array of active faults is associated with the "Big Bend" of the San Andreas fault, which is located about 51 km northeast of the reservoir. Well documented nearby active faults in the Peninsular Ranges are represented by the northwest-trending Newport-Inglewood, Whittier (including various northern splays), Elsinore and Palos Verdes faults, each of which displays a significant strike-slip component. Conversely, major faults associated with the Transverse Ranges in the vicinity of the reservoir are represented by east-west-trending, northerly-dipping, thrust and high-angle reverse/oblique faults, including the seismically active Santa Monica-Hollywood, Sierra Madre-Cucamonga and Raymond faults.

Extending beneath both the Peninsular and Transverse ranges is the east-west-trending, northerly dipping Puente Hills Blind-Thrust fault (PHBT) system of Shaw (et. al., 2002), Meyers (et. al., 2003), and Griffith and Cooke (2004). The PHBT has also been referred to as the Elysian Park Blind Thrust (Shaw and Suppe, 1996). According to Shaw (et. al., 2002), the Montebello Hills are situated about 10 km above what is referred to as the "Santa Fe Springs (SFS) segment" of the PHBT. The 1987 magnitude (M_w) 6.1 Whittier Narrows earthquake is believed to have occurred on the SFS segment, based upon depth and the focal mechanism of the event, and was situated about 5 km north of the reservoir at a depth of about 14 km below ground surface.

Other significant faults in the vicinity of the reservoir include East Montebello (EM)/ Workman Hill (WH) fault [extension (of Dibblee, 1999)], located beneath the eastern edge of the Montebello Hills, and the Whittier fault. Both the EM and WH faults may in fact represent the northwest continuation of the Whittier fault, which is located along the southern base of the Puente Hills, southeast of Whittier Narrows. The Raymond, Santa Monica-Hollywood, and Sierra Madre faults are situated approximately 8, 12, and 14 km from the reservoir, respectively (Figure 7).

5.2 DETERMINATION OF MAXIMUM CREDIBLE EARTHQUAKE (MCE)

The MCE is usually defined as the maximum earthquake that appears capable of occurring under the known tectonic framework (Kramer, 1996). It is a rational and believable event which can be supported by known geologic and seismologic data. URS (2005) estimated ground motions at the site for the MCE by performing a deterministic ground motion analysis. The deterministic approach involves the following steps:

- Identification of the potential seismic sources that could affect the site and estimation of their maximum earthquake that could reasonably be expected from these sources.
- Development of the range of maximum ground motions that are likely to occur at the site due to the maximum earthquake for each seismic source based on several ground motion attenuation relationships.
- Selection of the MCE with the potential for generating the strongest ground motions at the site.
- Characterization of the ground motions in terms of peak ground acceleration, acceleration response spectra, duration of strong ground shaking, and/or other seismic parameters as deemed appropriate for the structures being evaluated.

The seismic sources and parameters used in URS (2005) study are mainly based on the 2002 California Geological Survey/U.S. Geological Survey (CGS/USGS) model. The attenuation relationships used in URS (2005) include Abrahamson and Silva (1997), Campbell and Bozorgnia (2003), Sadigh et al. (1997), and Boore et al. (1997). These attenuation relationships were deemed appropriate for the site conditions and tectonic settings for Garvey Reservoir at the time. The relationships provide the attenuation of peak ground acceleration and response spectral acceleration (5 percent damping). A value of 2 km for the depth to basement was used in URS (2005) for the Campbell and Bozorgnia (2003) relationship.

Using a shear wave velocity (v_{s30}) of 468 meter per second for the foundation, URS (2005) computed median and 84th percentile 5 percent-damped response spectra for Garvey Reservoir for the closest significant faults including the Upper Elysian Park, Puente Hills, Raymond, Elsinore, and San Andreas faults. The site is located on the hanging wall of the Puente Hills fault, and the closest distance to surface projection of co-seismic rupture is zero. URS (2005) adjusted the spectra for rupture directivity for the Puente Hills fault using the approach of Somerville et al. (1997) modified by Abrahamson (2000).

Results of URS (2005) indicate that maximum earthquakes on two different faults control different portions of the spectrum at the Garvey Reservoir site and these two earthquakes exhibit significantly higher spectral accelerations compared to maximum earthquakes on other identified near-by significant faults. At periods shorter than 0.4 seconds, the M 6½ event on the Upper Elysian fault, with a rupture distance of about 3.4 km, results in the largest spectral response at the site. At longer periods, the M 7 event on the Puente Hills fault (at a distance of about 9 km) controls the hazard at the site. URS (2005) developed an envelope for the two spectral accelerations to obtain the MCE response spectrum. The median and 84th percentile spectra are shown in Figures 8 and 9. For comparison, Figures 8 and 9 also show the spectra

obtained from this current investigation using the next generation attenuation (NGA) relationships as discussed in the next section.

5.3 DETERMINATION OF MAXIMUM CREDIBLE EARTHQUAKE (MCE) USING THE NEXT GENERATION ATTENUATION RELATIONSHIPS

Recently, the attenuation relationships used in the URS (2005) MCE study have been updated and revised. The updated relationships, commonly known as NGA relationships, are based on improved statistical methods for analyzing ground motion data and on major expansion and upgrading of the Pacific Earthquake Engineering Research (PEER) Center strong-motion database. Research results from PEER, USGS, CGS, and other organizations are incorporated into the NGA relationships to provide physical constraints on factors influencing ground motions.

In this study, AMEC performed deterministic ground motion estimates of the MCE ground motions for Garvey Reservoir using the NGA relationships that included Abrahamson and Silva (2008), Boore and Atkinson (2008), Campbell and Bozorgnia (2008), and Chiou and Youngs (2008). The approach of Somerville et al. (1997) modified by Abrahamson (2000) was also used to include the fault normal directivity effects. The median and 84th percentile spectra obtained from this investigation are shown on Figures 8 and 9 respectively, and are compared with those of URS (2005). The URS (2005) MCE response spectra appear conservative compared to those using the NGA relationships at spectral periods greater than about 0.2 to 0.3 second (Figures 8 and 9).

5.4 FAULT RUPTURE

As discussed in Section 4.1, no faults or shear zones have been mapped within the footprint or the immediate vicinity of the reservoir. Therefore, the potential for fault rupture within the immediate vicinity of the reservoir is considered to be low.

6.0 EVALUATION OF MATERIAL PROPERTIES

In order to develop recommended shear strength parameters for simplified seismic stability analyses, AMEC reviewed the previous laboratory shear strength test results as well as the previously recommended parameters. A summary of corrected SPT blow counts for embankment fill from previous investigations is provided in Table 3 and a summary of strength parameters used by Bechtel (1965) and Dames and Moore (1991) as well as those recommended for stability analyses by AMEC is provided in Table 4.

6.1 BEDROCK

The bedrock was modeled in the Bechtel stability analyses as having "a sufficiently higher strength relative to the embankment material". D&M (1991) performed 15 direct shear tests on samples of sandstone and siltstone which were sampled between depths of 40 and 88 feet below the surface of the embankment (6 to 54 feet into the bedrock). The tests were performed to simulate shearing along the bedding planes. They also compiled direct shear and triaxial test results from samples of similar bedrock from nearby areas which were performed for the investigation of a Metro Rail project. The test results from the 1991 investigation agreed with the Metro Rail test results. D&M estimated a total stress strength envelope with angle of friction of 27 degrees, and cohesion of 700 pounds per square foot (psf). Based on the review of the D&M's strength envelope plot, AMEC found that the parameters for the envelope plotted were different than the values listed. The angle of friction and cohesion for the plotted envelope were 24 degrees and 700 psf, respectively, and these parameters are recommended in our study for the shear strength envelope for use in further analyses. The results of the D&M direct shear tests are plotted in Figure 10 of this report.

6.2 ALLUVIUM

Limited strength testing has been performed on the alluvium. Bechtel (1965) performed three ICU triaxial tests on alluvial clay which was sampled at a depth of approximately 78 feet. Based on the similarity of the ICU test results for the alluvium and the embankment fill, the alluvium was modeled by Bechtel as having the same strength properties as the embankment fill. Although Bechtel estimated the friction angle and cohesion to be 24 degrees and 1,080 psf, respectively, they conservatively reduced the cohesion by half (to 540 psf) for their stability analyses. D&M did not perform triaxial strength tests on the alluvium, and they did not distinguish an alluvium soil layer from the embankment fill. In order to establish strength parameters for the embankment fill, D&M included all of their test results on the embankment fill as well as all of the Bechtel triaxial test results on the embankment fill and alluvium. A discussion of the D&M embankment fill test results is provided in the following section.

The SPT blowcount information from Wahler boring, DH-26, suggests that the alluvium, in some areas, may be weaker than the overlying embankment fill and underlying bedrock. However, due to the limited test information available for the alluvium, the estimated strength at the time of this report is based only on the Bechtel test results. AMEC estimates the strength of the alluvium to be the same as the embankment fill as discussed in the following section.

6.3 EMBANKMENT FILL

Several shear strength tests have been performed on the existing embankment fill which consists of gravelly, silty to clayey sand. As discussed, Bechtel assigned a friction angle and cohesion of 24 degrees and 540 psf, respectively, to the embankment fill. Subsequently, D&M (1991) performed additional ICU triaxial tests for their stability analyses, and estimated the effective and total stress strength parameters of the embankment fill for stability analyses. D&M estimated the strength parameters for the fill based on all their test results of the fill and all of the Bechtel test results of the fill and alluvium. D&M assigned a friction angle and cohesion of 21 degrees and 1,200 psf as total stress strength parameters and a friction angle and cohesion of 24 degrees and 1,100 psf as effective stress strength parameters.

The embankment fill is predominantly granular and well compacted. Furthermore, the PI tests indicate that the fines are typically on the silt-clay margin. We, therefore, expect the fill to have a higher angle of friction from that assigned by Bechtel (1965) and D&M (1991). Based on the individual Bechtel and D&M (1991) triaxial test results, total and effective stress strength envelopes for the embankment fill were plotted as shown in Figures 11 and 12, respectively. Both Bechtel and D&M interpreted the test results such that the failure occurred when the principal effective stress ratio ($\sigma_{1'}/\sigma_{3'}$) reached a maximum value for both total and effective stress strength envelopes. The q vs. p plot in Figure 11 is based on the stress conditions at a strain between 3 and 5 percent whereas the q vs. p' plot in Figure 12 is based on stress conditions at the maximum effective stress ratio. These plots show scatter in the test results and the strength parameters selected by D&M (1991) appear to conservatively represent the tested samples. We, therefore, conclude that the D&M (1991) total and effective stress strength parameters are reasonable estimates for the embankment fill, and for the alluvium.

7.0 SIMPLIFIED SEISMIC ANALYSES

Simplified seismic analyses of the reservoir were performed as part of Task 1B of this study. We performed pseudo-static slope stability analyses (Appendix H), seismic deformation analyses, seismically induced settlement evaluation, liquefaction potential evaluation, and seismic seiche evaluation. We used the 84th percentile MCE ground motions developed using NGA relationships as shown in Figure 9, material properties recommended in Table 4, and groundwater conditions as discussed in Section 4.3.

7.1 SEISMIC SLOPE STABILITY AND SEISMIC DEFORMATIONS

The slope stability analyses were performed and permanent slope deformations were estimated using the yield acceleration concept proposed by Newmark (1965) and modified by Makdisi and Seed (1978). The procedure used to estimate permanent deformation of the slopes comprises the following steps.

- A yield acceleration, k_y, at which a potential sliding surface would develop a factor of safety of one, is determined using limit-equilibrium, pseudo-static slope stability methods. The yield acceleration depends on slope geometry, phreatic surface conditions, undrained shear strength of the slope material, and the location of the potential sliding surface.

- The peak, or maximum acceleration, k_{max}, induced within a potential sliding mass (peak value of a seismic coefficient time history) is estimated. The seismic coefficient, which is estimated using simplified procedures, is the ratio of the force that an earthquake induces in a sliding block to the total mass of that block.

- For a specified potential sliding mass, the seismic coefficient time history of that mass is compared with the yield acceleration, k_y. When the seismic coefficient exceeds the yield acceleration, down slope movement will occur along the direction of the assumed failure plane. The movement will decelerate and will stop after the level of induced acceleration drops below the yield acceleration, and the relative velocity of the sliding mass drops to zero. The magnitude of the accumulated permanent displacement can be estimated using the charts developed by Makdisi and Seed (1978).

The yield acceleration, k_y, for the critical surfaces in selected cross sections of the reservoir embankments were calculated as described below, and figures showing the slip surfaces are included in Appendix H.

Slope stability analyses of the embankment and foundation were performed using limit-equilibrium methods and the computer program SLOPE/W version 6.22 (GEO-SLOPE, 2004). The analyses were performed using Spencer's method for computing factors of safety. Spencer's method satisfies horizontal, vertical force and overall moment equilibrium, and accounts for inter-slice side forces.

The seismic stability of the reservoir slopes was evaluated using undrained shear strength parameters recommended by AMEC as discussed in Section 6 and presented in Table 4. Groundwater levels are modeled based on the regional levels shown on Figure 6 and as discussed in Section 4.3. The high water level within the reservoir is assumed to be at the spillway crest elevation of 573 feet providing a freeboard of 7 feet below the embankment crest elevation of 580 feet.

Based on the reservoir surface grades, preconstruction site topography, and the boring logs reviewed, five cross sections (A-A', B-B', C-C', M-M', and N-N') which represent maximum thickness of the embankment at these locations were analyzed. A plan showing the locations

of these embankment sections and the profiles at these cross sections are included in Appendix G. The cross sections at these five locations were presented also in D&M (1991), and therefore we used the same section labels for conformity.

The dynamic response of the embankment was estimated using the simplified procedure of Makdisi and Seed (1979). This procedure is based on a one-dimensional shear slice analysis for triangular embankments. It computes the embankment response in terms of peak acceleration at the crest of the embankment and estimates the first natural period, using acceleration response spectra as input motion at the base of the embankment. The method employs the equivalent-linear analysis to simulate the nonlinear strain-dependent modulus and damping behavior of soils. A number of iterations are performed until strain-compatible modulus and damping values are obtained.

The analysis require as input, the height of the embankment, the unit weight, the shear wave velocity, which determines the maximum shear modulus at low strain, and relationships for the variation of shear modulus and damping ratio with shear strain. For the present study, the estimated shear wave velocity used for the embankments is 1,200 fps. The modulus reduction curve for gravels proposed by Seed et al (1984) and the damping curve for sands and gravels proposed by Seed and Idriss (1970) were used.

The results of the response evaluation indicate peak horizontal crest accelerations (PHA_{crest}) vary between 1.7 and 2.0g and first natural periods vary between 0.3 second and 0.6 second for the sections analyzed. The PHA_{crest} was used to estimate maximum induced average acceleration values, k_{max}, for potential sliding surfaces within the embankment using the relationships of Makdisi and Seed (1978) shown on Figure 13. The computed values of k_{max} were found to vary between 0.95 and 1.08g (Table 5) for the sections analyzed.

The deformations were then estimated using the ratio of k_y/k_{max} described above, the anticipated duration of strong ground shaking represented by the magnitude of the earthquake, and the frequency content of the induced acceleration time-history. The k_y/k_{max} ratio and the natural period of the embankments are used, together with the charts on Figure 14 (Makdisi and Seed, 1978), to estimate the permanent deformations.

The estimated deformations for the sections analyzed vary between 8 inches and 16 inches; the largest displacement was estimated for Section A-A' (Figure H-2) which has the highest embankment fill height, and the lowest displacement was estimated for Section B-B' and N-N' (Figures H-3 and H-6) which has the lowest embankment fill. The results are summarized in Table 5.

One additional estimate was made for a potential sliding surface within the upper portion of the embankment at Section A-A' (Figure H-1). This was assessed because a slip surface at that elevation will experience significantly greater accelerations than a slip surface that extends through the full height of the embankment. The k_{max} for this potential sliding mass is 1.91g, the estimated k_y is 0.55g, and the corresponding estimated deformation is 37 inches. Thus the maximum displacement of 37 inches is expected to occur at the highest embankment section due to a potential shallow slip surface.

The permanent deformations were also estimated using a simplified semi-empirical predictive relationship developed by Bray and Travasarou (2007). The method utilizes a nonlinear fully coupled stick-slip sliding block model to capture the dynamic performance of an earth dam, natural slope, compacted earth fill, or municipal solid-waste landfill. The estimated displacement represents a potential sliding surface through the full height of the embankment. The input variables for the model are the yield acceleration, k_y, embankment's first natural period, T_s, and the foundation spectral acceleration at a degraded embankment period equal to $1.5T_s$. The estimated deformations using this method ranged between 7 and 12 inches, and are in general agreement with the estimates (8 to 16 inches) from Makdisi and Seed (1978) method.

Given the large available freeboard of 7 feet relative to the estimated permanent slope deformations, the seismic performance of the embankments is considered satisfactory.

7.2 SEISMICALLY INDUCED SETTLEMENT

Seismically induced settlements occur due to the contractive volumetric strains developed in unsaturated soils during a seismic event. Seismically-induced settlements are typically estimated using the methodology by Tokimatsu and Seed (1987) which is applicable only to clean sands. Recent research by Stewart and Whang (2003) updates the Tokimatsu and Seed (1987) method and extends the formulation to compacted fill soils containing significant amounts of fines. Based on Stewart and Whang (2003), clean sands can experience up to ten times more vertical strain than soils with fines compacted to a comparable density. Therefore, for embankments containing significant amount of fines, Tokimatsu and Seed (1987) method is expected to provide conservative estimates, and Stewart and Whang (2003) method is expected to provide a lower and more realistic estimate.

Both procedures used to estimate the seismically induced settlement comprise the following general steps.

- Estimate PHA_{crest}, magnitude, and number of strain cycles (N) for the MCE event.

- Calculate the corrected SPT $N_{1(60)}$ values and estimate the shear modulus (G_{max}) of embankment fill based on $N_{1(60)}$.

- Estimate the stress reduction factor with depth and calculate the cyclic strains for 15 strain cycles.

- Calculate the cyclic strains for the given magnitude and number of strain cycles of the MCE event.

- Multiply the vertical strain by 2 to include the multi-directional effect of earthquake shaking on settlement, and calculate the total seismically-induced settlement for the profile.

Both procedures were developed utilizing datasets of fill soils consisting of relative densities less than 80 percent and cyclic strains less than 1 percent. The embankment soils for the Garvey Reservoir are well compacted and exhibit high density as inferred from the high $N_{1,60}$ values presented in Table 3 and the high unit weight from laboratory test results as presented in Table 2 and summarized in Table 4. Therefore, the relative density of embankment fill is near 100%, which is beyond the densities evaluated by the above procedures, and which suggests there is essentially negligible potential for further compression. Also, due to the high value of estimated PHA_{crest} (in excess of 2g) the estimated cyclic strains exceed the ranges covered by the procedures discussed above. Stewart and Whang (2003) point out the problems in cyclic shear strain estimation for strong levels of shaking where PHA_{crest} is greater than 0.9g. Therefore, these procedures were not used for estimating seismically induced settlements at Garvey Reservoir.

In order to develop an order of magnitude estimate for the seismically induced settlements, we examined the $N_{1(60)}$ values presented in Table 3. It is seen that Borings B-1, B-3, B-4, and B-6 exhibit very dense fill conditions and B-5 exhibit relatively less dense fill soils between 30 and 43 feet below ground surface, although the bottom half of this 13-foot zone was logged as clayey sand foundation soil which would have even less seismic compression potential compared to silty sands and sands. Assuming this 13-foot zone of fill and foundation soil undergoes seismic compression and assigning an average vertical strain of 0.5% based on examination of charts presented in Tokimatsu and Seed (1987) for high relative density soils at high cyclic shear strains, the seismically induced settlement at Boring B-5 is estimated to be less than 1 inch.

Based on the review of the seismically induced settlement estimation procedures and the density of the fill interpreted from available boring logs, seismically-induced settlements are anticipated to be negligible, and the seismic performance of the embankments is considered satisfactory.

7.3 LIQUEFACTION POTENTIAL

Liquefaction is a soil behavior phenomenon in which a loose saturated soil located below the groundwater surface loses a substantial amount of strength due to strong earthquake ground shaking. Some types of loose to medium dense soils tend to compact during earthquake shaking, inducing excess pore water pressure in the saturated soil, which in turn, causes a reduction in strength. Recently deposited (i.e., geologically young) and relatively loose natural soils, and uncompacted or poorly compacted fills, are potentially susceptible to liquefaction. While silty, sandy, and gravelly soils typically have potential for liquefaction, clayey soils and bedrock generally are not susceptible to liquefaction.

Based on our review of available data, the embankment fill is well compacted, dense, and is not saturated. As noted in Section 4.2, alluvium consisting of silty sand soils with relatively low blow counts was encountered below the embankment fill in two borings. While these soils, if saturated, may be susceptible to shaking-induced strength reduction, the existing boring logs and piezometric data do not suggest saturated soil conditions. Although, it is anticipated that the embankment fill will not be saturated (due to the "impermeable" hypalon liner within the reservoir and the underdrain system above the bedrock), we recommend that the groundwater levels be monitored periodically in all of the piezometers including the ones screened within the embankment material. Any anomaly should be evaluated in relation to the potential saturation of the embankment fill and in the event the embankment fill is found to be saturated, a detailed liquefaction analysis should be performed.

7.4 SEISMIC SEICHE

Seiches are standing waves that develop in enclosed bodies of water such as harbors, lakes, reservoirs, or channels, most commonly through atmospheric or seismic forces (Kramer, 1996). Seismically induced seiches fall into two categories (Barberopoulou et al, 2006):

1. free seiches initiated by displacement of water due to fault movements or landslides,

2. forced seiches caused by the passing of seismic waves.

As discussed in previous sections, fault rupture or landslides are not expected within the footprint of the reservoir. Therefore, free seiches which could induce large wave heights are not expected at Garvey Reservoir.

Forced seiches in bodies of water are typically induced by the passage of seismic waves with sufficient energy at the resonant frequency of the body of water to excite response. Seiches may be observed at great distances from the source of an earthquake and the oscillations may be from several centimeters to a few meters (Bates and Jackson, 1984). Forced seiches may develop through excitation of the most fundamental mode of resonance, or higher order modes. Seiche oscillations of the fundamental mode are characterized by the simplest standing wave that can occur within the basin, represented by a wave peak on one side and, at the same time, a wave trough on the opposite side. Higher order modes of resonance represent more complex standing waves with multiple peaks and troughs oscillating within a basin. While higher order modes of resonance may be excited by shorter period seismic waves, they are associated with smaller amplitudes than the fundamental mode (given identical amplitude of seismic forcing).

The fundamental period of resonance for a rectangular basin is proportional to the ratio of length and depth of the reservoir (Chen and Scawthorn, 2002). The fundamental period of Garvey Reservoir in the northwest-southeast direction is about 110 seconds. In the southwest-northeast direction the fundamental period is about 70 seconds. Therefore, seiche generation in Garvey Reservoir is expected to be most susceptible to seismic shaking with frequencies between 0.009 Hz and 0.014 Hz. However, some vertical oscillations may develop from seismic waves with shorter periods that match the higher modes of resonance.

Seismic surface waves are believed to be the dominant trigger for seismic seiches (McGarr and Vorhis, 1968). The dominant surface-wave accelerations lie within the frequency range of .07 Hz to 0.2 Hz (periods of about 5 to 15 seconds) (McGarr and Vorhis, 1968). If everything else is equal, bodies of water with fundamental modes of oscillation in this frequency should have the most numerous seiches. This may explain (in part) the abundance of seiche observations in swimming pools. This frequency range correlates well with measured ground motions from the M_w 7.9 Denali earthquake of 3 November, 2002 that produced several seiches in the Puget Sound lowland, Washington (Barberopoulou et al, 2006). The largest amplitudes in the Puget Sound lowland from this earthquake were at frequencies of 0.08 Hz to 0.1 Hz (periods of 10 to 12.5 seconds) (Barberopoulou et al, 2006). Amplitudes of seismic acceleration at frequencies of 0.01 to 0.02 Hz (matching the fundamental period of resonance for Garvey Reservoir) are likely to be significantly lower than these (perhaps an order of magnitude).

Historically, seiches have occurred more frequently in water bodies overlying sedimentary basins than those overlying rock. Barberopoulu et al (2006) show that seiches in the Puget Sound lowland produced from the Denali earthquake resulted from significant amplification of ground motions by shallow or deep sedimentary basins in the frequency range of 0.04 to 1.0

Hz (1 to 25 seconds). Similarly, the majority of seiches triggered by the M 9.2 1964 Good Friday earthquake, Alaska, occurred over the Mississippi Embayment, probably also as a result of seismic wave amplification by deep sediments (McGarr and Vorhis, 1968).

Based on observations of hundreds of seiches that were caused by the M 9.2 1964 Good Friday earthquake, Alaska, McGarr and Vorhis (1968) present a model for seiche generation caused by horizontal acceleration of water by seismic surface waves. They note that the height of a seiche is directly proportional to the horizontal acceleration provided by the seismic surface waves. The height is also proportional to the square root of the water depth. Thus, for a given surface wave acceleration, a deeper body of water will produce a higher seiche. These characteristics facilitate comparison to other reservoirs that have experienced seiches to provide estimates for heights of potential seiches in Garvey Reservoir.

Several seiches were initiated in reservoirs in California by the M 9.2 1964 Good Friday earthquake, Alaska (McGarr and Vorhis, 1968). The largest of these seiches resulted in amplitudes of oscillation between 0.3 and 0.4 foot (corresponding to water heights of 0.15 and 0.2 above normal). These occurred on Chabot Reservoir, near San Leandro, Salinas Reservoir near Pozo, and Pardee Reservoir near Valley Springs, California. Smaller and shallower reservoirs experienced seiches of much lower magnitude. The largest seiche in North America produced by this earthquake (outside of Alaska) was at Lake Ouachita, near Hot Springs, Arkansas and produced seiche oscillations of 1.48 feet.

Based on comparison to seiches that have been observed and reported during historic earthquakes in reservoirs of similar size, the likelihood that ground accelerations occurring at Garvey Reservoir at frequencies between 0.01 and 0.02 Hz is very small. Given the absence of sedimentary deposits beneath the site that could potentially amplify long period ground motions, the likelihood that seismic seiches would occur at Garvey Reservoir (with vertical oscillations close to the 7 feet of available freeboard) is considered very low.

7.5 SUMMARY OF FINDINGS AND RECOMMENDATIONS

Simplified seismic analyses consisting of pseudo-static slope stability analyses, seismic deformation analyses, seismically induced settlement evaluation, liquefaction potential evaluation, and seismic seiche evaluation were performed using the 84th percentile MCE ground motions developed using NGA relationships and material properties recommended in this study.

The seismic stability was evaluated for a postulated MCE of magnitude 6 ½ on the Upper Elysian Park fault at a distance of 3.4 km from the site. The 84th percentile horizontal peak ground acceleration is 0.90 g. The estimated seismic deformations are between 8 inches and

16 inches for the five cross sections analyzed at maximum embankment heights, and up to 37 inches for a potential sliding surface at the upper portion of the embankment section. Seismic compression was evaluated only qualitatively due to the high density of the embankment material and high level of ground motions compared to the range of material densities and ground motion levels used in development of available procedures. Due to the high density of the embankment fill, the seismic compression is expected to be insignificant.

Even though the embankment fill and underlying silty sand alluvium (if saturated) are considered potentially susceptible to liquefaction and strength reduction during earthquake shaking, a detailed liquefaction evaluation was not performed due to the absence of evidence for saturated ground conditions. AMEC recommends that MWD resume reading of Piezometers P-1, P-2, P-4, P-9, and P-11 screened in the embankment, and Piezometer P-12 screened in the foundation below the southwest fill area on a semi-annual basis to monitor for any changes in ground water conditions. In the event the embankment or underlying foundation fill becomes saturated, a detailed liquefaction assessment should be performed.

Seismic seiche potential was evaluated and, based on the geologic conditions at the reservoir site and the reservoir size, the potential for seismic seiche with vertical oscillations in excess of the 7 feet of available freeboard is considered to be low.

Based on the simplified seismic analyses performed, the seismic performance of the reservoir embankments is considered satisfactory.

8.0 LIMITATIONS

The summary and opinions presented herein are: (1) based upon AMEC's evaluation and interpretation of the data obtained from the reviewed information and (2) based upon an interpolation of soil conditions between and beyond the previous borings.

In the performance of its professional services, AMEC, its employees, and its agents comply with the standards of care and skill ordinarily exercised by members of our profession practicing in the same or similar localities. No warranty, either expressed or implied, is made or intended in connection with the work performed by us, or by the proposal for consulting or other services or by the furnishing of oral or written reports or findings. We are responsible for the conclusions and recommendations contained in this report, which are based on data related only to the specific project and locations discussed herein. In the event that conclusions or recommendations based on these data are made by others, such conclusions and recommendations are not our responsibility unless we have been given an opportunity to review and concur in writing with such conclusions or recommendations.

The scope of work for this study did not include an environmental assessment or investigation for the presence of natural or man-made contaminates in the soil, bedrock, or groundwater. No inference of such conditions should be made from information contained in this report.

9.0 REFERENCES

Abrahamson, N.A., 2000, Effects of Rupture Directivity on Probabilistic Seismic Hazard Analysis, Proceedings of 6th International Conference on Seismic Zonation, Palm Springs.

Abrahamson, N.A., and Silva, W.J., 1997, Empirical Response Spectral Attenuation Relations for Shallow Crustal Earthquakes, Seismological Research Letters, Volume 68, Number 1, pp. 94-127.

Abrahamson, N.A., and Silva, W.J., 2008, Summary of the Abrahamson & Silva NGA Ground-Motion Relations, Earthquake Spectra, Volume 24, Issue 1, pp. 67-97.

Barberopoulou, A., 2006, Long-Period Effects of the Denali Earthquake on Water Bodies in the Puget Lowland: Observation and Modeling, Bulletin of the Seismological Society of America, Volume 96, No. 2, pp. 519-535, April 2006.

Bates, R.L. and Jackson, J.J., 1984, Dictionary of Geological Terms, Anchor Press, Garden City, New York, 571 pp.

Boor, D.M., Joyner, W.B., and Fumal, T.E., 1997, Equations for Estimating Horizontal Response Spectra and Peak Acceleration from Western North American Earthquakes; A Summary of Recent Work, Seismological Research Letters, Volume 68, pp. 128-153.

Boore, David M. and Atkinson, Gail M., 2008, Ground-Motion Prediction Equations for the Average Horizontal Component of PGA, PGV, and 5%-Damped PSA at Spectral Periods between 0.01 s and 10.0 s, Earthquake Spectra, Volume 24, Issue 1, pp. 99-138.

Bray, J.D., and Travasarou, T., 2007, Simplified Procedure for Estimating Earthquake-Induced Deviatoric Slope Displacements, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Volume 133, No. 4, pp. 381-392, April 1, 2007.

Campbell, K.W., and Bozorgnia, Y., 2003, Updated Near-Source Ground-Motion (Attenuation) Relations for the Horizontal and Vertical Components of Peak Ground Acceleration and Acceleration Response Spectra, Bulletin of Seismological Society of America, Volume 93, Number 1, pp. 314-331

Campbell, Kenneth W. and Bozorgnia, Yousef, 2008, NGA Ground Motion Model for the Geometric Mean Horizontal Component of PGA, PGV, PGD and 5% Damped Linear Elastic Response Spectra for Periods Ranging from 0.01 to 10 s, Earthquake Spectra, Volume 24, Issue 1, pp. 139-171.

Chen, W.-F., and Scawthorn, C., 2002, Earthquake Engineering Handbook, CRC Press LLC,

Chiou, Brian S.-J. and Youngs, Robert R., 2008, An NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra, Earthquake Spectra, Volume 24, Issue 1, pp. 173-215.

Dibblee, T.W., 1999, Geologic Map of the El Monte and Baldwin Park Quadrangles, Los Angeles, California: Dibblee Geological Foundation Map # DF-69, scale 1:24,000.

GEO-SLOPE International, Ltd., 2004, User's Guide, SLOPE/W for slope stability analysis, version 6; Calgary, Alberta, Canada.

Griffith, W.A. and Cooke, M.L., 2004, Mechanical Validation of the Three-Dimensional Interaction geometry between the Puente Hills Blind-Thrust System and the Whittier Fault, Los Angeles, California: Bulletin of the Seismological Society of America, Vol. 94, No.28, pp. 493-505, April 2004.

Idriss, I.M. and Boulanger, R.W., 2008, Soil Liquefaction During Earthquakes, Earthquake Engineering Research Institute, Monograph 12

Kramer, S.L. (1996). Geotechnical Earthquake Engineering, Prentice Hall, Inc., Upper Saddle River, New Jersey, 653 pp.

Makdisi, F.I., and Seed, H.B., 1978, Simplified procedure for estimating dam and embankment earthquake-induced deformation: Journal of Geotechnical Engineering, ASCE, v. 104, no. GT7, July.

Makdisi, F.I., and Seed, H.B., 1979, Simplified Procedure for Evaluating Embankment Response, Journal of Geotechnical Engineering, ASCE, v. 105, no. GT12, December.

Newmark, N.M., 1965, Effects of earthquakes on dams and embankments: Geotechnique, v. 15, no. 2, pp. 138-160.

McGarr, A., Vorhis, R.C., 1968, Seismic Seiches, in The Great Alaska Earthquake of 1964, Vol 3, Hydrology by the Committee on the Alaska Earthquake of the Division of Earth Sciences, National Research Council, National Academy of Sciences Publication 1603 pp. 196-236.

Metropolitan Water District of Southern California, 1996. "Piezometer and Underdrain Instrumentation Plan," November 13, 1996.

Metropolitan Water District of Southern California, 1997, Garvey Reservoir Performance Report for the Period from November 1, 1996 through April 30, 1997, May 21, 1997.

Myers, D.J., et. al., 2003, Dislocation modeling of blind thrusts in the eastern Los Angeles basin, California: Journal of Geophysical Research, Vol. 108, No. B9, pp. ESE 14-1 to ESE 14-9.

Sadigh, K., Chang, C.Y., Egan, J.A., Makdisi, F., and Youngs, R.R., 1997, Attenuation Relationships for Shallow Crustal Earthquakes Based on California Strong Motion Data, Seismological Research Letters, 68, 180-189.

Seed, H.B., Wong, R.T, Idriss, I.M., Tokimatsu, K., 1984, Moduli and damping factors for dynamic analyses of cohesionless soils: Earthquake Engineering Research Center (EERC), University of California, Berkeley, Report No. UCB-EERC 84-14.

Seed, H.B., and Idriss, I.M., 1970, Soil moduli and damping factors for dynamic response analyses: Earthquake Engineering Research Center (EERC), University of California, Berkeley, Report No. UCB-EERC 70-10.

Shaw, J.H., Plesch, A., Dolan, J.F., Pratt, T.L., Fiore, P., 2002, Puente Hills Blind-Thrust System, Los Angeles, California, Bulletin of Seismological Society of America, Volume 92, Number 8, pp. 2946-2960, December.

Shaw, J.H., and Suppe, J., 1996, Earthquake Hazards of Active Blind-Thrust Faults under the Central Los Angeles Basin, California, Journal of Geophysical Research, 101/B4, 8623-8642.

Somerville, P.G., et al, 1997, Modification of Empirical Strong Ground Motion Attenuation Relations to Include the Amplitude and Duration Effects of Rupture Directivity, Seismological Research Letters, Volume 68, Number 1, pp. 199.

Stewart, J.P., and Whang, D.H., 2003, Simplified Procedure to Estimate Ground Settlement from Seismic Compression in Compacted Soils, 2003 Pacific Conference on Earthquake Engineering, No. 046, 8 pp.

Tokimatsu, K., and Seed, H.B., 1987, Evaluation of Settlements in Sands due to Earthquake Shaking, Journal of Geotechnical Engineering, ASCE, Volume 113, No. 8, pp. 861-878

URS, 2005, Seismic Reevaluation of Existing Reservoirs, Phase 1B – Ground Motion Study, 6 September.

TABLES

TABLE 1

SUMMARY OF PREVIOUS DRILLING EXPLORATIONS

Garvey Reservoir
Los Angeles County, California

Company	Year	Boring Number	Drilling Method	SPT[1] y/n	Lab y/n	Fine-Grained Alluvium y/n
Bechtel Corporation	1964	A (P-1)	rotary with water (no mud)	n	n	n
	1964	B (P-2,P-3)	rotary with water (no mud)	n	y	y
	1964	C (P-4)	rotary with water (no mud)	n	n	n
	1964	D (P-5)	rotary with water (no mud)	n	n	n
	1964	E (P-6)	rotary with water (no mud)	n	n	n
	1964	F (P-7)	rotary with water (no mud)	n	n	n
	1964	G (P-8)	rotary with water (no mud)	n	n	n
	1964	H (P-9, P-10)	rotary with water (no mud)	n	y	y
	1964	I (P-11, P-12)	rotary with water (no mud)	n	y	n
	1964	J (P-13, P-14)	rotary with water (no mud)	n	y	n
Dames and Moore	1981	1	mud rotary	y	y	n
	1981	3	mud rotary	y	y	n
	1981	4	mud rotary	y	y	y (very thin)
	1981	5	mud rotary	y	y	y
	1981	6	mud rotary	y	y	n
	1981	7	mud rotary	y	y	y
LeRoy Crandall and Associates	1990	A-1, I-16	mud rotary	n	y (M-D's only)	n
	1990	A-2, I-37	mud rotary	n	y (M-D's only)	y (5' @ surface)
	1990	A-3	mud rotary	n	y (M-D's only)	n
	1990	A-4	mud rotary	n	y (M-D's only)	y (3' @ surface)
	1990	A-5	mud rotary	n	y (M-D's only)	n
	1990	A-6	mud rotary	n	y (M-D's only)	n
	1990	A-7, I-36	mud rotary	n	y (M-D's only)	y (4' @ surface)
	1990	A-8	24" diameter bucket auger	n	n	n

TABLE 1

SUMMARY OF PREVIOUS DRILLING EXPLORATIONS

Company	Year	Boring Number	Drilling Method	SPT[1] y/n	Lab y/n	Fine-Grained Alluvium y/n
Wahler Associates	1990	DH-1, W-1	rotary wash (water/polymer)	n	y	n
	1990	DH-2, W-2	rotary wash (water/polymer)	n	y	n
	1990	DH-3, W-3	rotary wash (water/polymer)	n	y	n
	1990	DH-4	rotary wash (water/polymer)	y (only 1)	y	n
	1990	DH-4A	rotary wash (water/polymer)	n	n	n
	1990	DH-5	rotary wash (water/polymer)	n	y	n
	1990	DH-6, W-4	rotary wash (water/polymer)	n	y	y (1' @ surface)
	1990	DH-7, W-5	rotary wash (water/polymer)	y (only 2)	y	y
	1990	DH-7A	rotary wash (water/polymer)	y (only 2)	n	n
	1990	DH-8, W-6	rotary wash (water/polymer)	n	y	y
	1990	DH-9, W-7	rotary wash (water/polymer)	y (only 1)	y	n
	1990	DH-10, W-8	rotary wash (water/polymer)	n	y	n
	1990	DH-11, W-9	rotary wash (water/polymer)	n	y	n
	1990	DH-12	rotary wash (water/polymer)	y (only 1)	y	n
	1990	DH-13	rotary wash (water/polymer)	y (only 1)	n	n
	1990	DH-14	rotary wash (water/polymer)	n	n	n
	1990	DH-15	rotary wash (water/polymer)	n	n	n
	1990	DH-16	rotary wash (water/polymer)	n	n	n
	1990	DH-17	rotary wash (water/polymer)	n	n	n
	1990	DH-18	12-inch diameter auger	n	n	n
	1990	DH-19	12-inch diameter auger	n	n	n
	1990	DH-20	12-inch diameter auger	n	n	n
	1990	DH-21	12-inch diameter auger	n	n	n
	1990	DH-22, I-15	rotary wash (water/polymer)	n	n	n
	1990	DH-23, I-19	rotary wash (water/polymer)	y (only 1)	y	n
	1990	DH-24 / I-1	rotary wash (water/polymer)	n	y	n
	1990	DH-25, I-12	rotary wash (water/polymer)	n	y	n
	1990	DH-26	rotary wash (water/polymer)	y	n	n
	1990	DH-27, W-12	rotary wash (water/polymer)	n	n	y (colluvium)
	1990	DH-28, W-11	rotary wash (water/polymer)	n	n	y (colluvium)

TABLE 1

SUMMARY OF PREVIOUS DRILLING EXPLORATIONS

Company	Year	Boring Number	Drilling Method	SPT[1] y/n	Lab y/n	Fine-Grained Alluvium y/n
Wahler Associates (cont.)	1990	DH-29, W-10	rotary wash (water/polymer)	n	n	y (only 3' @ surface)
	1990	DH-30, W-13	rotary wash (water/polymer)	n	n	n
	1990	DH-31, I-34	rotary wash (water/polymer)	n	n	n
	1990	DH-32, I-8	rotary wash (water/polymer)	n	n	n
	1990	DH-33, I-3	rotary wash (water/polymer)	n	n	y
	1990	DH-34, I-25	rotary wash (water/polymer)	n	n	n
	1990	DH-35, I-22	rotary wash (water/polymer)	n	n	n
	1990	DH-36, I-27	rotary wash (water/polymer)	n	n	n
	1990	DH-37, I-6	rotary wash (water/polymer)	n	n	n
	1990	BA-1	30" diameter bucket auger	n	y	n (clay liner)
	1990	BA-2	30" diameter bucket auger	n	n	n (clay liner)
	1990	BA-3	30" diameter bucket auger	n	n	n
	1990	BA-4	30" diameter bucket auger	n	y	n
	1990	BA-5	30" diameter bucket auger	n	n	n
	1990	BA-6	30" diameter bucket auger	n	n	y (colluvium)
	1990	BA-7	30" diameter bucket auger	n	n	y (colluvium)
	1990	BA-8	30" diameter bucket auger	n	n	n
	1993	DH-38, I-17	rotary wash (water/polymer)	n	n	n
	1993	DH-39, I-9E	rotary wash (water/polymer)	n	n	n
	1993	DH-40, I-9W	rotary wash (water/polymer)	n	n	n
	1993	DH-41, I-4	rotary wash (water/polymer)	n	n	n
	1993	DH-42, I-40	rotary wash (water/polymer)	n	n	n
	1993	DH-43, I-33	rotary wash (water/polymer)	n	n	n
	1993	DH-44, I-42	rotary wash (water/polymer)	n	n	n
	1993	DH-45, I-26	rotary wash (water/polymer)	n	n	y (only 2' @ surface)
	1993	DH-46, I-23	rotary wash (water/polymer)	n	n	n
	1993	DH-47, I-21	rotary wash (water/polymer)	n	n	n
	1993	DH-48. I-13	rotary wash (water/polymer)	n	n	n
	1993	DH-49, I-41	rotary wash (water/polymer)	n	n	y (only 5' @ surface)
	1993	DH-50, I-5	rotary wash (water/polymer)	n	n	n

TABLE 1

SUMMARY OF PREVIOUS DRILLING EXPLORATIONS

Company	Year	Boring Number	Drilling Method	SPT[1] y/n	Lab y/n	Fine-Grained Alluvium y/n
Wahler Associates (cont.)	1993	DH-51, I-11	rotary wash (water/polymer)	n	n	y (only 5' fill @ surface)
	1993	DH-52, I-20	rotary wash (water/polymer)	n	n	y
	1993	DH-53, I-38	rotary wash (water/polymer)	n	n	y (colluvium 5-16')
	1993	DH-54, I-2	rotary wash (water/polymer)	missing	missing	missing
	1993	DH-55, I-7	rotary wash (water/polymer)	n	n	n

Note:
1. SPT = standard penetration test; y = yes; n = no.

amec

TABLE 2

SUMMARY OF PREVIOUS LABORATORY TEST RESULTS

Boring No.	Sample No.	Sample Depth (feet)	Sample type[1]	Unified Soil Classification System: Group Name[2]	Unified Soil Classification System: Group Symbol[2]	Moisture Content (ASTM[4] D2216) (%)[5]	Dry Density (ASTM D2216) (pcf)[6]	Sieve Analysis (ASTM D422): Gravel (%)	Sieve Analysis (ASTM D422): Sand (%)	Sieve Analysis (ASTM D422): Fines (%)	<No. 200 Sieve (ASTM D1140) (%)	Hydrometer (ASTM D422): Silt (%)	Hydrometer (ASTM D422): Clay (%)	Atterberg Limits (ASTM D4318): LL:PL:PI	Atterberg Limits (ASTM D4318): Group Symbie of Fines	Direct Shear (ASTM D3080): C (peak)	Direct Shear (ASTM D3080): F (peak)	Direct Shear (ASTM D3080): C (Ultimate)	Direct Shear (ASTM D3080): F (Ultimate)	Consolidation[7] (ASTM D2435): C_c / C_{ae}	Consolidation[7] (ASTM D2435): C_r / C_{er}	Triaxial Test	Hydraulic Conductivity: k_v (cm/s)[8]
D&M Hole 4 (cont.)		72.5	SPT	SILTY SAND with GRAVEL	SM	–	–	19	61	20	–	–	–	–	–	–	–	–	–	–	–	–	–
		77	D&M	SILTY SAND with GRAVEL	SM	10.6	117.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		92.7	D&M	SILTY SAND (PICO FMN)	SM	10.3	129.0	10	50	40	–	–	–	–	–	–	–	–	–	–	–	–	–
		96	SPT	SILTY SAND (PICO FMN)	SM	–	–	13	64	23	–	–	–	–	–	–	–	–	–	–	–	–	–
		102	D&M	SILTY SAND (PICO FMN)	SM	9.2	117.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		112.5	SPT	SILTY GRAVEL with SAND (PICO FMN)	GM	–	–	51	34	15	–	–	–	–	–	–	–	–	–	–	–	–	–
D&M Hole 5		5	D&M	SILTY SAND with GRAVEL	SM	8.4	121.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		12	D&M	SILTY SAND with GRAVEL	SM	8.2	125.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		16.5	SPT	SILTY SAND	SM	–	–	14	66	20	–	–	–	–	–	–	–	–	–	–	–	–	–
		21	D&M	SILTY SAND with GRAVEL	SM	7.9	126.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		32.5	SPT	SILTY SAND with GRAVEL	SM	–	–	25	55	20	–	–	–	–	–	–	–	–	–	–	–	–	–
		36	D&M	SILTY SAND	SM	11.2	124.0	6	78	16	–	–	–	–	–	–	–	–	–	–	–	Undrained Test after Cyclic Loading	–
		44.6	D&M	SANDY CLAY / SANDY SILT (PICO FMN?)	ML/CL	17.5	114.0	0	27	73	–	–	–	–	–	–	–	–	–	–	–	Undrained Test after Cyclic Loading	–
		48	SPT	SANDY SILT (PICO FMN)	ML	–	–	–	–	–	63	–	–	–	–	–	–	–	–	–	–	–	–
		56.5	SPT	SILTY SAND with GRAVEL (PICO FMN)	SM	–	–	23	44	33	–	–	–	–	–	–	–	–	–	–	–	–	–
		60.3	D&M	SILTY SAND (PICO FMN)	SM	11.2	116.0	1	82	17	–	–	–	–	–	–	–	–	–	–	–	–	–
D&M Hole 6		4	D&M	SILTY SAND with GRAVEL	SM	12.1	123.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		8	SPT	SILTY SAND	SM	–	–	8	62	30	–	–	–	–	–	–	–	–	–	–	–	–	–
		16	SPT	SILTY SAND	SM	–	–	14	56	30	–	–	–	–	–	–	–	–	–	–	–	–	–
		20	D&M	SILTY SAND with GRAVEL	SM	11.6	120.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Consolidated-Drained	–
		24	SPT	SILTY SAND with GRAVEL	SM	–	–	15	66	19	–	–	–	–	–	–	–	–	–	–	–	–	–
		32	SPT	SILTY SAND with GRAVEL (SAUGUS FMN)	SM	–	–	15	65	20	–	–	–	–	–	–	–	–	–	–	–	–	–
		36	D&M	SILTY SAND with GRAVEL (SAUGUS FMN)	SM	10.0	125.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Consolidated-Drained	–
		44	D&M	SILTY SAND (SAUGUS FMN)	SM	12.5	114.0	–	–	–	–	–	–	–	–	–	–	see report	see report	–	–	–	–
D&M Hole 7		4.2	SPT	SILTY SAND with GRAVEL	SM	–	–	22	60	18	–	–	–	–	–	–	–	–	–	–	–	–	–
		7	SPT	SANDY SILT (PICO FMN?)	ML	–	–	–	–	–	66	–	–	–	–	–	–	–	–	–	–	–	–
		9	BULK	CLAY (PICO FMN?)	CL	–	–	–	–	–	–	–	–	39:18:21	CL	–	–	–	–	–	–	–	–
		12.2	SPT	SILTY SAND (PICO FMN)	SM	–	–	4	79	17	–	–	–	–	–	–	–	–	–	–	–	–	–
Wahler W-1 (DH-1)	S-1	4 - 6.5	Pitcher	SILTY SAND with GRAVEL (LINER)	SM	10.8	122.6	23	60	17	–	–	–	24:18:6	CL-ML	–	–	–	–	–	–	–	3.7E-05
	S-3	8 - 10.5	Pitcher	SILTY SAND (LINER)	SM	10.2	127.4	4	55	41	–	–	–	21:17:4	CL	–	–	–	–	–	–	–	8.8E-07
	S-4	10.5 - 12.8	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	15.3	112.1	25	67	8	–	–	–	–	–	–	–	–	–	–	–	–	1.2E-04
	S-6	30 - 32.5	Pitcher	POORLY GRADED SAND with GRAVEL (PICO FMN)	SP	11.7	–	38	57	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-8	50 - 50.8	Pitcher	POORLY GRADED SAND with GRAVEL (PICO FMN)	SP	9.6	120.1	30	65	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-11	65.5 - 66.7	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	8.9	122.1	38	54	8	–	–	–	–	–	–	–	–	–	–	–	–	8.5E-05
	S-14	68.5 - 69.5	Pitcher	POORLY GRADED GRAVEL with SAND (PICO FMN)	GP	6.7	129.7	60	35	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-17	80 - 81.3	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	22.4	129.7	0	91	9	–	–	–	–	–	–	–	–	–	–	–	–	4.2E-04
	S-18	90.0 - 90.7	Pitcher	POORLY GRADED SAND and GRAVEL (PICO FMN)	GP-SP	8.0	123.1	45	50	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-23	120 - 121.1	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	11.3	123.5	5	85	10	–	–	–	–	–	–	–	–	–	–	–	–	–
Wahler W-2 (DH-2)	S-2	8.5 - 11.0	Pitcher	POORLY GRADED SAND with SILT (LINER)	SP-SM	17.0	106.9	11	81	8	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-7	50 - 51.8	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	10.4	125.2	33	60	7	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-9	70 - 71.1	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	12.4	114.0	18	75	7	–	–	–	–	–	–	–	–	–	–	–	–	2.2E-04
	S-11	81.6 - 83.6	Pitcher	WELL GRADED SAND with SILT and GRAVEL (PICO FMN)	SW-SM	10.5	118.9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-12	86.5 - 88	Pitcher	WELL GRADED SAND with SILT and GRAVEL (PICO FMN)	SW-SM	10.7	114.3	30	63	7	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-13	92 - 93.5	Pitcher	SILTY SAND (PICO FMN)	SM	13.5	120.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-14	97 - 98.5	Pitcher	POORLY GRADED SAND and GRAVEL (PICO FMN)	GP-SP	9.3	–	43	52	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-15	102 - 103	Pitcher	POORLY GRADED SAND and GRAVEL (PICO FMN)	GP-SP	11.4	113.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-16	105 - 107.5	Pitcher	POORLY GRADED SAND with GRAVEL (PICO FMN)	SP	13.2	–	17	78	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-17	107.5 - 110	Pitcher	POORLY GRADED SAND and GRAVEL (PICO FMN)	GP-SP	10.2	–	43	52	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-18	110 - 112.5	Pitcher	POORLY GRADED SAND and GRAVEL (PICO FMN)	GP-SP	13.2	113.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Wahler W-3 (DH-3)	S-1	4 - 6.5	Pitcher	SILTY SAND (LINER)	SM	12.1	118.3	–	–	–	–	–	–	25:21:4	CL-ML	–	–	–	–	–	–	–	8.7E-06
	S-3	10.5 - 12.0	Pitcher	SILTY SAND with GRAVEL (PICO FMN)	SM	11.0	121.6	22	64	14	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-6	30 - 31.9	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	15.8	104.5	2	90	8	–	–	–	–	–	–	–	–	–	–	–	–	1.4E-04
	S-8	50 - 51.3	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	12.0	109.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-11	70 - 71.6	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	13.6	109.9	4	90	6	–	–	–	–	–	–	–	–	–	–	–	–	7.7E-04
	S-16	95 - 96.5	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	8.6	116.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

TABLE 2

SUMMARY OF PREVIOUS LABORATORY TEST RESULTS

Garvey Reservoir
Los Angeles County, California

Boring No.	Sample No.	Sample Depth (feet)	Sample type[1]	Unified Soil Classification System: Group Name[2]	Unified Soil Classification System: Group Symbol[3]	Moisture Content (ASTM[4] D2216) (%)[5]	Dry Density (ASTM D2216) (pcf)[6]	Sieve Analysis (ASTM D422): Gravel (%)	Sieve Analysis (ASTM D422): Sand (%)	Sieve Analysis (ASTM D422): Fines (%)	<No. 200 Sieve (ASTM D1140) (%)	Hydrometer (ASTM D422): Silt (%)	Hydrometer (ASTM D422): Clay (%)	Atterberg Limits (ASTM D4318): LL:PL:PI	Atterberg Limits (ASTM D4318): Group Symble of Fines	Direct Shear (ASTM D3080): C (peak)	Direct Shear (ASTM D3080): F (peak)	Direct Shear (ASTM D3080): C (Ultimate)	Direct Shear (ASTM D3080): F (Ultimate)	Consolidation[7] (ASTM D2435): C_c / C_{rc}	Consolidation[7] (ASTM D2435): C_r / C_{rr}	Triaxial Test	Hydraulic Conductivity: k_v (cm/s)[8]
Bechtel B	GR-3	15.8 - 17.1	Pitcher	CLAYEY/SILTY SAND with GRAVEL	SM-SC	17.4	114.9	19	62	19	--[9]	14	5	23:16:7	CL-ML	--	--	--	--	--	--	Anisotropically Consolidated-Undrained	2.0E-08
	GR-4	30.1 - 31.1	Pitcher	CLAYEY/SILTY SAND with GRAVEL	SM-SC	9.3	115.3	27	57	16	--	12	4	23:18:5	CL-ML	--	--	--	--	--	--	Anisotropically Consolidated-Undrained	--
	GR-5*	45.6 - 46.1	Pitcher	CLAYEY/SILTY SAND with GRAVEL	SM-SC	10.9	124.8	15	60	25	--	--	--	--	--	--	--	--	--	--	--	--	--
	GR-6	65.8 - 66.7	Pitcher	CLAYEY/SILTY SAND with GRAVEL	SM-SC	12.9	118.9	16	59	25	--	19	6	24:17:7	CL-ML	--	--	--	--	--	--	Anisotropically Consolidated-Undrained	--
	GR 7-1a	78.3 - 80.3	Shelby	SANDY LEAN CLAY	CL	21.7	108.2	0	33	67	--	50	17	41:19:22	CL	--	--	--	--	0.19/0.12	0.08/0.05	Isotropically Consolidated-Undrained	1.8E-09
	GR 7-1b	78.3 - 80.3	Shelby	SANDY LEAN CLAY	CL	21.7	108.2	0	33	67	--	50	17	41:19:22	CL	--	--	--	--	0.19/0.12	0.08/0.05	Isotropically Consolidated-Undrained	--
	GR 7-2	78.3 - 80.3	Shelby	SANDY LEAN CLAY	CL	21.7	108.2	0	33	67	--	50	17	41:19:22	CL	--	--	--	--	0.19/0.12	0.08/0.05	Isotropically Consolidated-Undrained	--
	GR-50*	100	Pitcher	SANDY SILT (PICO FMN)	ML	31.2	--	--	18	82	--	--	--	--	--	--	--	--	--	--	--	--	--
Bechtel H	GR-14*	10.4 - 11.0	Pitcher	SILTY SAND	SM	9.7	119.5	9	48	43	--	--	--	NP	ML	--	--	--	--	--	--	--	--
	GR-15*	11.0 - 12.0	Pitcher	SILTY SAND with GRAVEL	SM	12.5	115.4	15	59	26	--	--	--	--	--	--	--	--	--	--	--	--	--
	GR-16*	15.0 - 17.0	Pitcher	SILTY SAND	SM	12	115.6	9	71	20	--	--	--	--	--	--	--	--	--	--	--	--	--
	GR-52*	30 - 30.5	Shelby	LEAN CLAY with SAND	CL	17.3	110.7	5	18	77	--	--	--	29:20:9	CL	--	--	--	--	--	--	--	--
	GR-53*	74 - 79	Pitcher	SILTY SAND (PICO FMN)	SM	13.2		2	73	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Bechtel I	GR-8*	11.8 - 12.3	Pitcher	CLAYEY/SILTY SAND	SM-SC	14.6	115.7	9	59	32	--	--	--	38:24:14	CL-ML	--	--	--	--	--	--	--	--
	GR-9*	17.6 - 18.1	Pitcher	CLAYEY SAND	SC	11.4	121.2	5	61	34	--	--	--	27:17:10	CL	--	--	--	--	--	--	--	--
	GR-10	18.6 - 19.9	Pitcher	CLAYEY/SILTY SAND	SM-SC	11.6	120.3	10	63	27	--	17	10	23:17:6	CL-ML	--	--	--	--	--	--	Anisotropically Consolidated-Undrained	--
	GR-11*	21.0 - 21.3	Pitcher	CLAYEY/SILTY SAND	SM-SC	7.8	125.7	7	57	36	--	--	--	--	--	--	--	--	--	--	--	--	--
	GR-12	21.3 - 23.4	Pitcher	CLAYEY SAND	SC	10.3	--	7	64	29	--	21	8	25:15:10	CL	--	--	--	--	--	--	--	--
	GR-13*	27.6 - 28.8	Pitcher	CLAYEY SAND	SC	13.3	119.2	0	56	44	--	--	--	--	--	--	--	--	--	--	--	--	--
Bechtel J	GR-1	5 - 6.5	Pitcher	CLAYEY/SILTY SAND	SM-SC	--	--	3	53	44	--	34	10	21:17:4	CL-ML	--	--	--	--	--	--	--	--
	GR-2	15 - 16.5	Pitcher	SILTY SAND	SM	--	--	13	70	17	--	12	5	NP	ML	--	--	--	--	--	--	--	--
D&M Hole 1		8.5	SPT	SILTY SAND with GRAVEL	SM	--	--	20	62	18	--	--	--	--	--	--	--	--	--	--	--	--	--
		24.5	SPT	SILTY SAND with GRAVEL	SM	--	--	19	64	17	--	--	--	--	--	--	--	--	--	--	--	--	--
		28	D&M	SILTY SAND with GRAVEL	SM	9.0	127.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		37	D&M	SILTY SAND with GRAVEL	SM	11.0	124.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		40.5	SPT	SILTY SAND with GRAVEL	SM	--	--	17	59	24	--	--	--	--	--	--	--	--	--	--	--	--	--
		56.5	SPT	SILTY SAND with GRAVEL	SM	--	--	17	65	18	--	--	--	--	--	--	--	--	--	--	--	--	--
		68.7	D&M	SILTY SAND with GRAVEL	SM	11.3	125.0	19	63	18	--	--	--	--	--	--	--	--	--	--	--	Undrained Test after Cyclic Loading	--
		72.5	SPT	SILTY SAND with GRAVEL	SM	--	--	17	63	20	--	--	--	--	--	--	--	--	--	--	--	--	--
		77	D&M	SILTY SAND with GRAVEL	SM	9.1	126.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		85	D&M	SILTY SAND with GRAVEL	SM	9.4	124.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		88.5	SPT	SILTY SAND	SM	--	--	10	62	28	--	--	--	--	--	--	--	--	--	--	--	--	--
		92.3	D&M	SILTY SAND with GRAVEL	SM	10.5	127.0	30	55	15	--	--	--	--	--	--	--	--	--	--	--	Undrained Test after Cyclic Loading	--
		104.3 TOP	SPT	SILTY SAND (PICO FMN)	SM	--	--	0	55	23	--	--	--	--	--	--	--	--	--	--	--	--	--
		104.3 BOT	SPT	SANDY SILT (PICO FMN)	ML	--	--	--	--	--	75	--	--	--	--	--	--	--	--	--	--	--	--
		109	D&M	SANDY SILTSTONE (PICO FMN)	ML	24.7	98.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D&M Hole 3		12.3	D&M	SILTY SAND with GRAVEL	SM	11.2	123.0	25	60	15	--	--	--	--	--	--	--	--	--	--	--	Undrained Test after Cyclic Loading	--
		16.5	SPT	SILTY SAND with GRAVEL	SM	--	--	30	54	16	--	--	--	--	--	--	--	--	--	--	--	--	--
		33	SPT	SILTY SAND / SANDY SILT (SAUGUS FMN)	SM-ML	--	--	--	--	--	50	--	--	--	--	--	--	--	--	--	--	--	--
		37	D&M	SANDY SILT (PICO FMN)	ML	25.4	98.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		42	SPT	SANDY SILT (PICO FMN)	ML	--	--	--	--	--	63	--	--	--	--	--	--	--	--	--	--	--	--
		44.3	D&M	SANDY SILT (BOTTOM PICO FMN)	ML	--	--	0	35	65	--	--	--	--	--	--	--	--	--	--	--	Undrained Test after Cyclic Loading	--
		44.3	D&M	SILTY SAND (TOP PICO FMN)	SM	--	--	0	60	40	--	--	--	--	--	--	--	--	--	--	--	Undrained Test after Cyclic Loading	--
D&M Hole 4		8.5	SPT	SILTY SAND	SM	--	--	12	63	25	--	--	--	--	--	--	--	--	--	--	--	--	--
		12.7	D&M	SILTY SAND with GRAVEL	SM	9.5	--	22	62	16	--	--	--	--	--	--	--	--	--	--	--	--	--
		20.7	D&M	SILTY SAND with GRAVEL	SM	10.6	125.0	15	68	17	--	--	--	--	--	--	--	--	--	--	--	--	--
		24.5	SPT	SILTY SAND	SM	--	--	6	68	26	--	--	--	--	--	--	--	--	--	--	--	--	--
		40.5	SPT	SILTY SAND with GRAVEL	SM	--	--	17	56	27	--	--	--	--	--	--	--	--	--	--	--	--	--
		52.3	D&M	SILTY SAND with GRAVEL	SM	11.1	125.0	20	53	27	--	--	--	--	--	--	--	--	--	--	--	Undrained Test after Cyclic Loading	--
		56.3	SPT	SILTY SAND	SM	--	--	12	68	20	--	--	--	--	--	--	--	--	--	--	--	--	--
		62	D&M	SILTY SAND with GRAVEL	SM	10.8	122.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 2

SUMMARY OF PREVIOUS LABORATORY TEST RESULTS

Boring No.	Sample No.	Sample Depth (feet)	Sample Type[1]	Unified Soil Classification System: Group Name[2]	Unified Soil Classification System: Group Symbol[3]	Moisture Content (ASTM[4] D2216) (%)[5]	Dry Density (ASTM D2216) (pcf)[6]	Sieve Analysis (ASTM D422): Gravel (%)	Sieve Analysis (ASTM D422): Sand (%)	Sieve Analysis (ASTM D422): Fines (%)	<No. 200 Sieve (ASTM D1140) (%)	Hydrometer (ASTM D422): Silt (%)	Hydrometer (ASTM D422): Clay (%)	Atterberg Limits (ASTM D4318): LL:PL:PI	Atterberg Limits (ASTM D4318): Group Symble of Fines	Direct Shear (ASTM D3080): C (peak)	Direct Shear (ASTM D3080): F (peak)	Direct Shear (ASTM D3080): C (Ultimate)	Direct Shear (ASTM D3080): F (Ultimate)	Consolidation[7] (ASTM D2435): C_c / C_{rc}	Consolidation[7] (ASTM D2435): C_r / C_{rr}	Triaxial Test	Hydraulic Conductivity: k_v (cm/s)[8]
Wahler (DH-4)	S-1	4 - 6.5	Pitcher	SILTY SAND with GRAVEL (LINER)	SM	11.6	122.8	17	65	18	–	–	–	24:19:5	CL-ML	–	–	–	–	–	–	–	2.7E-06
	S-2	20 - 22.5	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	16.9	111.3	10	82	8	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-5	44 - 46.5	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	15.4	110.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-6	50 - 52.5	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	14.5	112.5	16	77	7	–	–	–	–	–	–	–	–	–	–	–	–	2.0E-04
	S-8	62 - 63	Pitcher	POORLY GRADED SAND and GRAVEL with SILT (PICO FMN)	SP-SM	10.3	114.0	44	49	7	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-11	65.9 - 67.1	Pitcher	POORLY GRADED SAND and GRAVEL (PICO FMN)	GP-SP	10.9	118.4	40	55	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-16	80 - 82.0	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	11.5	120.9	32	58	10	–	–	–	–	–	–	–	–	–	–	–	–	2.0E-05
	S-18	90 - 91.6	Pitcher	SILTY SAND (PICO FMN)	SM	21.2	103.6	2	82	16	–	–	–	–	–	–	–	–	–	–	–	–	–
Wahler (DH-5)	S-1	6 - 8.5	Pitcher	SILTY SAND with GRAVEL (LINER)	SM	11.4	119.8	25	63	12	–	–	–	22:20:2	ML	–	–	–	–	–	–	–	4.6E-05
	S-2	16.5 - 19.0	Pitcher	POORLY GRADED SAND (PICO FMN)	SP	11.5	115.9	13	82	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-4	34 - 35.5	Pitcher	POORLY GRADED SAND with GRAVEL (PICO FMN)	SP	10.3	123.2	34	61	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-7	43.5 - 46.0	Pitcher	POORLY GRADED SAND (PICO FMN)	SP	15.4	107.7	6	89	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-9	47.5 - 50.0	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	21.7	101.9	1	89	10	–	–	–	–	–	–	–	–	–	–	–	–	3.5E-04
	S-11	60 - 62.5	Pitcher	SANDY SILT (PICO FMN)	ML	22.1	90.8	0	35	65	–	–	–	35:39:6	ML	–	–	–	–	–	–	–	–
	S-14	75 - 77.5	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	14.5	110.9	20	74	6	–	–	–	–	–	–	–	–	–	–	–	–	2.6E-04
	S-17	90 - 92.5	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	11.9	115.7	26	67	7	–	–	–	–	–	–	–	–	–	–	–	–	–
Wahler W-4 (DH-6)	S-2	20.9 - 22.5	Pitcher	SANDY SILT (PICO FMN)	ML	20.2	96.3	1	35	64	–	–	–	34:39:5	ML	–	–	–	–	–	–	–	–
	S-4	40 - 41.4	Pitcher	WELL GRADED SAND with SILT (PICO FMN)	SW-SM	18.0	98.5	2	90	8	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-7	70 - 71.7	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	13.2	111.4	28	64	8	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-10	100 - 102.5	Pitcher	WELL GRADED SAND and GRAVEL with SILT (PICO FMN)	SW-SM	10.7	123.8	42	50	8	–	–	–	–	–	–	–	–	–	–	–	–	9.4E-06
	S-12	120 - 121.7	Pitcher	WELL GRADED SAND with SILT (PICO FMN)	SW-SM	17.5	106.0	1	92	7	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-14	139 - 141.0	Pitcher	WELL GRADED GRAVEL and SAND (PICO FMN)	GW-SW	6.8	125.0	52	43	5	–	–	–	–	–	–	–	–	–	–	–	–	–
Wahler W-5 (DH-7)	S-7	60 - 62.2	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	15.1	106.3	15	77	8	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-9	72 - 74.5	Pitcher	SANDY SILT (PICO FMN)	ML	26.6	92.4	1	30	69	–	–	–	38:29:9	ML	–	–	–	–	–	–	–	–
	S-10	80 - 80.9	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	10.4	122.6	20	74	6	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-13	110 - 112.5	Pitcher	POORLY GRADED SAND and GRAVEL with SILT (PICO FMN)	SP-SM	10.4	122.8	45	45	10	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-14	120 - 122.5	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	9.2	121.4	40	51	9	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-17	140 - 140.9	Pitcher	POORLY GRADED SAND and GRAVEL with SILT (PICO FMN)	SP-SM	7.6	127.0	44	49	7	–	–	–	–	–	–	–	–	–	–	–	–	–
Wahler W-6 (DH-8)	S-2	20 - 22.5	Pitcher	SANDY ELASTIC SILT (PICO FMN)	MH	24.8	96.1	1	22	77	–	–	–	61:32:29	MH	–	–	–	–	–	–	–	–
	S-5	50 - 51.1	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	12.7	119.0	–	–	–	6	–	–	–	–	–	–	–	–	–	–	–	–
	S-7	75 - 77.0	Pitcher	SANDY SILT (PICO FMN)	ML	22.7	104.1	–	–	–	67	–	–	–	–	–	–	–	–	–	–	–	–
	S-10	100 - 102.5	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	9.5	128.4	34	57	9	–	–	–	–	–	–	–	–	–	–	–	–	–
Wahler W-7 (DH-9)	S-3	21 - 22.9	Pitcher	POOLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	10.9	122.6	35	59	6	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-6	37.2 - 39.7	Pitcher	POORLY GRADED SAND with GRAVEL (PICO FMN)	SP	16.2	109.1	–	–	–	5	–	–	–	–	–	–	–	–	–	–	–	–
	S-10	65 - 67.0	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	19.0	108.2	–	–	–	9	–	–	–	–	–	–	–	–	–	–	–	–
	S-15	100 - 101.0	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	11.1	118.6	–	–	–	6	–	–	–	–	–	–	–	–	–	–	–	–
	S-18	119 - 120.9	Pitcher	POORLY GRADED SAND with GRAVEL (PICO FMN)	SP	9.1	124.7	–	–	–	5	–	–	–	–	–	–	–	–	–	–	–	–
Wahler W-8 (DH-10)	S-1	7 - 9.1	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	12.2	103.1	6	85	9	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-6	42 - 44.0	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	10.6	117.3	–	–	–	6	–	–	–	–	–	–	–	–	–	–	–	–
	S-11	77 - 79.5	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	11.2	124.1	38	52	10	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-15	110 - 111.6	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	12.7	129.5	11	79	10	–	–	–	–	–	–	–	–	–	–	–	–	–
Wahler W-9 (DH-11)	S-1	7 - 9.7	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	9.1	124.9	37	57	6	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-4	28 - 30.5	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	11.7	123.1	25	68	7	–	–	–	–	–	–	–	–	–	–	–	–	–
	S-5	35 - 37.5	Pitcher	SANDY SILT (PICO FMN)	ML	21.1	105.7	–	–	–	61	–	–	33:28:5	ML	–	–	–	–	–	–	–	–
	S-8	62 - 64.5	Pitcher	SANDY SILT (PICO FMN)	ML	19.4	110.0	0	20	80	–	–	–	36:29:7	ML	–	–	–	–	–	–	–	–
	S-11	94 - 96.5	Pitcher	SANDY SILT (PICO FMN)	ML	21.4	105.3	–	–	–	80	–	–	–	–	–	–	–	–	–	–	–	–
Wahler (DH-12)	S-1	7 - 9.6	Pitcher	SILTY SAND with GRAVEL (LINER)	SM	11.4	119.8	–	–	–	–	–	–	20:17:3	ML	–	–	–	–	–	–	–	3.0E-07
Wahler I-1 (DH-24)	S-2	50 - 52.5	Pitcher	CLAYEY/SILTY SAND with GRAVEL	SM-SC	–	–	19	66	15	–	–	–	–	–	–	–	–	–	–	–	Isotropically Consolidated-Undrained	–
	S-3	60 - 62.3	Pitcher	CLAYEY/SILTY SAND with GRAVEL	SM-SC	–	–	17	68	15	–	–	–	–	–	–	–	–	–	–	–	Isotropically Consolidated-Undrained	–

TABLE 2

SUMMARY OF PREVIOUS LABORATORY TEST RESULTS

Boring No.	Sample No.	Sample Depth (feet)	Sample type[1]	Unified Soil Classification System: Group Name[2]	Unified Soil Classification System: Group Symbol[3]	Moisture Content (ASTM[4] D2216) (%)[5]	Dry Density (ASTM D2216) (pcf)[6]	Sieve Analysis (ASTM D422): Gravel (%)	Sieve Analysis (ASTM D422): Sand (%)	Sieve Analysis (ASTM D422): Fines (%)	<No. 200 Sieve (ASTM D1140) (%)	Hydrometer (ASTM D422): Silt (%)	Hydrometer (ASTM D422): Clay (%)	Atterberg Limits (ASTM D4318): LL:PL:PI	Atterberg Limits (ASTM D4318): Group Symble of Fines	Direct Shear (ASTM D3080): C (peak)	Direct Shear (ASTM D3080): F (peak)	Direct Shear (ASTM D3080): C (Ultimate)	Direct Shear (ASTM D3080): F (Ultimate)	Consolidation[7] (ASTM D2435): C_c / C_{mc}	Consolidation[7] (ASTM D2435): C_r / C_{mr}	Triaxial Test	Hydraulic Conductivity: k_v (cm/s)[8]
Wahler I-12 (DH-25)	S-1	25 - 28	Pitcher	CLAYEY/SILTY SAND with GRAVEL	SM-SC	--	--	20	62	18	--	--	--	--	--	--	--	--	--	--	--	Isotropically Consolidated-Undrained	--
	S-3	30.5 - 33	Pitcher	CLAYEY/SILTY SAND with GRAVEL	SM-SC	--	--	18	65	17	--	--	--	--	--	--	--	--	--	--	--	Isotropically Consolidated-Undrained	--
	S-8	39 - 40.5	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	19.0	110.0	9	81	10	--	--	--	--	--	--	--	see report	see report	--	--	--	--
	S-9	40.5 - 42	Pitcher	POORLY GRADED SAND with SILT (PICO FMN)	SP-SM	--	--	4	87	9	--	--	--	--	--	--	--	--	--	--	--	--	--
	S-12	45 - 46.5	Pitcher	POORLY GRADED SAND with SILT and GRAVEL (PICO FMN)	SP-SM	25.0	105.0	--	--	--	--	--	--	--	--	--	--	see report	see report	--	--	--	--
	S-16A	87 - 89.5	Pitcher	SANDY SILT (PICO FMN)	ML	27.0	16.0	--	--	--	--	--	--	--	--	--	--	see report	see report	--	--	--	--
	S-16B	87 - 89.5	Pitcher	SANDY SILT (PICO FMN)	ML	28.0	107.0	--	--	--	--	--	--	--	--	--	--	see report	see report	--	--	--	--
Wahler I-19 (DH-23)	S-1	20 - 22	Pitcher	CLAYEY SAND with GRAVEL	SC	--	--	21	67	12	--	--	--	--	--	--	--	--	--	--	--	Isotropically Consolidated-Undrained	--
	S-2	40 - 42.4	Pitcher	CLAYEY SAND with GRAVEL	SC	--	--	18	64	18	--	--	--	25:17:8	CL	--	--	--	--	--	--	Isotropically Consolidated-Undrained	--
	S-3	60 - 61.9	Pitcher	CLAYEY SAND with GRAVEL	SC	--	--	25	63	12	--	--	--	--	--	--	--	--	--	--	--	Isotropically Consolidated-Undrained	--
	S-4	80 - 81.9	Pitcher	CLAYEY/SILTY SAND	SM-SC	--	--	13	80	27	--	--	--	23:17:6	CL-ML	--	--	--	--	--	--	Isotropically Consolidated-Undrained	--

Notes:
1. Pitcher = pitcher barrel sampler; Shelby = shelby tube thin-walled sampler, 3-inch outside diameter;
   SPT = Standard Penetration Test sampler - 1.4-inch inside diameter, 2-inch outside diameter; D&M = Dames and Moore sampler;
2. FMN = formation.
3. Group symbol based upon the Unified Soil Classification System.
4. ASTM = ASTM International Standard.
5. % = percent.
6. pcf = pounds per cubic foot.
7. C_c = compression index; C_{mc} = modified compression index; C_r = recompression index; C_{mr} = modified recompression index.
8. kv (cm/s) = vertical hydraulic conductivity.
9. "--" = not applicable.

* = Tests performed by MWD Soil Laboratory.

TABLE 3

SUMMARY OF CORRECTED SPT[1] BLOWCOUNTS FROM PREVIOUS INVESTIGATIONS

Garvey Reservoir
Los Angeles County, California

Dames and Moore (1981)[2]			
Boring	**Depth (feet)**	**Field Blowcount "N"**	**Corrected $N_{1(60)}$ Blowcount[3]**
B-1	9.0	74	77
B-1	17.0	105	102
B-1	25.0	105	93
B-1	33.0	106	92
B-1	40.0	92	75
B-1	48.0	62	48
B-1	57.0	118	88
B-1	65.0	158	114
B-1	72.5	127	89
B-1	81.0	98	67
B-1	89.0	108	72
B-1	97.0	82	53
B-1	105.0	110	70
B-3	9.0	80	83
B-3	17.0	91	89
B-3	25.0	86	76
B-3	33.0	66	57
B-3	41.0	104	85
B-4	9.0	76	78
B-4	17.0	70	68
B-4	25.0	89	78
B-4	33.0	116	100
B-4	41.0	74	60
B-4	48.0	85	66
B-4	57.0	100	75
B-4	65.0	146	105
B-4	73.0	105	73
B-4	80.0	110	75
B-5	9.0	40	42
B-5	17.0	78	76
B-5	25.0	82	72
B-5	33.0	30	23
B-5	41.0	38	28
B-5	48.0	155	121
B-6	8.0	59	59
B-6	17.0	48	47
B-6	24.0	54	48
B-6	33.0	76	65
B-6	40.0	52	42
B-6	48.0	100	78

TABLE 3

SUMMARY OF CORRECTED SPT[1] BLOWCOUNTS FROM PREVIOUS INVESTIGATIONS

Wahler (1990) / Dames and Moore (1991)[2]			
Boring	**Depth (feet)**	**Field Blowcount "N"**	**Corrected $N_{1(60)}$ Blowcount[3]**
DH-26	21.5	77	71
DH-26	23.0	63	57
DH-26	24.5	66	58
DH-26	26.0	52	45
DH-26	27.5	63	54
DH-26	29.0	58	52
DH-26	30.5	50	44
DH-26	32.0	32	25
DH-26	33.5	36	28
DH-26	35.0	40	32
DH-26	36.5	34	26
DH-26	38.0	97	81

Notes:

1. SPT = standard penetration test.
2. Dames and Moore, 1981, Phase II Seismic Stability Investigation, Garvey Reservoir, Monterey Park, California, December 28. Dames and Moore, 1991, Seismic Stability Investigation, Garvey Reservoir for the Metropolitan Water District, January 30. Wahler, 1990: Results reported in RUST Environment and Infrastructure, 1997, Supplemental Geotechnical Investigation and Piezometer Installation for Garvey Reservoir, Monterey Park, California, July.
3. Refer to Appendix D for spreadsheet calculations of corrected blowcounts.

TABLE 4

SUMMARY OF STRENGTH PARAMETERS

Garvey Reservoir
Los Angeles County, California

Soils			AMEC Geomatrix, Inc. (Recommended)						Bechtel (1965)[5]			Dames and Moore (1991)[6]					
			Total Stress Parameters			Effective Stress Parameters			Total/Effective Stress Parameters			Total Stress Parameters			Effective Stress Analysis		
Material	Soil Description	Group Symbol[1]	$\gamma_t / \gamma_{t\text{-}sat}$ (pcf)[2]	ϕ (degrees)[3]	c[4] (psf)	$\gamma_t / \gamma_{t\text{-}sat}$ (pcf)	ϕ (degrees)	c(psf)	$\gamma_t / \gamma_{t\text{-}sat}$ (pcf)	ϕ (degrees)	c (psf)	$\gamma_t / \gamma_{t\text{-}sat}$ (pcf)	ϕ (degrees)	c (psf)	$\gamma_t / \gamma_{t\text{-}sat}$ (pcf)	ϕ (degrees)	c (psf)
1	Embankment Fill	SM-SC	135/140	21	1,200	120/135	24	1,100		24	540	120/135	21	1,200	120/135	24	1,100
2	Alluvium	SM-ML-CL	120/135	21	1,200	120/135	24	1,100		24	540	120/135	21	1,200	120/135	24	1,100
3	Foundation (Bedrock)	NA	115/130	24	700	115/130	NA	NA		NA	NA	115/130	27	700	115/130	NA	NA

Notes:
1. Group symbol based upon the Unified Soil Classification System; NA = not applicable.
2. $\gamma_t / \gamma_{t\text{-}sat}$ = total unit weight/saturated unit weight; pcf = pounds per cubic foot.
3. ϕ = angle of friction.
4. c = cohesion.
5. Bechtel Corporation, 1965, Review of Metropolitan Water District Dams, Garvey Reservoir, January.
6. Dames and Moore, 1991, Seismic Stability Investigation, Garvey Reservoir for the Metropolitan Water District, January 30.

TABLE 5

SUMMARY OF SEISMIC DEFORMATION ANALYSES

Garvey Reservoir
Los Angeles County, California

Section	Depth of Sliding	T_o[1] (sec)	k_y[2] (g)	PHA_{crest}[3] (g)	k_{max}/PHA_{crest}[5]	k_{max}[4] (g)	k_y/k_{max}	$U/k_{max}*g*T_o$[6] (sec)	U (cm)[7]	U (in)[8]
A-A'	1/3H	0.66	0.55	2.12	0.90	1.91	0.29	0.077	95	**37**
A-A'	H	0.66	0.30	2.12	0.45	0.95	0.31	0.067	41	**16**
B-B'	H	0.35	0.38	2.47	0.45	1.11	0.34	0.056	21	**8**
C-C'	H	0.43	0.34	2.39	0.45	1.08	0.32	0.065	29	**12**
M-M'	H	0.43	0.35	2.39	0.45	1.08	0.33	0.061	28	**11**
N-N'	H	0.43	0.40	2.39	0.45	1.08	0.37	0.047	21	**8**

Notes:

1. T_o = first natural period of embankment (sec).
2. k_y = yield acceleration (g).
3. PHA_{crest} = peak horizontal crest acceleration (g).
4. k_{max} = maximum acceleration (g).
5. k_{max}/PHA_{crest} = Ratio of maximum acceleration to peak horizontal crest acceleration based on the depth of sliding (Makdisi and Seed, 1978).
6. $U/k_{max}*T_o$ = normalized displacement based on magnitude and k_y/k_{max} (Makdisi and Seed, 1978).
7. cm = centimeters.
8. in = inches.

FIGURES

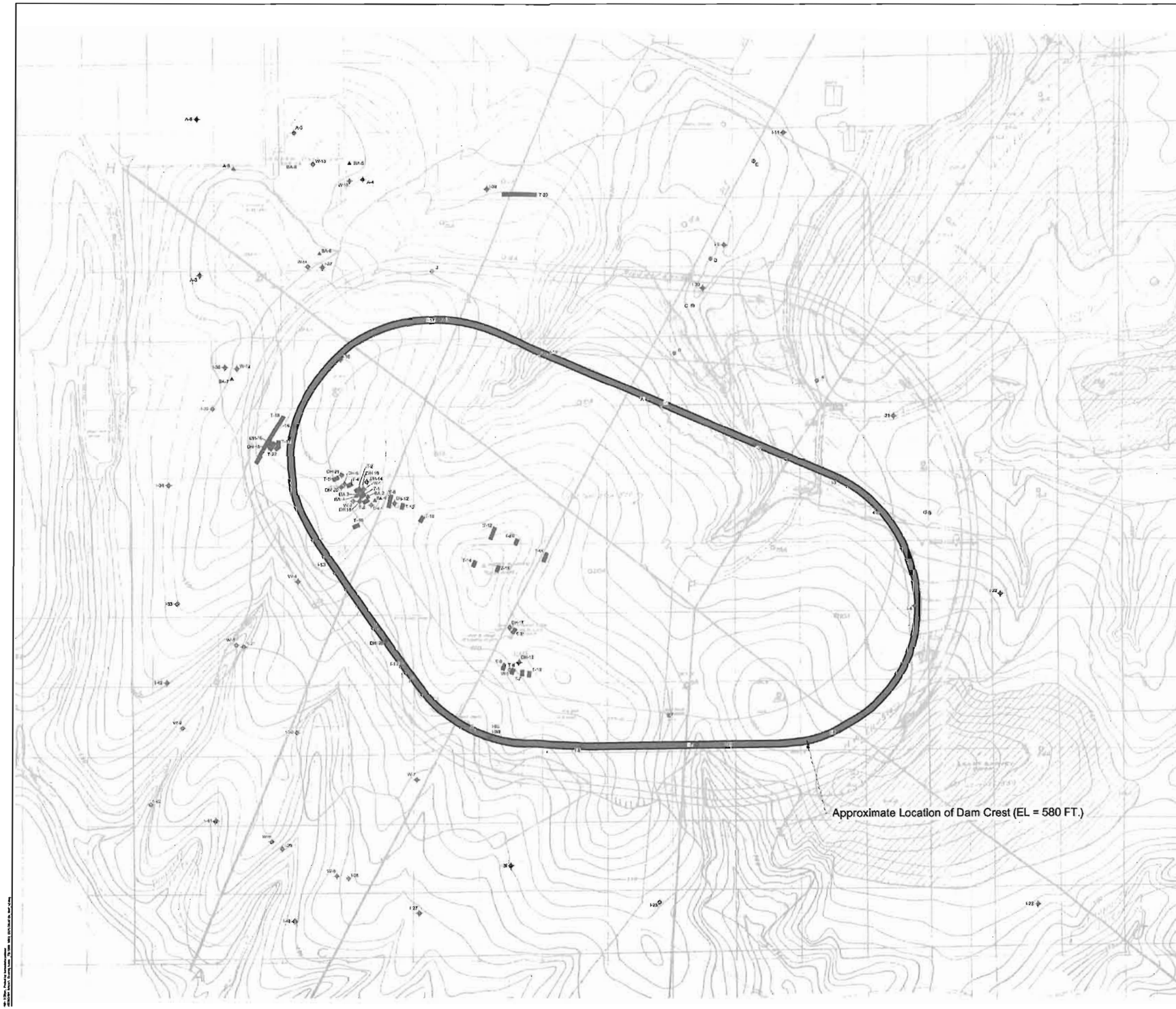
Basemap modified from U.S.G.S. 7.5 minute quadrangle map El Monte 1966, California.
Photo-revised 1981. U.S.G.S. 7.5 minute quadrangle map Los Angeles 1966, California.
Photo-revised 1981.

0 500 1000
Approximate Scale in Feet

SITE LOCATION MAP
Garvey Reservoir
Los Angeles County, California

By: BRP	Date: 03/04/10	Project No. 12153.001
AMEC Geomatrix		Figure 1

Plot Date: 03/04/10 - 2:33pm, Plotted by: bernadette.pastrana
Drawing Path: Y:\12153.001.0\Acad\, Drawing Name: _TB-site_location_map.dwg



Explanation

I-35 Piezometer location

I-5 Piezometer location (Walker-RUST 1990/1992)
Drill hole or existing piezometer location
(I: piezometer, W: piezometer, DH: drill hole)

A 6 Installed piezometer (Leroy Crandall & Associates 1990)

P13 P14 Drill hole and installed piezometer location (Bouldin 1986)

BA 5 Bucket auger hole location (Walker-RUST 1990)

7 Boring location (Dames & Moore 1981)

T-23 Exploratory trench (Walker 1990)

Note: Colors below apply to above borings & piezometers

Blue - elevation from logs only

Lat - laboratory testing

Grey - SPT blowcount information

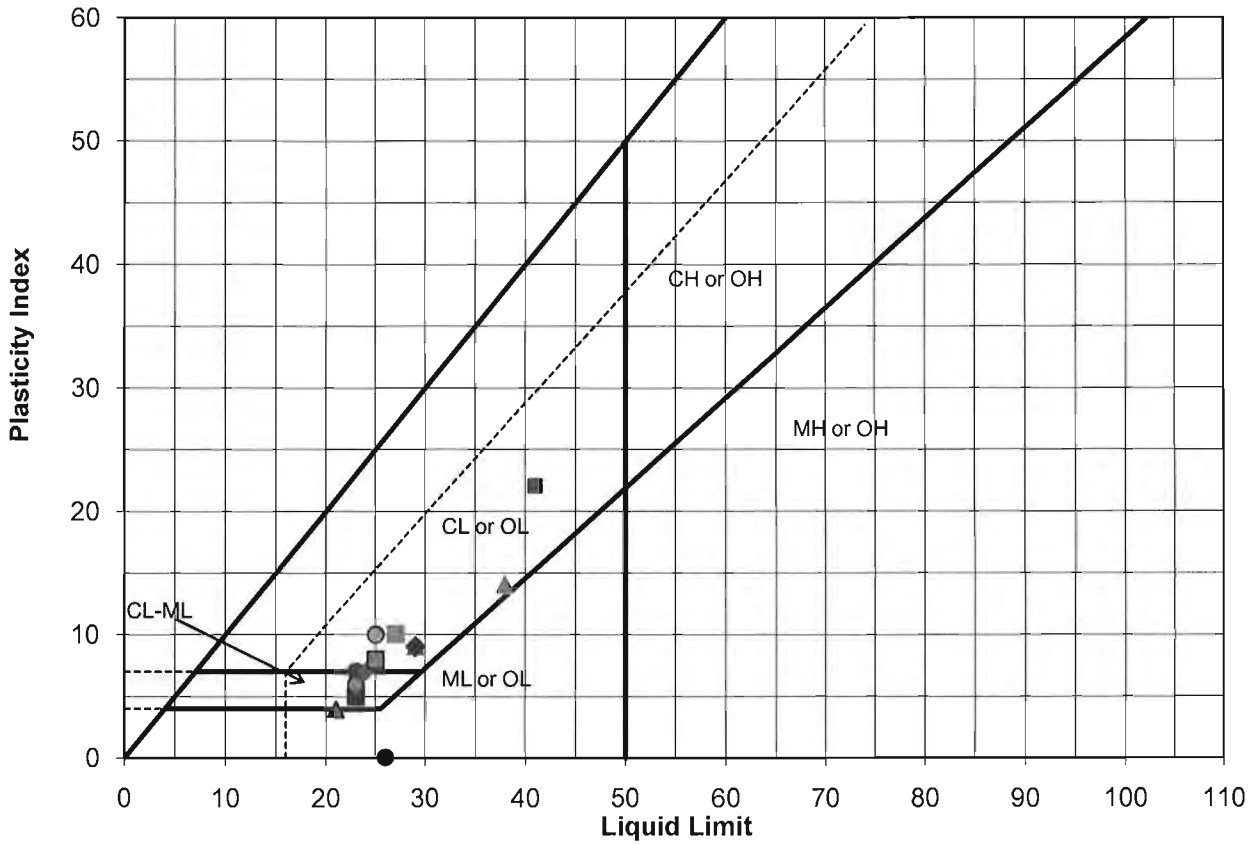
Grey - elevation not available

Red - SPT and lab testing information

Approximate Scale is Feet

Basemap modified from J.P. Buwalda, Garvey Reservoir Site - Geology, dated June 1950

PREVIOUS FIELD EXPLORATION MAP
Garvey Reservoir
Los Angeles, California

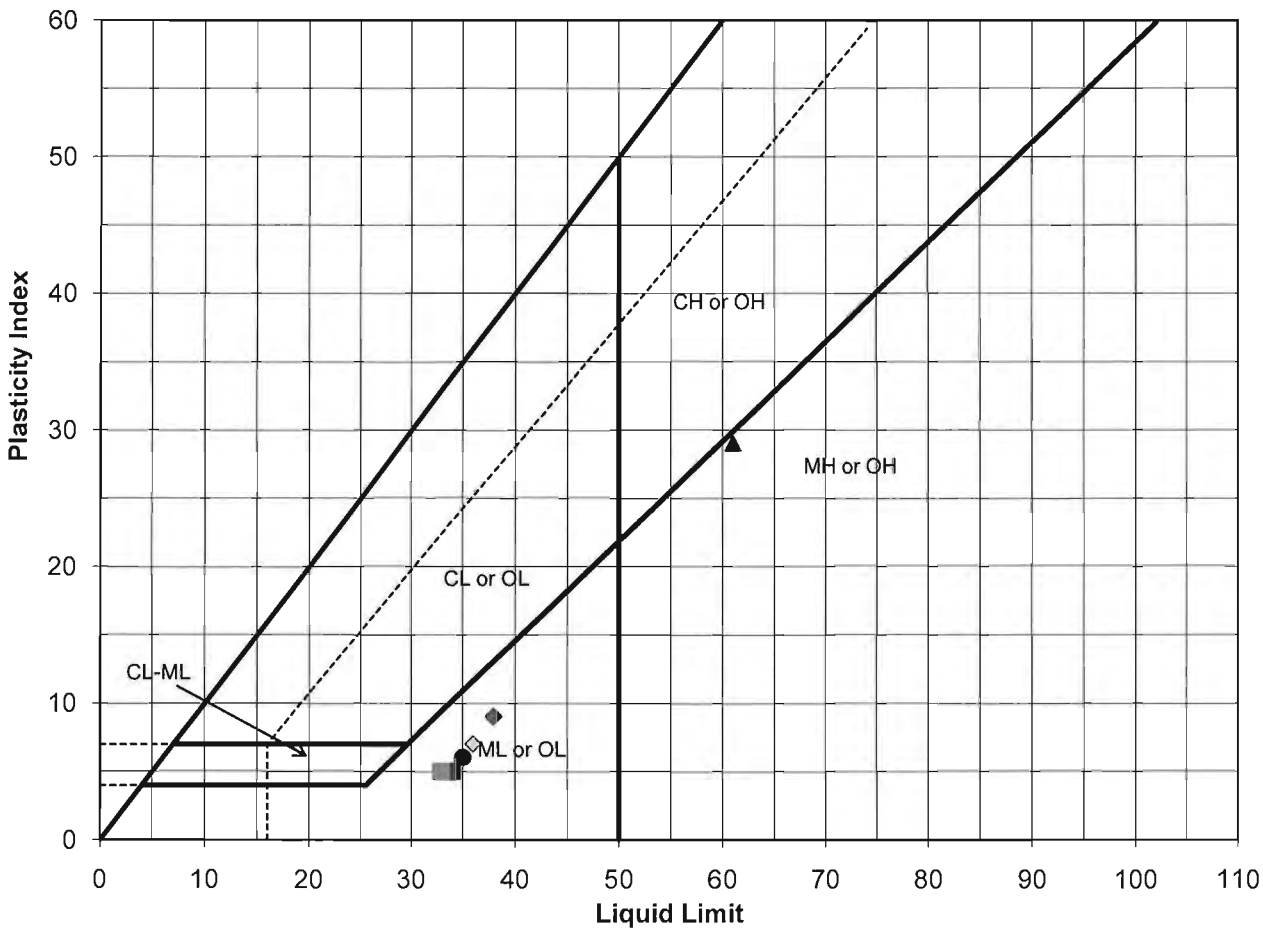


Legend	Boring No.	Sample No.	Sample Depth (feet)	Liquid Limit	Plastic Limit	Plasticity Index	Group Symbol of Fines
●	Bechtel B	GR-3	15.8-17.1	23	16	7	CL-ML
■	Bechtel B	GR-4	30.1-31.1	23	18	5	CL-ML
◆	Bechtel B	GR-6	65.8-66.7	24	17	7	CL-ML
■	Bechtel B	GR-7*	78.3-80.3	41	19	22	CL
●	Bechtel H	GR-14	10.4-11.0	26	NP	NP	ML
◆	Bechtel H	GR-52*	30.0-30.5	29	20	9	CL
▲	Bechtel I	GR-8	11.8-12.3	38	24	14	CL-ML
■	Bechtel I	GR-9	17.6-18.1	27	17	10	CL
◆	Bechtel I	GR-10	18.6-19.9	23	17	6	CL-ML
●	Bechtel I	GR-12	21.3-23.4	25	15	10	CL
▲	Bechtel J	GR-1	5.0-6.5	21	17	4	CL-ML
NA	Bechtel J	GR-2	15.0-16.5	NP	NP	NP	ML
■	Wahler I-19	S-2	40.0-42.4	25	17	8	CL
●	Wahler I-19	S-4	80.0-81.6	23	17	6	CL-ML

Notes:
1. Group symbol based upon the Unified Soil Classification System.
2. * = indicates Alluvium.
3. NP = non-plastic.

ATTERBERG LIMITS TESTS ON EMBANKMENT FILL AND ALLUVIUM
Garvey Reservoir
Los Angeles County, California

By: LH	Date: 03/04/10	Project No.:12153.001
AMEC Geomatrix		Figure 3

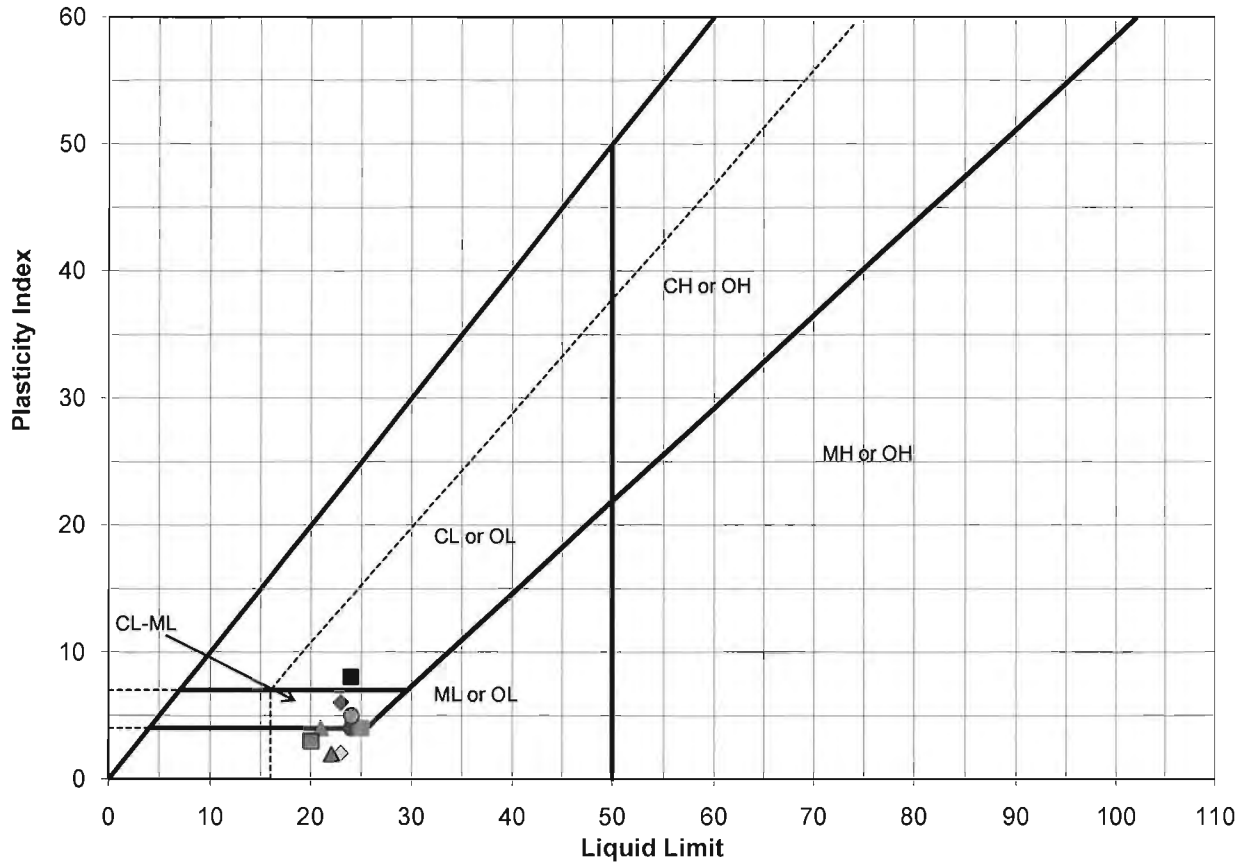


Legend	Boring No.	Sample No.	Sample Depth (feet)	Liquid Limit	Plastic Limit	Plasticity Index	Group Symbol of Fines
●	Wahler DH-5	S-11	60-62.5	35	29	6	ML
■	Wahler W-4	S-2	20-22.5	34	29	5	ML
◆	Wahler W-5	S-9	72-74.5	38	29	9	ML
▲	Wahler W-6	S-2	20-22.5	61	32	29	MH
■	Wahler W-9	S-5	35-37.5	33	28	5	ML
◆	Wahler W-9	S-8	62-64.5	36	29	7	ML

Note:
Group symbol based upon the Unified Soil Classification System.

ATTERBERG LIMITS TESTS ON FOUNDATION BEDROCK MATERIALS
Garvey Reservoir
Los Angeles County, California

By: LH	Date: 03/04/10	Project No.:12153.001
AMEC Geomatrix		Figure 4



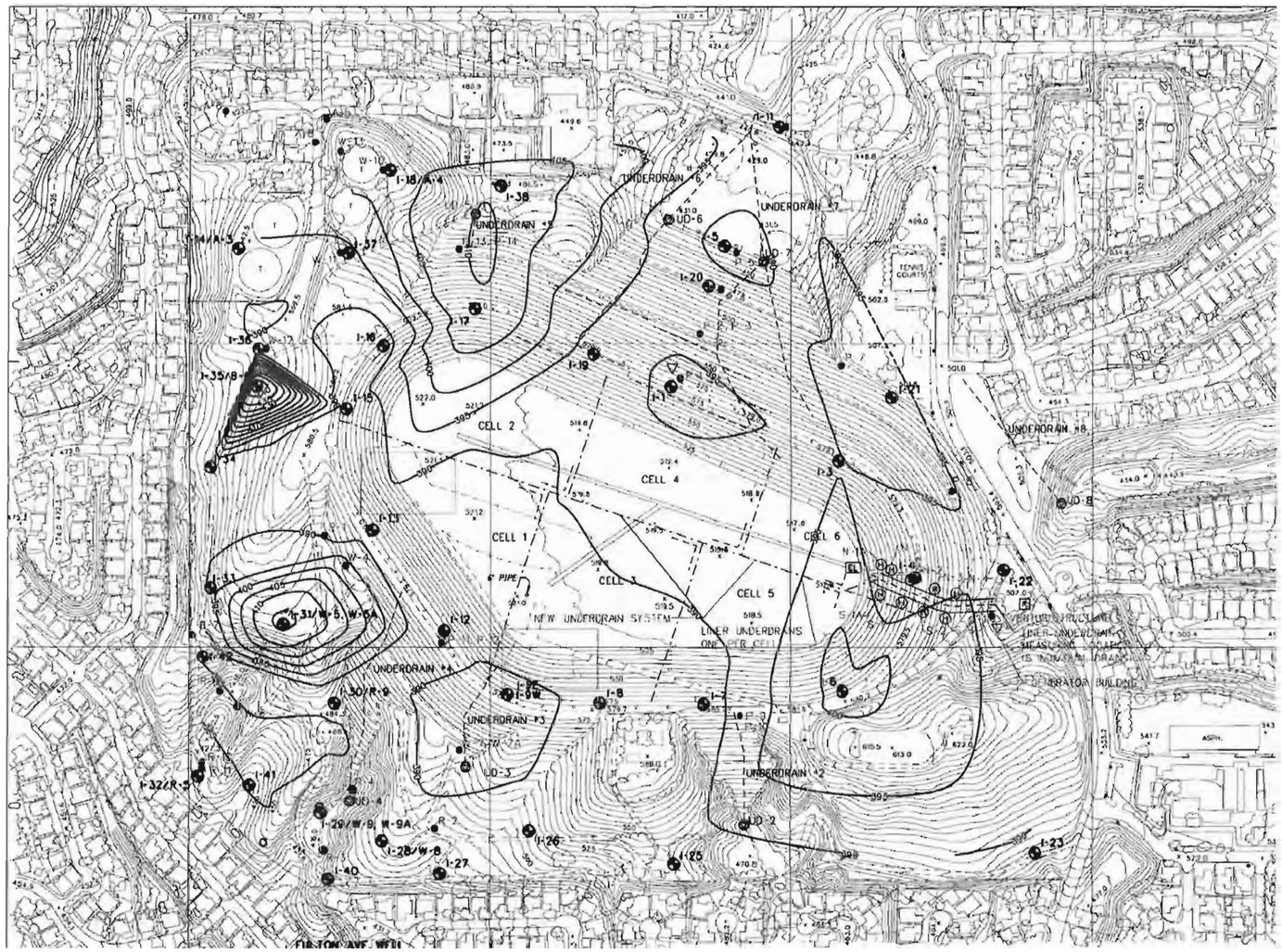
Legend	Boring No.	Sample No.	Sample Depth (feet)	Liquid Limit	Plastic Limit	Plasticity Index	Group Symbol of Fines
●	Wahler W-1	S-1	4-6.5	24	20	4	CL-ML
■	Wahler W-1	S-1	4-6.5	24	16	8	CL
◆	Wahler W-1	S-1	4-6.5	23	17	6	CL-ML
▲	Wahler W-1	S-3	8-10.5	21	17	4	CL-ML
■	Wahler W-3	S-1	4-6.5	25	21	4	CL-ML
◆	Wahler W-3	S-1	4-6.5	23	21	2	ML
○	Wahler DH-4	S-1	4-6.5	24	19	5	CL-ML
△	Wahler DH-5	S-1	6-8.5	22	20	2	ML
■	Wahler DH-12	GR-10	18.6-19.9	20	17	3	CL-ML

Note:
Group symbol based upon the Unified Soil Classification System.

ATTERBERG LIMITS TESTS ON COMPACTED LINER FILL
Garvey Reservoir
Los Angeles County, California

By: LH | Date: 03/04/10 | Project No.:12153.001

AMEC Geomatrix | Figure **5**



Explanation

—390— Groundwater elevation contour line

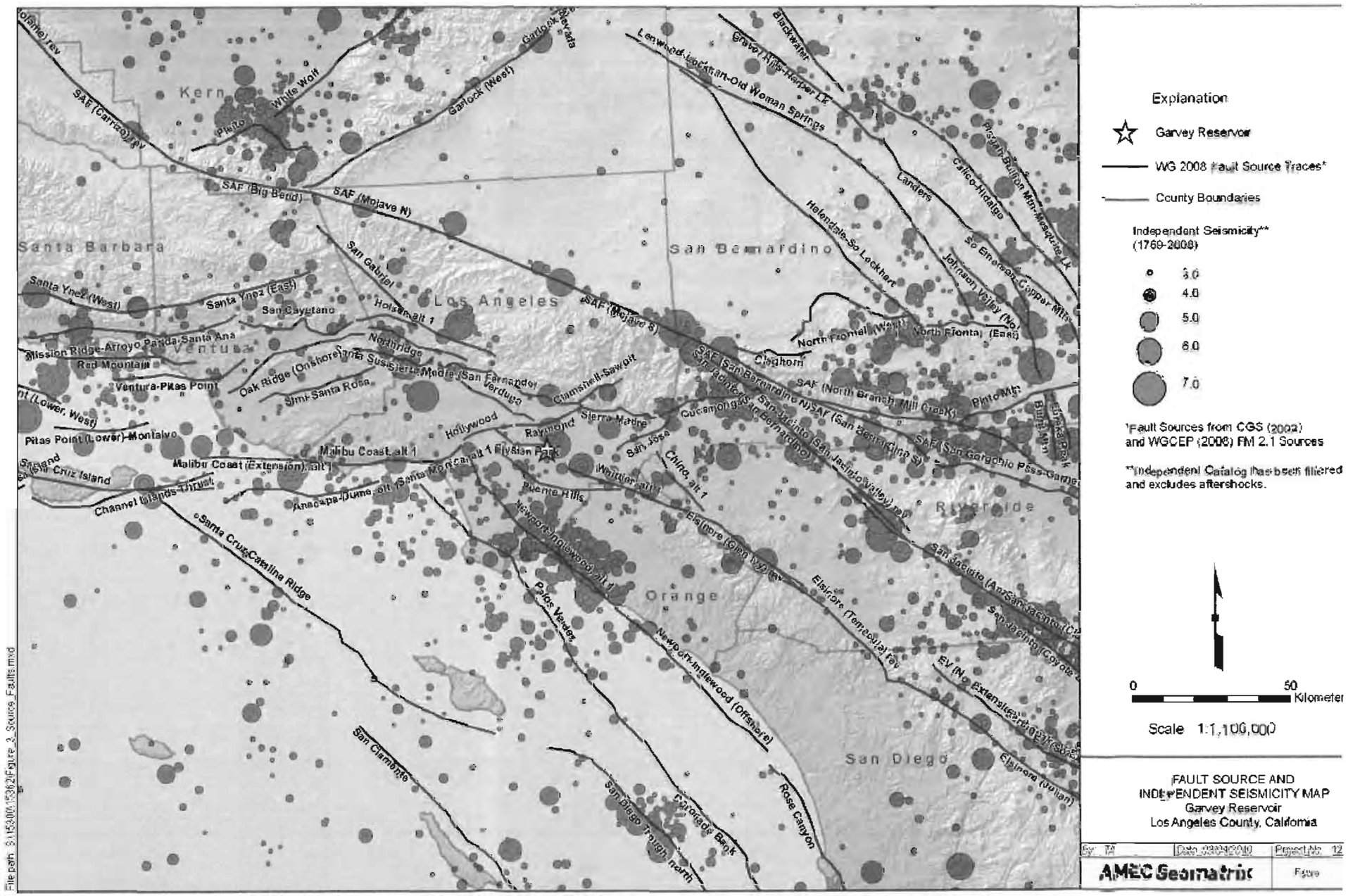
Note:

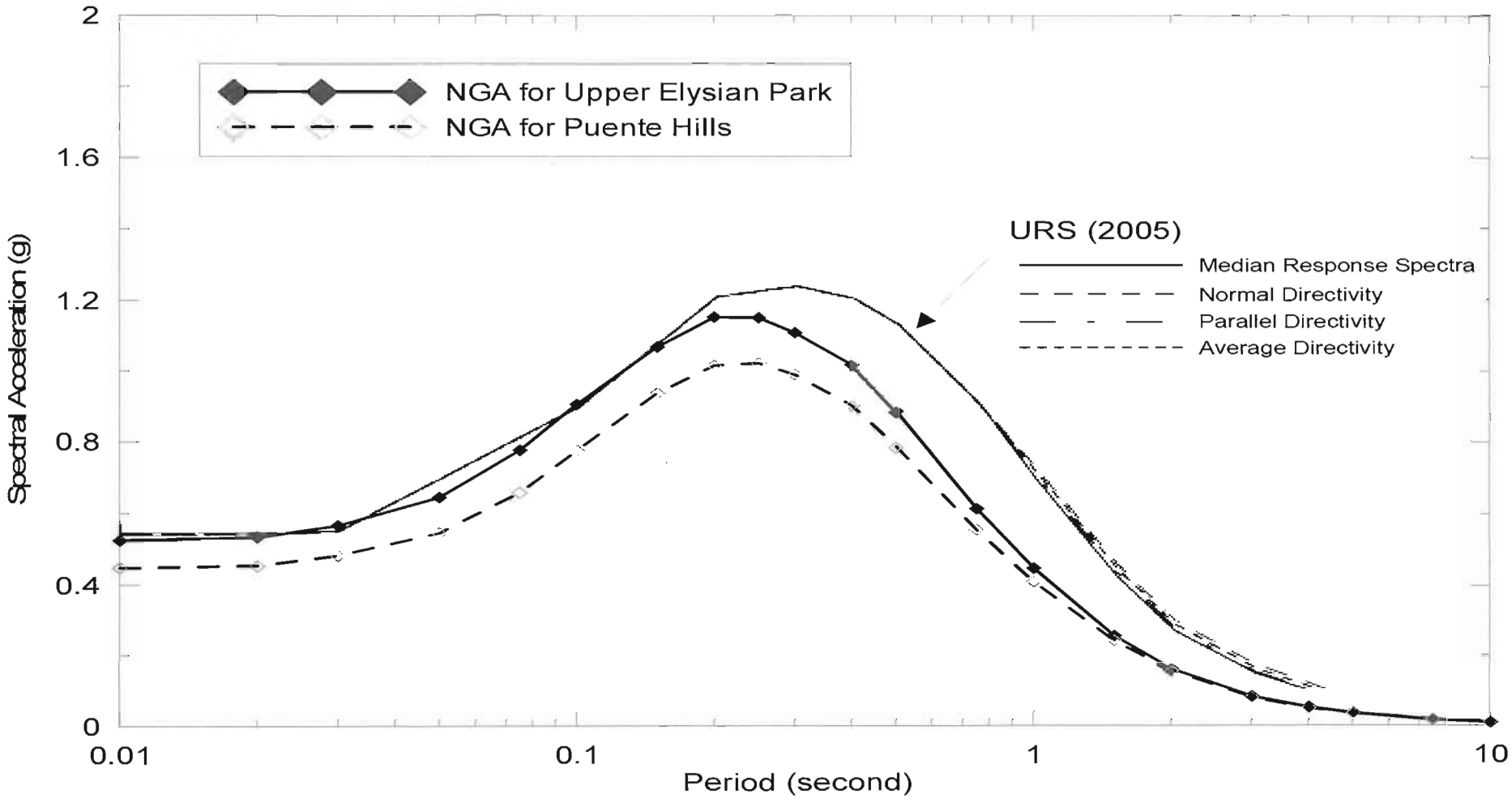
Groundwater elevations obtained from piezometers i
recorded by MWD (October 2009).

2008 GROUNDWATER
Garvey Reservoir Seis
Monterey Park,

By: peh | Date:03/04/2010

AMEC Geomatrix

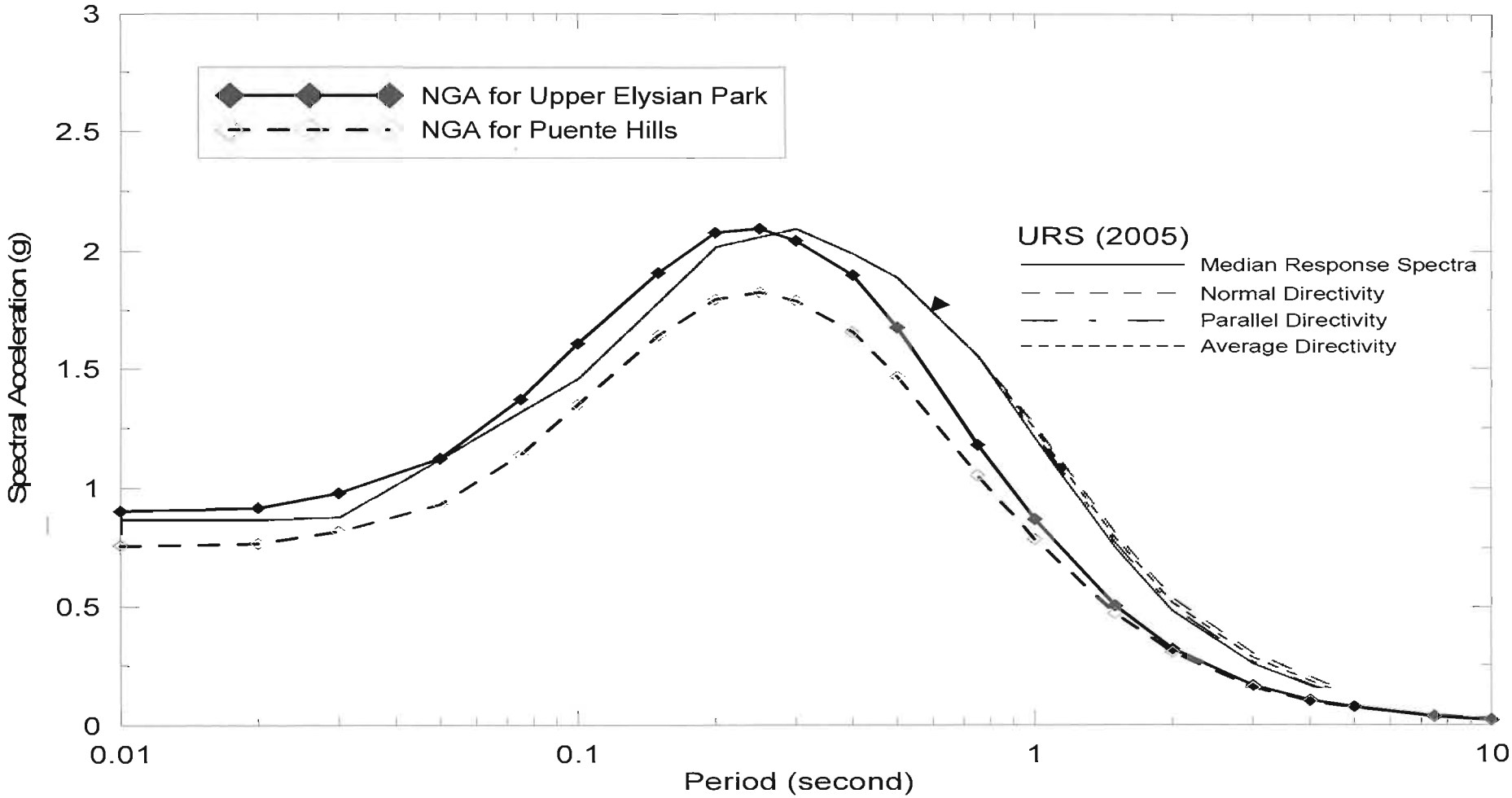

Explanation
Garvey Reservoir
WG 2008 Fault Source Traces*
County Boundaries
Independent Seismicity**
(1769-2008)
3.0
4.0
5.0
6.0
7.0
*Fault Sources from CGS (2002) and WGCEP (2008) FM 2.1 Sources
**Independent Catalog has been filtered and excludes aftershocks.
0
50
Kilometer
Scale 1:1,100,000
FAULT SOURCE AND
INDEPENDENT SEISMICITY MAP
Garvey Reservoir
Los Angeles County, California
AMEC Geomatrix
Kern
Santa Barbara
Ventura
Los Angeles
San Bernardino
Riverside
Orange
San Diego
SAF (Carrizo)
SAF (Big Bend)
SAF (Mojave N)
SAF (Mojave S)
Garlock (West)
Garlock (East)
Lenwood-Lockhart-Old Woman Springs
Blackwater
Gravel Hills-Harper Lk
Landers
Calico-Hidalgo
Pisgah-Bullion Mtn-Mesquite Lk
Helendale-So Lockhart
Johnson Valley (No)
So Emerson-Copper Mtn
North Frontal (West)
North Frontal (East)
Clapham
SAF (San Bernardino N)
SAF (North Branch Mill Creek)
SAF (San Bernardino S)
SAF (San Gorgonio Pass-Garnet
Pinto Mtn
Burnt Mtn
Eureka Peak
San Jacinto (San Bernardino)
San Jacinto (San Jacinto Valley)
San Jacinto (Anza)
San Jacinto (Coyote
San Jacinto (Borrego)
EV (No Extension)
Elsinore (Julian)
Elsinore (Glen Ivy)
Elsinore (Temecula) Fau
San Jacinto
Chino alt 1
Whittier alt 1
Elysian Park
Puente Hills
Raymond
Hollywood
Sierra Madre
San Jose
Clamshell-Sawpit
Cucamonga
Sierra Madre (San Fernando)
Verdugo
Northridge
Holser alt 1
San Gabriel
San Cayetano
Santa Ynez (East)
Santa Ynez (West)
Mission Ridge-Arroyo Parida-Santa Ana
Red Mountain
Ventura-Pitas Point
Oak Ridge (Onshore)
Simi-Santa Rosa
Pitas Point (Lower)-Montalvo
Malibu Coast alt 1
Malibu Coast (Extension) alt 1
Santa Monica alt 1
Anacapa-Dume alt 1
Channel Islands Thrust
Santa Cruz Island
Santa Cruz-Catalina Ridge
Newport-Inglewood alt 1
Palos Verdes
Newport-Inglewood (Offshore)
San Clemente
San Diego Trough, north
Coronado Bank
Rose Canyon
Elsinore (Julian)
Pleasant Valley
White Wolf
Pleito
SAF (Carrizo)



Note:
NGA = next generation attenuation.

MEDIAN HORIZONTAL ACCELERATION
RESPONSE SPECTRA (5% DAMPED)
Garvey Reservoir
Los Angeles County, California

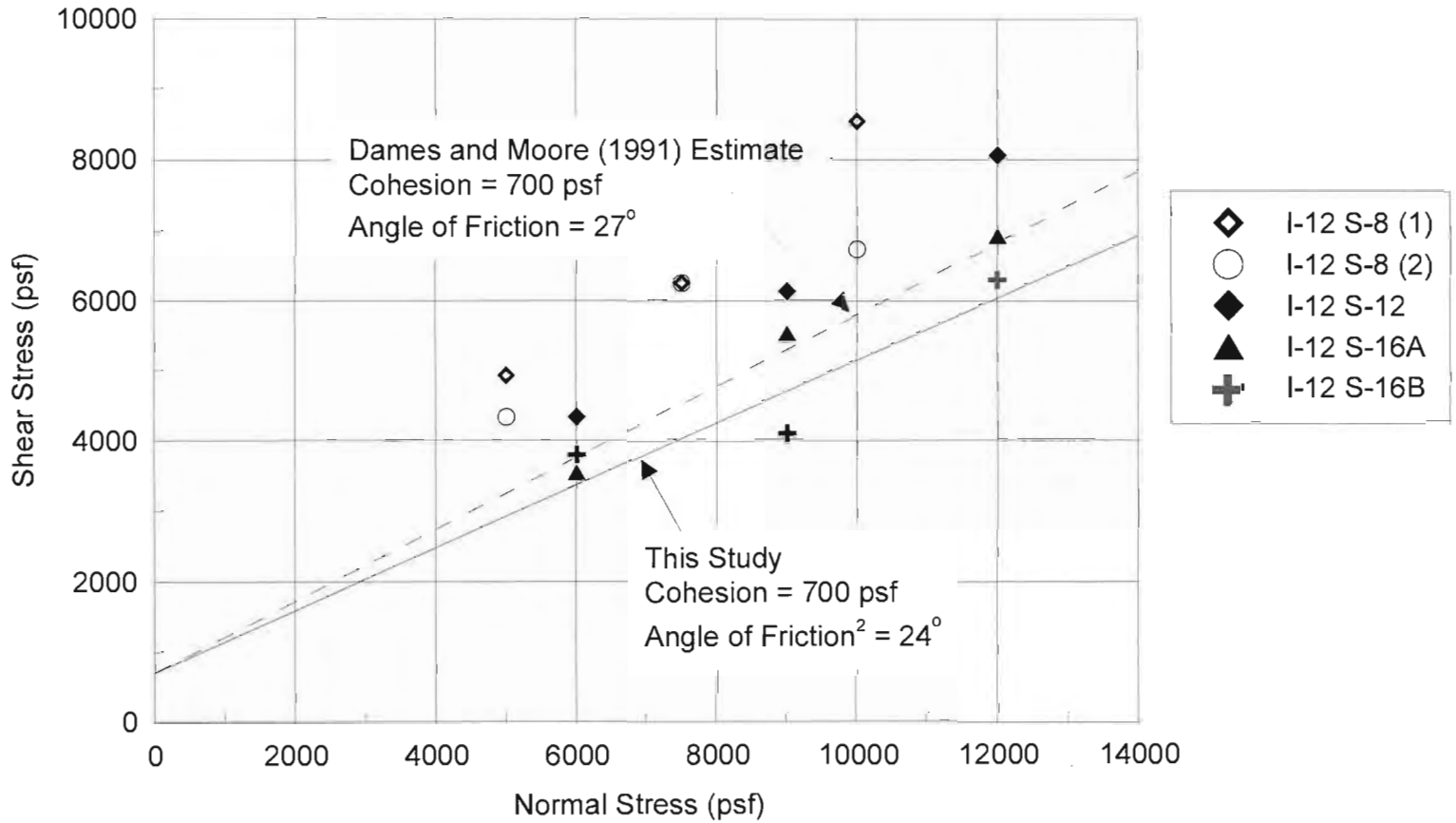
By: LH	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure 8



Note:
NGA = next generation attenuation.

84th PERCENTILE HORIZONTAL ACCELERATION RESPONSE SPECTRA (5% DAMPED)
Garvey Reservoir
Los Angeles County, California

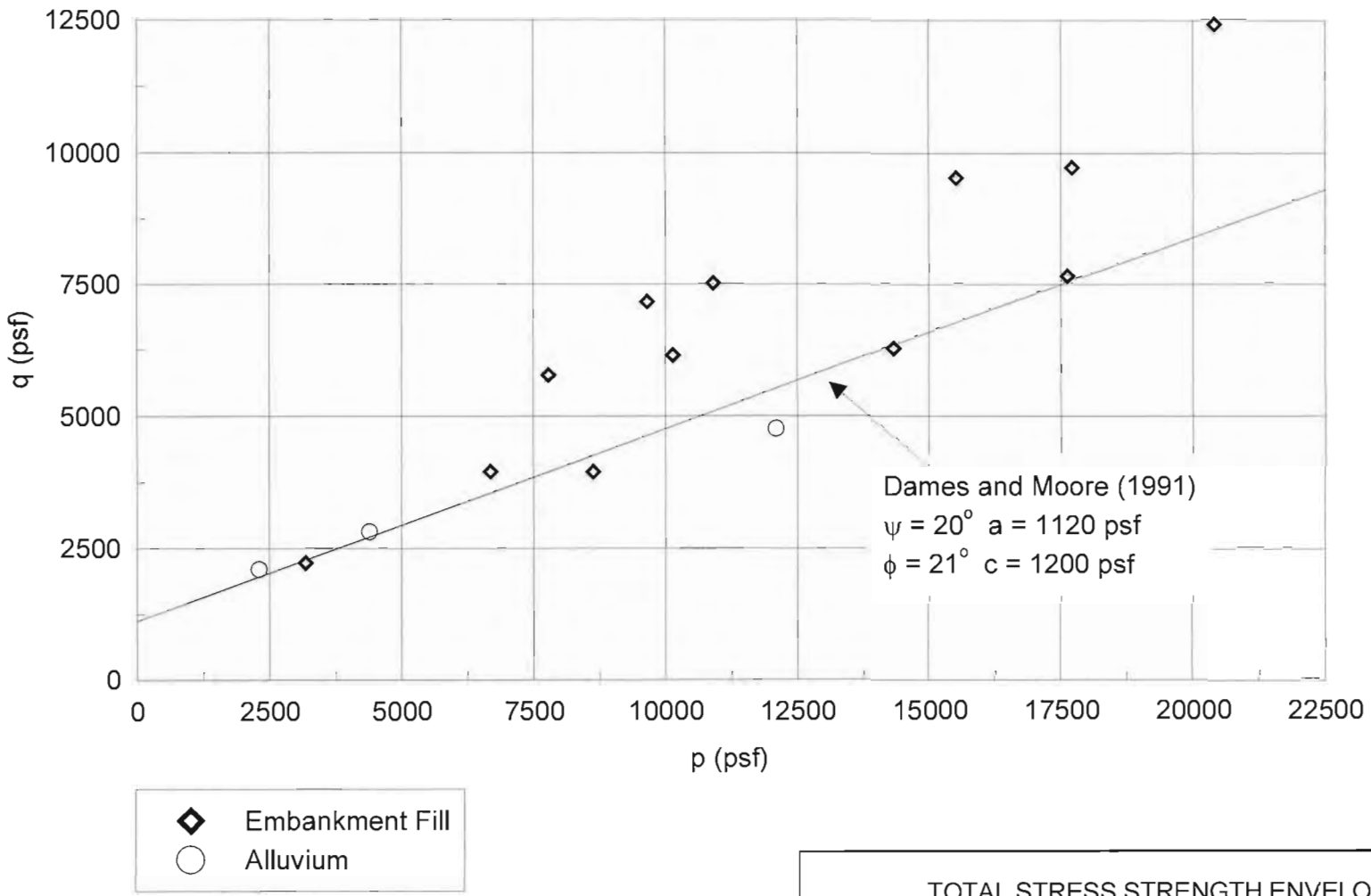
By: LH	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure 9



Notes:
1. Summary of Dames and Moore (1991) Laboratory Direct Shear Test Results.
2. Corrected Angle of Friction (Refer to Section 6.1 of Report).
3. psf = pounds per square foot.

DIRECT SHEAR TEST RESULTS
OF BEDROCK
Garvey Reservoir
Los Angeles County, California

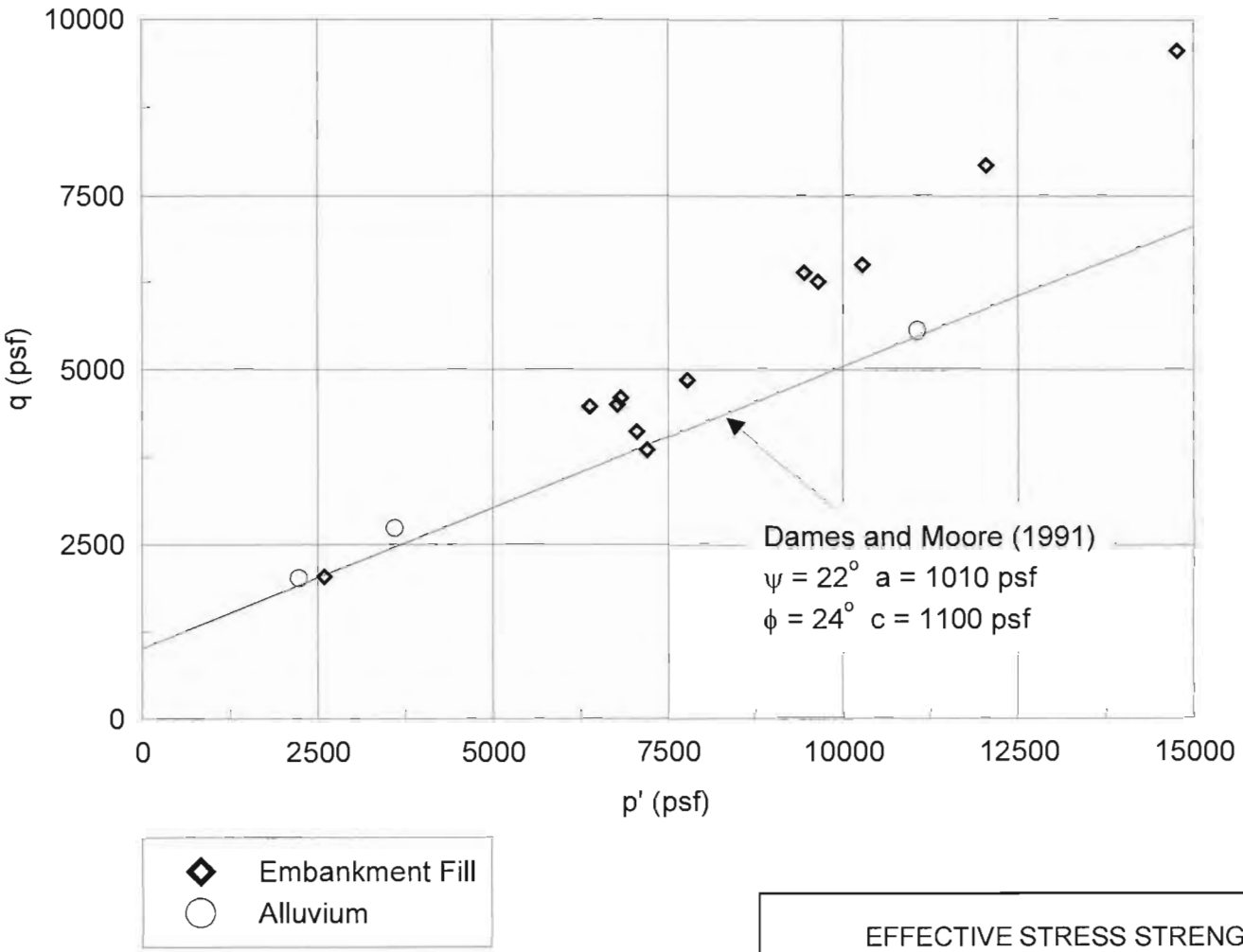
By: EF	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure **10**



Notes:
1. Summary of Bechtel (1965) and Dames and Moore (1991) Triaxial Test Results.
2. p-q pairs correspond to stress conditions at 3 to 5 percent strain level.
3. psi = pounds per square inch.

TOTAL STRESS STRENGTH ENVELOPE
Garvey Reservoir
Los Angeles County, California

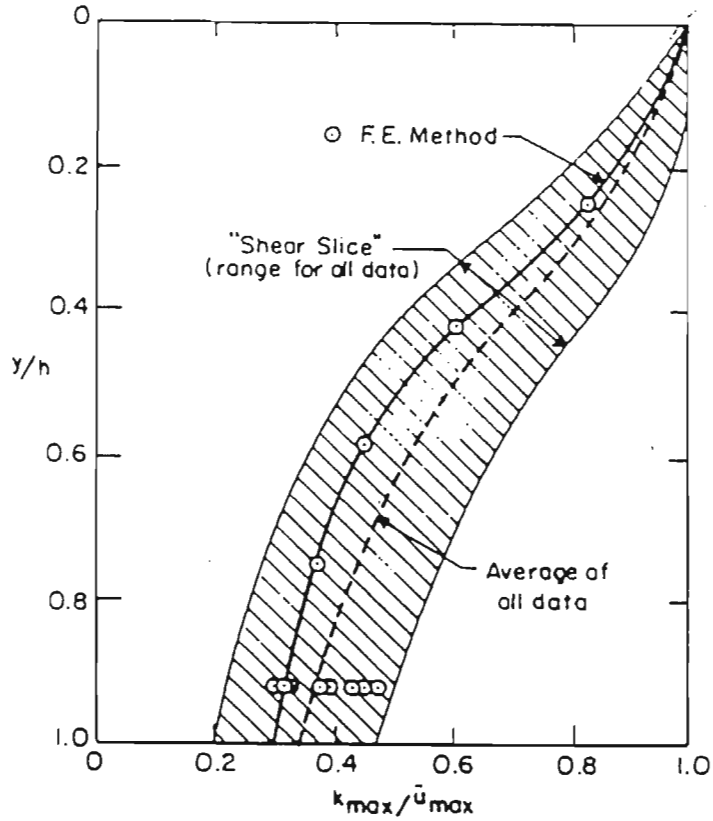
By: EF	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure 11



Notes:
1. Summary of Bechtel (1965) and Dames and Moore (1991) Triaxial Test Results.
2. p-q pairs correspond to stress conditions at maxiumum effective stress ratio.
3. psf = pounds per square foot.

EFFECTIVE STRESS STRENGTH ENVELOPE
Garvey Reservoir
Los Angeles County, California

By: EF	Date: 03/04/10	Project No.: 12153.001
AMEC Geomatrix		Figure 12



(from Makdisi and Seed, 1978)

VARIATION OF "MAXIMUM ACCELERATION RATIO"
WITH DEPTH OF SLIDING MASS
Garvey Reservoir
Los Angeles, California

By: BRP	Date: 03/04/10	Project No. 12153.001
AMEC Geomatrix		Figure 13

Y:\12153.001.0\other_figs\var_of_max_acc_ratio_w_depth_of_sliding_mass.cdr

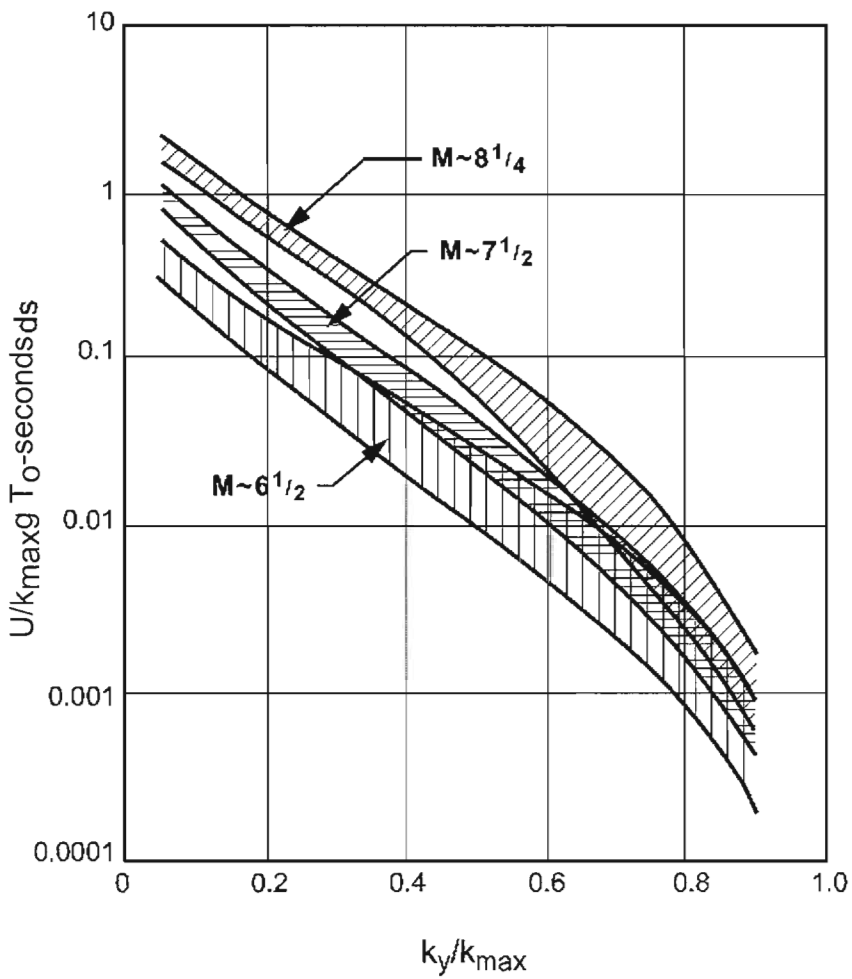


Figure 14-a Variations of normalized permanent displacement with yield acceleration-summary of all data (from Makdisi and Seed, 1978).

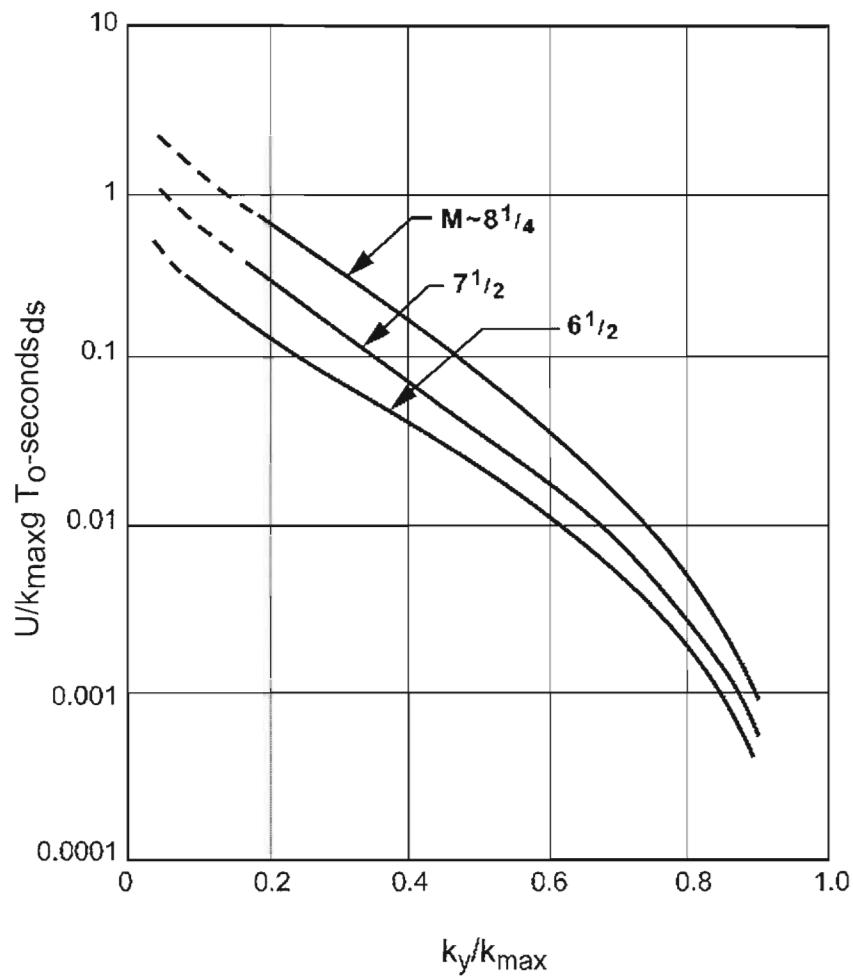


Figure 14-b Variations of average normalized displacement with yield acceleration (from Makdisi and Seed, 1978).

VARIATIONS OF NORMALIZED PERMANENT DISPLACEMENT WITH YIELD ACCELERATION
Garvey Reservoir
Los Angeles, California

By: BRP	Date: 03/04/10	Project No. 12153.001
AMEC Geomatrix		Figure 14

ATTACHMENT 5

Exhibit E – MWD

May 2013

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

May 9, 2013

Via Federal Express

Mr. Paul Talbot, City Manager
City of Monterey Park
320 West Newmark Avenue
Monterey Park, CA 91754

Dear Mr. Talbot:

Notice of Proposed Modifications to Garvey Reservoir Settlement Agreement

I am writing on behalf of The Metropolitan Water District of Southern California (Metropolitan) to memorialize our recent negotiations and Metropolitan's request regarding the implementation of paragraph 4.6 of the Settlement Agreement Between the City of Monterey Park and Metropolitan Water District of Southern California Concerning the Garvey Reservoir, dated September 16, 1993 (Settlement Agreement).

As anticipated in paragraph 4.6 of the Settlement Agreement, Metropolitan wrote to the City on May 15, 2008, requesting removal of all operational limits to allow Metropolitan to raise the level of the reservoir. The Settlement Agreement was intended to be self-executing based on the agreements made at that time. The parties agreed that if Metropolitan complied with the Settlement Agreement, normal operations could be resumed and if the City does not believe Metropolitan has complied, the City has the burden of challenging Metropolitan's operations. Metropolitan explained in its May 2008 letter that it had complied with the requirements of the Settlement Agreement and established that resuming normal operation would not adversely affect the City or "materially increase the risk of injury to persons or damage to property" (Settlement Agreement, ¶ 7.3); thus, Metropolitan is entitled to resume normal operations.

In a letter dated August 21, 2009, the City informed Metropolitan that it would comply with the Settlement Agreement if Metropolitan provided an updated seismic study that established that resuming normal operations would not create a material risk to persons or property within the City. Copies of the relevant correspondence without attachments are enclosed for reference. Since that time, Metropolitan obtained an updated seismic study and shared this study with the City. The study establishes the reservoir's integrity and confirms that it does not pose a material risk to the City. This study and the documentation provided by Metropolitan over the past 20 years demonstrate the safety and integrity of the reservoir, and justify the removal of the operational limits under the Settlement Agreement.

As Metropolitan explained previously, Garvey Reservoir is an essential component of its regional infrastructure, and assists in the reliable delivery of water to Metropolitan's service area. The reservoir provides a reserve supply of treated water which can be utilized to meet demands

700 N. Alameda Street, Los Angeles, California 90012 • Mailing Address: Box 54153, Los Angeles, California 90054-0153 • Telephone (213) 217-6000

during periods when State Water Project (SWP) supplies are reduced and when certain portions of Metropolitan's system must be taken out of service, most often for repairs or maintenance of the system, or in the event of a regional emergency. One of the primary benefits to the reliability of Metropolitan's water delivery system is that water can flow in and out of Garvey Reservoir without the need for pumping. This allows the reservoir to buffer demand changes and automatically react to system changes without mechanical, electrical, or operator intervention. The operating restrictions currently mandated by the Settlement Agreement significantly limit the ability for Metropolitan to use Garvey Reservoir to react to water supply variations in a passive manner. Removal of the operational restrictions at the reservoir is necessary to accommodate reductions in SWP supplies and upcoming critical repairs within Metropolitan's system, without interruptions in service. Without the flexibility provided by the full capacity of Garvey Reservoir, interruptions in service are more likely.

As we informed the City at our last meeting on April 10, 2013, Metropolitan is currently facing reduced SWP supplies, and thus needs to resume normal operation of the reservoir immediately in order to ensure reliability of an essential public service, the delivery of drinking water, during the approaching warm weather season. The City has allowed interim increased operations periodically in the past to address critical service needs. Additionally, allowing increased storage for the next several months can serve as a pilot study for long-term operations. Metropolitan proposes that the City allow Metropolitan to increase elevations at the reservoir on an interim, pilot basis for the next six months, while the parties continue cooperative negotiations on the long-term solution.

As requested in the City's August 2009 letter, Metropolitan has provided the updated seismic study and agrees to the following conditions as part of a long-term resolution of the Settlement Agreement:

1. All reporting requirements set forth in the Settlement Agreement shall continue and shall be updated, as necessary and appropriate, to address the City's reasonable safety concerns.
2. Current leak detection monitoring, reporting, and emergency coordination procedures shall continue to be implemented. Additionally, the City and Metropolitan shall meet periodically to review such procedures, and Metropolitan shall implement additional and/or new procedures based upon advancements in available technology and/or reasonable safety concerns.
3. Metropolitan shall have reporting, repair, and financial responsibility for any detected leaks from or caused by Metropolitan's operations.

4. Metropolitan shall provide 24-hour advance notification to the City when raising the level of the reservoir to the new operational limits for the first time, during the six month interim period.

Metropolitan believes these conditions more than satisfy its obligations under the Settlement Agreement, and will allow Metropolitan to resume normal operation of the reservoir moving forward. Nonetheless, in the spirit of cooperation, Metropolitan is willing to continue negotiations of a long-term resolution so long as the City is willing to accommodate Metropolitan's immediate needs.

For the foregoing reasons, Metropolitan seeks to increase reservoir levels on an interim, pilot basis immediately through October 31, 2013, while the parties complete negotiations on Metropolitan's satisfaction of the terms of the Settlement Agreement. Please let us know as soon as possible if this proposal is acceptable to the City.

If you have any questions, please contact John Wallace, Infrastructure Unit Manager, Engineering Services Group at (213) 217-6545 or by email at jdwallace@mwdh2o.com, who is Metropolitan's primary representative on this matter. We look forward to working cooperatively with the City on the modifications to the Settlement Agreement necessary to resume normal operation of the Garvey Reservoir.

Very truly yours,

Gordon Johnson
Chief Engineer

GLJ/cms
Enclosures

cc: Robert Quintero, Interim Director of Public Works (w/encls.)
Via Federal Express

Mark Hensley, City Attorney (w/encls.)
Via Federal Express

Catherine M. Stites, Esq., Metropolitan Senior Deputy General Counsel

John Wallace, P.E., Metropolitan Infrastructure Unit Manager

ATTACHMENT 6

Exhibit F – Amended Settlement Agreement

AMENDMENT TO SETTLEMENT AGREEMENT BETWEEN
THE CITY OF MONTEREY PARK
AND
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
CONCERNING THE GARVEY RESERVOIR

THIS AMENDMENT is made and entered into this _____ day of _____, 2014, by and between THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, a public corporation incorporated under the Metropolitan Water District Act of the State of California (Stats. 1969, Ch. 209 as amended; West's Annot. Cal. Water Code Appx. § 109), hereinafter referred to as "Metropolitan," and THE CITY OF MONTEREY PARK, a public body, corporate and politic, hereinafter referred to as the "City" ("Amendment").

WHEREAS, Metropolitan and the City entered into the Settlement Agreement Between The City of Monterey Park and The Metropolitan Water District of Southern California Concerning the Garvey Reservoir, dated September 16, 1993 (" Agreement"). This Agreement is attached for reference as Exhibit 1.

WHEREAS, the Garvey Reservoir is a 1,610-acre-foot storage facility owned and operated by Metropolitan and located in the City. Garvey Reservoir stores treated drinking water and controls pressure and pipeline flow within a 1,000 square mile area from central Los Angeles County to western Orange County. It provides for storage of treated water for flow regulation and emergency purposes, and provides for reserve supply of treated water to be utilized to meet demands during periods when portions of Metropolitan's system must be taken out of service.

WHEREAS, in late 1989, seepage was discovered in areas adjacent to the Garvey Reservoir.

WHEREAS , as a result of ensuing legal challenges, Metropolitan settled with the City and entered into the Settlement Agreement in September 1993, agreeing to operational restrictions on the use of the reservoir, including reducing the elevation of the reservoir from a maximum of 573 feet to a maximum of 561 feet.

WHEREAS, section 4.6 of the Agreement provides for a self-executing mechanism under which Metropolitan may request removal of this restriction after ten years. The ten-year anniversary occurred in May 2009.

WHEREAS, in anticipation of this milestone, on May 15, 2008, before the 9th anniversary of the Agreement, Metropolitan staff requested removal of the restriction, and has met and conferred with the City on this matter since that time.

WHEREAS, Metropolitan believes it has safely operated the reservoir since 1999, by installing and utilizing an upgraded lining and enhanced monitoring system and the City has not received any reports from Metropolitan, as required by the Agreement, that indicate that seepage issues have not been resolved.

WHEREAS, Metropolitan provided the City with an updated seismic study in or about April 2013,_pursuant to the City's request made in August 2009.

WHEREAS, this seismic study and the monitoring documentation provided by Metropolitan since 1999 have been provided to the City for purposes of demonstrating Metropolitans' contention regarding the safety and integrity of the reservoir.

WHEREAS, the parties have reached an understanding that the City is willing to forgo filing any legal challenge within the sixty day period contemplated by Section 4.6 of the Agreement to Metropolitan resuming normal operations at the Garvey Reservoir as contemplated in the Agreement and based upon the information and studies provided by Metropolitan to the City and in exchange for the consideration provided by Metropolitan, identified below, in this Amendment.

In consideration of the provisions contained herein, the parties HEREBY AGREE to amend the Agreement by deleting sections 4.1.1, 4.1.2, 4.2, 7.2, 7.3, and Attachment 3, replacing the existing sections 4.1 and 4.6 with the following amended versions, and adding a new section 4.6.2 as follows:

4.1 Metropolitan may operate the Garvey Reservoir subject to the amended provisions of this Section, which include Subsections 4.3 to 4.6. With this Amendment, the parties are deleting the Operation Limitations, as defined in former Section 4.2.

4.6 Following the effective date of this Amendment, Metropolitan may resume normal operation of the Garvey Reservoir, and the Operation Limitations in former sections 4.1,

4.1.1, 4.1.2, 4.2, 7.2, 7.3 and Attachment 3 of the Agreement, relative to the Operation Limitations, no longer apply and are deleted with this Amendment.

4.6.1 In exchange for the City's agreement to forgo any challenge to Metropolitan's normal operation of the Garvey Reservoir subject to the terms and conditions of this Agreement as well as all other legal and equitable rights the City may have should the Garvey Reservoir pose a health and safety risk in the future, Metropolitan agrees to the following terms:

4.6.1.1 Metropolitan shall continue to implement the leak detection monitoring, reporting, and emergency coordination procedures and all other safety, inspection and reporting obligations described in this Agreement. Additionally, the City and Metropolitan shall continue with regular Technical Coordination Committee meetings as prescribed under section 5.1.

4.6.1.2 Metropolitan shall have reporting, repair, and financial responsibility for the costs of repair and any direct damages resulting from any detected leaks from or caused by Metropolitan's-monitoring, maintenance and/or operation of the Reservoir, including without limitation the obligation to indemnify the City has set forth in Section 4.4 of this Agreement. Reporting and repair under this section shall be done in compliance with the Agreement and all Governmental Requirements.

4.6.1.3 Metropolitan will furnish property north of the tennis court for the City's use under a lease as a park. The approximate limits of property to be furnished under lease to the City are detailed in the map attached hereto as Exhibit 2. To effectuate these provisions, the parties intend to enter into an amendment to the City's existing lease, Revenue Lease No. 524..

4.6.1.4 Metropolitan will pay $50,000 to the City with understanding that the City will use the funds to help pay for improving the adjacent tennis court, and/or the parking and frontage north and/or south of the tennis court. Improvements to be performed by the City may include resurfacing, lighting, fencing and/or landscaping.

4.6.2 The effective date of this Amendment shall be determined pursuant to section 23 of the Agreement.

Except with respect to the Sections of the Agreement expressly amended by this Amendment , all of the terms and conditions of the Agreement shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed in duplicate as of the date and year first above written.

Approved as to form:

Marcia Scully
General Counsel

By: _____
Deputy General Counsel

The Metropolitan Water District
of Southern California

By: _____
Jeffrey Kightlinger
General Manager

Approved as to form:

By: _____
Mark Hensley, City Attorney

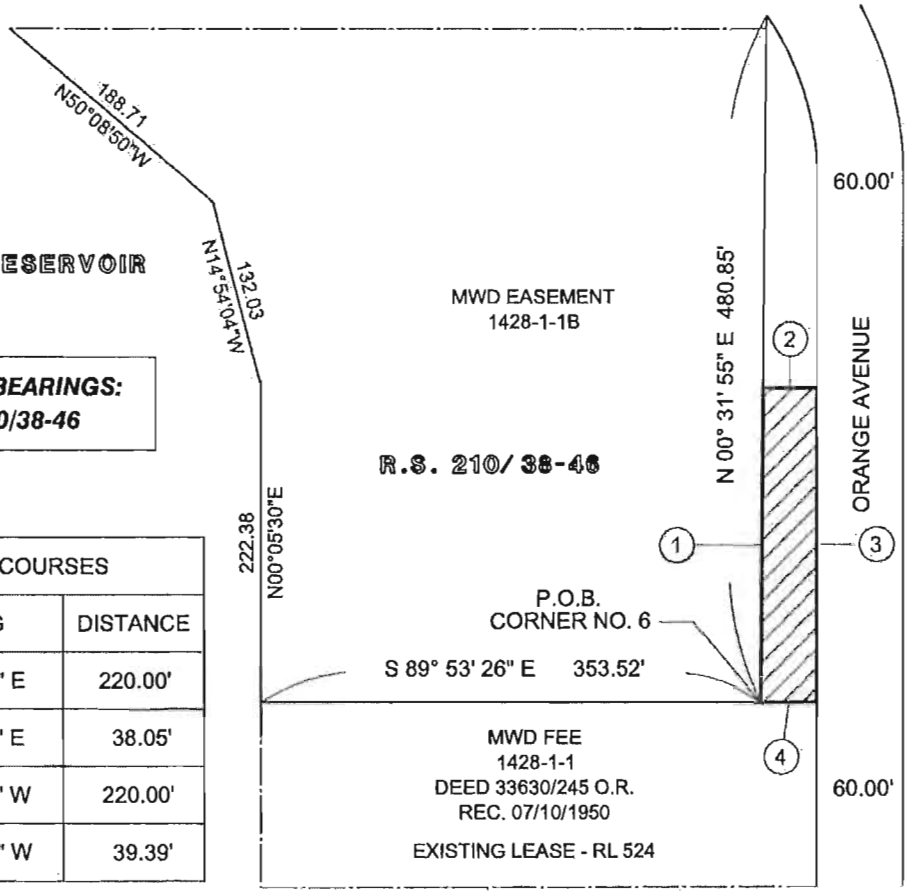
The City of Monterey Park

By: _____
Paul Talbot, City Manager

Attachments—Exhibit 1 (Settlement Agreement)
Exhibit 2 (map of lease amendment)

EXHIBIT B

POR. SW1/4 OF SEC. 26, T1S R12W, S.B.M.
CITY OF MONTERY PARK, COUNTY OF LOS ANGELES, CALIFORNIA
THIS EXHIBIT IS TO BE ATTACHED TO THE LEGAL DESCRIPTION



BASIS OF BEARINGS:
R.S. 210/38-46

TABLE OF COURSES		
NO.	BEARING	DISTANCE
1	N 00° 31' 55" E	220.00'
2	S 89° 53' 57" E	38.05'
3	S 00° 11' 03" W	220.00'
4	N 89° 53' 26" W	39.39'

LEGEND

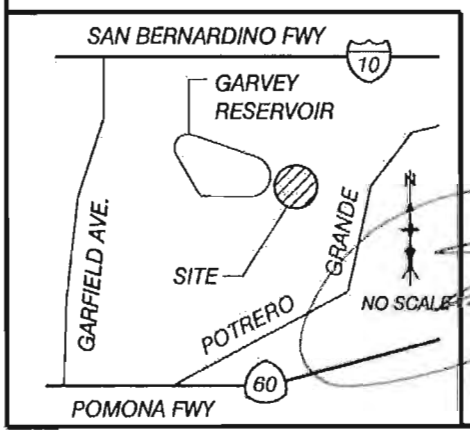
REVENUE LEASE - RL 524
AMENDMENT NO. 1
1428-1-1 (PORTION)
AREA = 0.196 AC.

LICENSED LAND SURVEYOR
PETER G. WISEMAN
Exp. 03/31/16
No. 6241
STATE OF CALIFORNIA

N

NO SCALE

VICINITY MAP



PREPARED UNDER MY SUPERVISION

Peter G. Wiseman PLS 6241

DATE 06/30/2014

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

GARVEY RESERVOIR
RL 524 AMENDMENT NO. 1
MWD to
CITY OF MONTEREY PARK
1428-1-1 (PORTION)

J:/Projects/Garvey_Reservoir/ROW/exhib/RL524_Amendment_No_1.dgn

06/30/2014 PGW BG

EXHIBIT A

Garvey Reservoir
RL 524 Amendment No. 1
MWD to
City of Monterey Park
1428-1-1 (Portion)

That portion of the southwest quarter of Section 26, Township 1 South, Range 12 West of San Bernardino Meridian in the City of Monterey Park, County of Los Angeles, State of California as conveyed to The Metropolitan Water District of Southern California by Corporation Grant Deed recorded July 10, 1950 in Book 33630, page 245 of Official Records, Los Angeles County described as follows:

Beginning at Property Corner No. 6, said corner being the southerly terminus of that course that bears N 00° 31' 55" E 480.85 feet as shown on Record of Survey filed in Book 210, pages 38 through 46, inclusive of Record of Survey, in the Office of the County Recorder of Los Angeles County. Said corner being marked with 3 inch brass cap with chiseled "+" set in 6" concrete base 6" below surface; thence coincident with said last mentioned course N 00° 31' 55" E 220.00 feet; thence S 89° 53' 57" E 38.05 feet to the westerly right of way line of Orange Avenue 60.00 feet wide as shown on said Record of Survey; thence southerly coincident with said westerly right of way line S 00° 11' 03" W 220.00 feet to a point on the easterly prolongation of that certain course that bearing S 89° 53' 26" E 353.52 feet as shown on said Record of Survey; thence coincident with said easterly prolongation N 89° 53' 26" W 39.39 feet to the Point of Beginning.

All as shown on EXHIBIT "B" attached hereto and made a part hereof

Subject to any and all existing uses, licenses, permits, easements, rights of way, covenants, conditions and restrictions.

END OF DESCRIPTION

PREPARED UNDER MY SUPERVISION

Peter G. Wiseman P.L.S. 6241

06/30/2014

Date

LICENSED LAND SURVEYOR
PETER G. WISEMAN
Exp. 03/31/16
No. 6241
STATE OF CALIFORNIA

Filename: J:\Project\Garvey Reservoir\ROW\legal\RL524_Amendment_No_1 06/30/2014

ATTACHMENT 7

Exhibit G – Original Lease
October 1983

L E A S E

R.L. No. 524
Garvey Reservoir Site
Parcel 1428-1-1 (Portion)

THIS LEASE is made on October 1, 1983, between THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, a public corporation, ("Lessor") and THE CITY OF MONTEREY PARK, a municipal corporation, ("Lessee").

1. DESCRIPTION OF PROPERTY. Lessor hereby leases to Lessee, on the terms and conditions hereinafter set forth, the following described real property ("Property"):

Those certain parcels of land herein designated Parcel A and Parcel B in the southwest quarter of Section 26, Township 1 South, Range 12 West, San Bernardino Meridian, and in Lot 4, as shown on map filed in Book 74, page 22, of Record of Surveys in the office of the County Recorder of the County of Los Angeles, State of California, said certain parcels of land being more particularly described as follows:

Parcel A

A parcel of land in said southwest quarter, said parcel of land being more particularly described as follows:

Commencing at the intersection of the centerline of Alhambra Avenue, formerly Sefton Avenue, 50 feet wide, with the southerly line of Tract No. 4461 as shown on map recorded in Book 59, page 51, of Maps, in the office of the County Recorder of the County of Los Angeles; thence S 0° 19' 15" E 420.00 feet along the southerly prolongation of the centerline of said Alhambra Avenue; thence S 89° 53' 05" E 270.00 feet; thence S 67° 00' 00" E 339.77 feet to THE TRUE POINT OF BEGINNING; thence S 45° 00' 00" E 492.25 feet; thence S 89° 53' 05" E 170.00 feet to a point on a line that is parallel with and distant westerly 30 feet, measured at right angles, from the centerline of Orange Avenue, as shown on Tract No. 33626, recorded in Book 884, page 69, of Maps in the office of said County Recorder; thence S 0° 06' 55" W along said parallel line 138.66 feet to the beginning of a tangent curve, concave easterly and having a radius of 529.00 feet; thence southerly

DESCRIPTION APPROVED
AUG 6 1982
R.H.B.

along said curve through a central angle of 20° 37' 35", an arc distance of 190.80 feet; thence S 70° 34' 45" W along a radial line of said curve 23.23 feet; thence N 56° 05' 00" W 350.00 feet; thence N 25° 47' 41" W 540.76 feet to the True Point of Beginning.

Parcel A containing 2.38 acres, more or less.

Parcel B

A parcel of land in said Lot 4, said parcel of land being more particularly described as follows:

Beginning at a point on the easterly line of Orange Avenue, 60 feet wide, said point being distant thereon northerly 229.60 feet from the intersection thereof with the centerline of Tegner Drive, 50 feet wide, as both avenue and drive are shown on Tract No. 25649, recorded in Book 781, page 98, of Maps in the office of said County Recorder; thence northerly along said easterly line to the southerly line of Metro Drive, 43 feet wide, as described in easement deed to the City of Monterey Park, recorded in Book D41, page 74, of Official Records of said County of Los Angeles; thence easterly along said southerly line of Metro Drive to the northerly prolongation of the westerly line of Lot 1 of Tract No. 33626 as shown on Map recorded in Book 884, page 70, of said Maps; thence southerly along said prolonged line and the westerly lines of Lots 1, 2, 3, and 4 of said Tract No. 33626; to the most southerly corner of said Lot 4 thence N 81° 32' 10" E along the southerly line of said Tract No. 33626 a distance of 125 feet; thence S 24° 35' W 100 feet; thence S 01° 35' W 240 feet to the True Point of Beginning.

✓ Parcel B containing 1.29 acres, more or less.

Parcel A and Parcel B in the aggregate containing 3.67 acres, more or less.

2. TERM. Subject to the provisions of Paragraph 11, the term of this lease shall be for 25 years beginning on October 1, 1983.

3. SUBLEASING. Lessee shall have the right to sublease all or any part of the property.

DESCRIPTION APPROVED
AUG 6 1982
Jeff B.a.B.

4. OPTION TO RENEW. Lessee shall have the option to renew this lease for one additional 25-year term upon giving written notice to Lessor of its intent to do so at least 365 days before the expiration of the preceding term, such notice shall be deemed given upon the mailing thereof to Lessor at its address hereinbelow.

5. RENT. The annual rent shall be $1,000, payable in advance, for the first two-year period of the term of this lease.

6. DETERMINATION OF FUTURE RENT. The annual rent during each succeeding two-year period following the first two-year period of the term of this Lease shall be determined by multiplying the basic annual minimum rent of $1,000 by a factor which shall be the ratio of the Annual Average of the United States Producer Price Index-All Commodities for the last year of the concluding two-year rental period to the Annual Average of the Producer Price Index-All Commodities for the year 1981, reported to be 293.4 by the United States Department of Labor, Bureau of Labor Statistics, and published in U.S. Department of Commerce's monthly publication "Survey of Current Business", provided, however, that the minimum annual rent shall be $1,000, nothing above to the contrary withstanding.

Computation of the above ratio shall be carried to four decimal places and rounded to the nearest 1/1000th with the computation of rent resulting from the application of this ratio rounded to the nearest dollar.

In the event that the U.S. Department of Labor, Bureau of Labor Statistics, shall cease to report, or change its method of compiling and/or reporting the Producer Price Index used in the above ratio, such other index as may be substituted in place thereof by the appropriate governmental agency of the United States then having responsibility for such compilation and reports of Producer Price Indexes, subject to any necessary adjustment of such Index appropriate to its continued use in determining the ratio set forth above, shall be used.

In the event that such substitute index is not provided, or proves unsuitable for determining the above ratio, then such other index appropriate to such use, as mutually agreed upon by the parties hereto, shall be used.

7. USE. Property shall be used for park and recreational uses only. Such use shall include the right to improve Property with improvements such as tennis courts, raquetball, snack bar, health spa center, parking area, fencing, and landscaping consistent with the purposes of the lease. Any such improvements shall be compatible with Lessor's requirements and use of the underlying fee, and in accordance with plans which must be submitted by Lessee to Lessor for Lessor's prior written approval, which shall not be unreasonably withheld. Lessee's use of Property shall be subject to the right of Lessor to use it for the construction and maintenance of any facility required by Lessor in its operations.

The following requirements must be considered in any plans for the use of Property:

a. Hours of operation of the leasehold shall be in accordance with City ordinances.

b. Lessee shall, at its expense, keep in good repair, and maintain all its facilities and grounds within leasehold on a year-round basis. This maintenance shall include any necessary reconstruction, repair, and painting of structures and fences. It shall also include the paving of parking lots and roadways to abate dust, planting and watering the grass areas, keeping the leasehold clean, neat, and orderly, and keeping the total area in a park-like condition.

8. MECHANICS LIENS. Lessee shall keep all improvements free from any mechanic's lien.

9. NONLIABILITY OF OWNER FOR DAMAGES. Lessee assumes all risk of loss to itself, which in any manner may arise out of the use of Property under this lease. Further, Lessee shall indemnify Lessor and its directors, officers, and employees, against any liability and expenses, including the reasonable expense of legal representation whether by special counsel or by Lessor's staff attorneys, resulting from injury to or death of any person, or damage to any property, including property of Lessor, or damage to any other interest of Lessor, including but not limited to suit alleging noncompliance with any statute or regulation which in any manner may arise out of the issuing of this lease, or use by Lessee and any Sublessee of Property.

10. LIABILITY INSURANCE. Lessee has furnished insurance in accordance with the certificate of insurance attached hereto as Exhibit "A". Such insurance shall remain in effect throughout the term of this lease and any renewals thereof. Failure of Lessee to keep such insurance in effect shall be cause for termination of this lease.

11. ENTRY BY OWNER. Lessee shall permit Lessor to enter Property at any reasonable time for the inspection of same, or at any time in connection with any work which may be required thereon. Lessor shall not be liable for any damage to Lessee's improvements resulting from such work. Lessor shall give Lessee 48 hours notice of such work, except in an emergency.

12. TERMINATION. a. This lease may be terminated at any time by Lessor or Lessee upon 360 days prior written notice. Such notice will be deemed given upon the mailing thereof to the recipient at its address hereinbelow.

b. In the event the lease is terminated between anniversary dates, in accordance with the provisions of this paragraph, there shall be a pro rata refund of any rent paid in advance.

c. All improvements such as tennis courts, raquet-ball, snack bar, health spa center, parking areas, fencing, and landscaping placed on Property by Lessee shall be and remain the personal property of Lessee, and shall be removed by Lessee from Property on or before the termination of lease; provided that title to such personal property not so removed by Lessee shall, at Lessor's option, vest in Lessor five days after written notice to Lessee that Lessor has exercised such option, said notice to be given within five days after the termination of the lease and to be deemed given upon the mailing thereof to Lessee at its address hereinbelow, or Lessor may remove any such personal property and Lessee shall be liable to Lessor for the cost of such removal.

d. Violation of any term, condition, or restriction which in the opinion of Lessor is detrimental to the operation or security of Lessor's facilities, will, at the sole discretion of Lessor, result in termination of this lease if not corrected within 30 working days after receipt by Lessee of written notice to correct such violation.

13. ATTORNEYS' FEES. The prevailing party in any action brought by either party hereto based on any claim arising under this lease shall be entitled to reasonable attorneys' fees.

14. WAIVER. The waiver by Lessor of any breach of any term, covenant, or condition herein contained shall not be deemed to be a waiver of such term, covenant, or condition, or of any subsequent breach of the same or any other term, covenant, or condition herein contained. The subsequent acceptance of rent hereunder by Lessor shall not be deemed to be a waiver of any preceding breach by Lessees of any term, covenant, or condition of this lease, other than the failure of Lessees to pay the particular rental so accepted, regardless of Lessor's knowledge of such preceding breach at the time of acceptance of such rent.

15. TIME is of the essence of this lease.

Lessor's Mailing Address:
Post Office Box 54153
Los Angeles, CA 90054
Attention Right of Way and Land Division

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Evan L. Griffith
General Manager

By [signature]
Assistant General Manager

Lessor

Lessee's Mailing Address:
City of Monterey Park
Department of Recreation and Parks
320 West Newmark Avenue
Monterey Park, CA 91754

THE CITY OF MONTEREY PARK
a municipal corporation

By [signature]
Mayor Louise Davis

By [signature]

Lessee

CMT/lgb

APPROVED AS TO FORM
CARL [illegible]
GENERAL COUNSEL

BY SETHA SCHLANG
DEPUTY GENERAL COUNSEL

Authorized by MWD Administrative Code Section 461.12.1

EXHIBIT A

(RL 524)
1428-1-1 (Portions)
LEASE
MWD to the City of Monterey Park

Those portions of land, lying within Section 26, Township 1 South, Range 12 West, San Bernardino Meridian, in the City of Monterey Park, County of Los Angeles, State of California, as conveyed to The Metropolitan Water District of Southern California, by Corporation Grant Deed, recorded July 10, 1950, in Book 33630 page 248, as Document No. 824, of Official Records, in the Office of the County Recorder of said County, and as shown on a map filed in Book 210 Pages 38 through 46 of Record of Survey, Records of said County, described herein as Parcels A and B as follows:

Parcel A

BEGINNING at the westerly terminus of that certain line shown on said map as having a bearing and distance of "S 89°53'26" E 353.52 feet", said point being marked by 3-inch Standard MWD Brass Cap with chiseled "+", set in a 6-inch concrete base, 12-inch below surface, per said map; thence S 89°53'26" E 392.91 feet along said line and its easterly prolongation to a point on the westerly Right of Way line of Orange Avenue, 60.00 feet wide, as shown on said map; thence S 00°11'03" W 418.91 feet along said westerly line to the beginning of a tangent curve concave easterly having a radius of 529.00 feet, said point being marked by 1-1/2 inch iron pipe, tagged "MWD LS 7902", flush with surface as shown on said map; thence continuing southerly 159.08 feet along said curve through central angle of 17°13'49"; thence leaving said westerly line on a radial line S 72°57'16" W 23.23 feet; thence N 58°48'50" W 350.43 feet; thence N 24°14'30" W 226.78 feet to a point on the southerly prolongation of that certain line shown on said map as having a bearing and distance of "N 00°05'30" E 222.38 feet"; thence N 00°05'30" E 195.00 feet along said prolongation to the **POINT OF BEGINNING.**

Parcel B

BEGINNING at a point on the easterly Right of Way line of Orange Avenue, 60.00 feet wide, as shown on said map, said point being distant thereon N 31°42'06" W 229.60 feet from intersection of said easterly Right of Way line and its southerly prolongation with the centerline of Tegner Drive, 50.00 feet wide, as shown on said map; thence N 31°42'06" W 371.85 feet, along said easterly line, to the beginning of a tangent curve, concave easterly, having a radius of 469.00 feet, said point being marked by 1-1/2 inch iron pipe, tagged "MWD LS 7902", flush with surface; thence northerly 231.22 feet along said curve through a central angle of 28°14'53" to the beginning of a compound curve, concave southeasterly, having a radius of 15.00 feet, said point being marked by 1-1/2 inch iron pipe, tagged "MWD LS 7902", flush with surface as shown on said map; thence easterly 24.81 feet along said curve, through a central angle of 94°46'56" to a point on the southerly Right of Way line of Metro Drive, 52.00 feet wide, as shown on said map, said point being marked by 1-1/2 inch iron pipe, tagged "MWD LS 7902", flush with surface as shown on said map; thence N 88°40'17" E 104.17 feet along said southerly line to Right of Way the beginning of a non-tangent curve, concave easterly, having a radius of 349.00 feet, and being concentric with and distant easterly 150.00 feet from the centerline of said Orange Avenue, said point being marked by 1-1/2

EXHIBIT A

(RL 524)
1428-1-1 (Portions)
LEASE
MWD to the City of Monterey Park

inch iron pipe, tagged "MWD LS 7902", flush with surface as shown on said map, a radial line to said point bears N 87°34'30" E; thence southerly 178.33 feet along said concentric curve, through a central angle of 29°16'34" to a point on a line parallel with and distant northeasterly 150.00 feet from the centerline of said Orange Avenue, said point being marked by 1-1/2 inch iron pipe, tagged "MWD LS 7902" as shown on said map; thence S 31°42'06" E 74.27 feet along said parallel line to the westerly terminus of that certain line having a bearing and distance of "S 81°29'56" W 1215.00 feet", as shown on said map, said point being marked by 1-1/2 inch iron pipe, tagged "MWD LS 7902", as shown on said map; thence N 81°29'56" E 125.00 feet along last said line; thence S 24°32'46" W 100.00 feet; thence S 06°30'25" W 245.34 feet to the **POINT OF BEGINNING.**

Subject to any and all existing uses, licenses, permits, easements, rights of way, covenants, conditions and restrictions.

All as shown on Exhibit "B" attached hereto and made a part hereof.

END OF DESCRIPTION

PREPARED UNDER MY SUPERVISION

Thomas M. Bosserman

Thomas M. Bosserman P.L.S. 7328

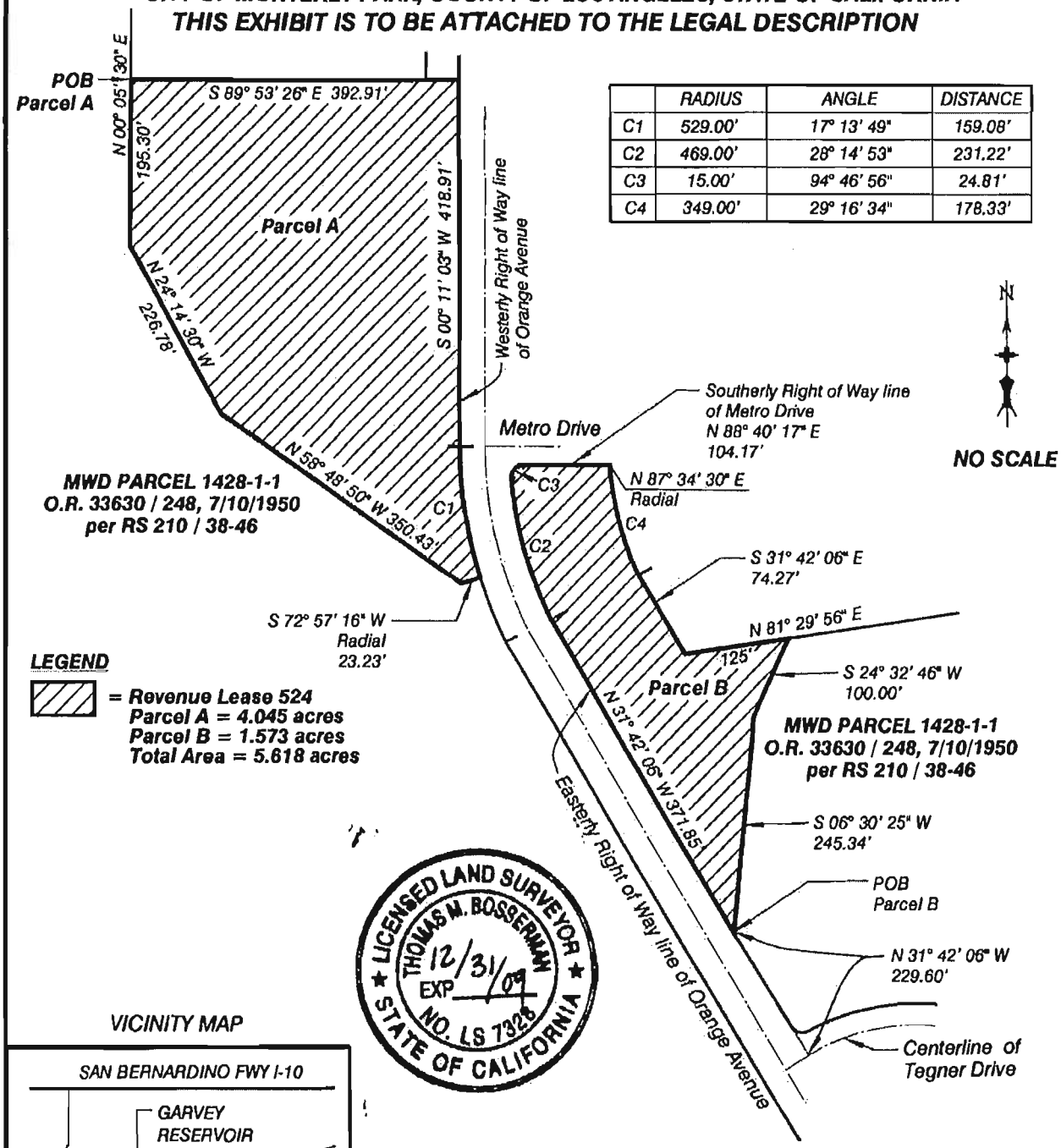
1/3/2008
Date

J:staff/tom/142811ptn.doc 12/11/2007

EXHIBIT B

PORTION OF SECTION 26, T1S, R12W, S.B.M.,
CITY OF MONTEREY PARK, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA
THIS EXHIBIT IS TO BE ATTACHED TO THE LEGAL DESCRIPTION

	RADIUS	ANGLE	DISTANCE
C1	529.00'	17° 13' 49"	159.08'
C2	469.00'	28° 14' 53"	231.22'
C3	15.00'	94° 46' 56"	24.81'
C4	349.00'	29° 16' 34"	178.33'

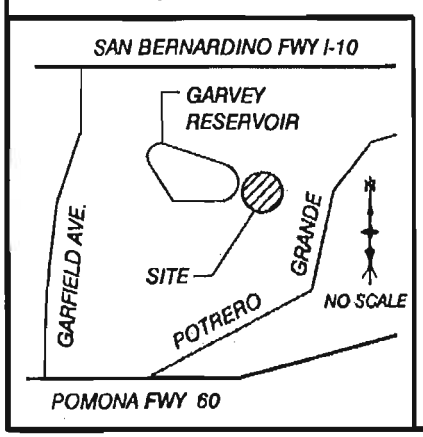


LEGEND

= Revenue Lease 524
Parcel A = 4.045 acres
Parcel B = 1.573 acres
Total Area = 5.618 acres

LICENSED LAND SURVEYOR
THOMAS M. BOSSERMAN
EXP 12/31/09
NO. LS 7328
STATE OF CALIFORNIA

VICINITY MAP



PREPARED UNDER MY SUPERVISION

Thomas M. Bosserman P.L.S. 7328

1/3/2008
Date

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

GARVEY RESERVOIR

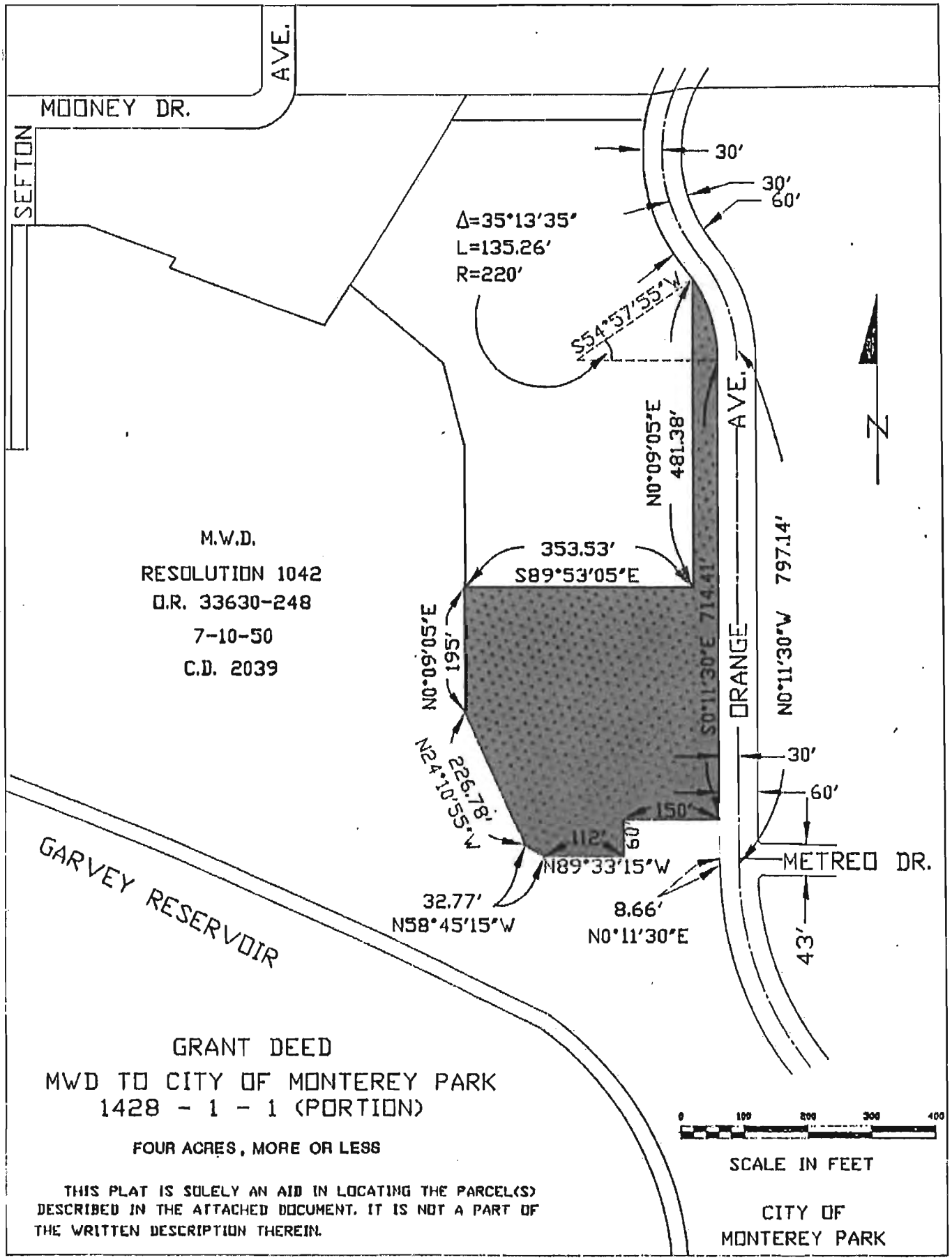
REVENUE LEASE 524

MWD
TO
CITY OF MONTEREY PARK

1428-1-1 PORTIONS

/garvey/row/exhib/rl524V8dgn

1-7-2008 DPN



LA 1428-1-1 DA01MP01 Js 12/21/88

ATTACHMENT 8

Exhibit H – Amendment to
Garvey Park Lease

Lease R. L. 524
Garvey Reservoir
MWD Parcel No. 1428-1-1 (Portion)
WSO Los Angeles Team
APN 5260-013-910

AMENDMENT NO. 1 TO LEASE

Lease R.L. 524 entered into as of October 1, 1983 by and between THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, a public corporation, (Lessor), and THE CITY OF MONTEREY PARK, a municipal corporation, (Lessee), is hereby amended with this Amendment No. 1.

As part Lessor's and Lessee's agreement to enter into an Amendment to the Settlement Agreement Between The City of Monterey Park and The Metropolitan Water District of Southern California Concerning the Garvey Reservoir, dated September 16, 1993, Lessor agreed to provide additional property and allow an additional use for the Property.

In consideration of the provisions contained herein, the parties HEREBY AGREE to amend the Lease by amending Paragraph 1 (description of property), adding Subparagraphs 7(c) and 7(d) (use), and replacing Paragraph 10 (liability insurance) as follows:

1. The introductory section of Paragraph 1 of the Lease is amended to add the new area to the definition of Property as described in new Exhibits A and B as follows:

Description of Property. Lessor hereby leases to Lessee, on the terms and conditions hereinafter set forth, the following described real property and the real property described in Exhibits "A" and "B" attached hereto (Property):

2. Subparagraphs 7(c) and 7 (d) are added to Lease to allow for the additional use and conditions thereon:

c. Subject to the terms of this paragraph, Lessee may elect to use portions of the property north of the tennis court, as shown on Exhibit _B, for Lessee's use as a dog park.

(i) If Lessee builds a dog park, Lessee will at Lessee's expense, erect a protective chain link fence around Lessor's manhole and air release and vacuum valve enclosure located at approximately Station 308+90, maintaining approximately 10 foot minimum, clearance to all above grade improvements.

(ii) Lessor reserves the right to erect the fence at its own expense under any other circumstances.

(iii) Lessee will afford Lessor equipment access through the dog park to Lessor's protected manhole/valve enclosure area for operation, maintenance, and other purposes.

d. North and/or south of the existing tennis court parking lot, Lessor will allow Lessee to install a white picket or other style fence, positioned to provide an approximate 10 foot-wide frontage which may be landscaped by Lessee in drought tolerant or other landscaping. Lessor reserves the right to install a chain link or other type security fence behind (or west of) the white picket fence.

3. Paragraph 10 of the Agreement is replaced as follows:

LIABILITY INSURANCE. Lessee has furnished insurance coverage evidenced by the Certificate(s) of Insurance attached hereto as Exhibit "C." A review of the insurance coverage will be made every year in order to adjust the coverage to be commensurate with the appropriate insurance coverage existing for similar type leaseholds at the time of review. Failure to maintain a current Certificate of Insurance on file with Lessor evidencing such insurance shall be cause for termination. Insurance coverage shall remain in effect throughout the term of lease and throughout any renewals.

Said insurance shall meet the following requirements:

a. General liability in the amount of $1,000,000 with a $2,000,000 aggregate

b. Workers' compensation coverage with California statutory limits, and employer's liability in the amount of $1,000,000

c. Auto liability in the amount of $1,000,000 each accident

Insurance coverage shall have the following endorsements:

a. Name Lessor as additional insured on the general liability and automobile liability
b. Shall obligate the insurance carrier to provide to Lessor not less than a 30 day notice of cancellation or material change affecting the coverage of the policies
c. The workers' compensation policy endorsed with a waiver of subrogation in favor of Lessor
d. The Lessee's insurance is primary to any self-insurance or insurance of Lessor

Lessor shall have no liability to Lessee or to any insurer, by way of subrogation or otherwise, on account of any loss or damage to Lessee's respective property, or the Project, regardless of whether such loss or damage is caused by the negligence of Lessor or Lessee, arising out of any of the perils or casualties insured against by the property and/or liability insurance policies carried. The insurance policies obtained by Lessee pursuant to this Lease shall permit waivers of subrogation that the insurer may otherwise have against the non-insuring party. In the event the policy or policies do not allow waiver of subrogation prior to loss, Lessee shall, at the request of Lessor, deliver to Lessor a waiver of subrogation endorsement in such form acceptable to Lessor. If such an endorsement is not available and the Lessee's insurer pursues separate legal action against the Lessor, the Lessee shall be responsible for all legal fees and payment of any funds Lessor is legally held obligated to pay.

All carriers must be admitted to do business in California and have an AM Best rating of not less than A: VII. A non-admitted carrier may be used with authorization by Lessor with an AM Best rating of at least A: X. The exception to these ratings is for the State Compensation Fund (Workers' Compensation), which is unrated.

[Notwithstanding the preceding provisions, Lessee has furnished Lessor with a letter evidencing the establishment of its self-insurance program with self-insured retentions in amounts equal to or in excess of the requirements in this paragraph, attached hereto as Exhibit "A." This program shall remain in full force and effect during the term of this Lease.]

Except as herein amended, all terms and conditions of Lease R.L. 524 shall continue in full force and effect.

Date Executed:_____

Licensor's Mailing Address:
Post Office Box 54153
Los Angeles, CA 90054
Attention: Real Property Development
and Management Group
Telephone: (213) 217-7750

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Jeffrey Kightlinger
General Manager

By_____
John Clairday, Manager
Real Property Development
and Management Group

Lessor

Date Executed:_____

Lessee's Mailing Address:

_____

_____

_____

Telephone ( )_____

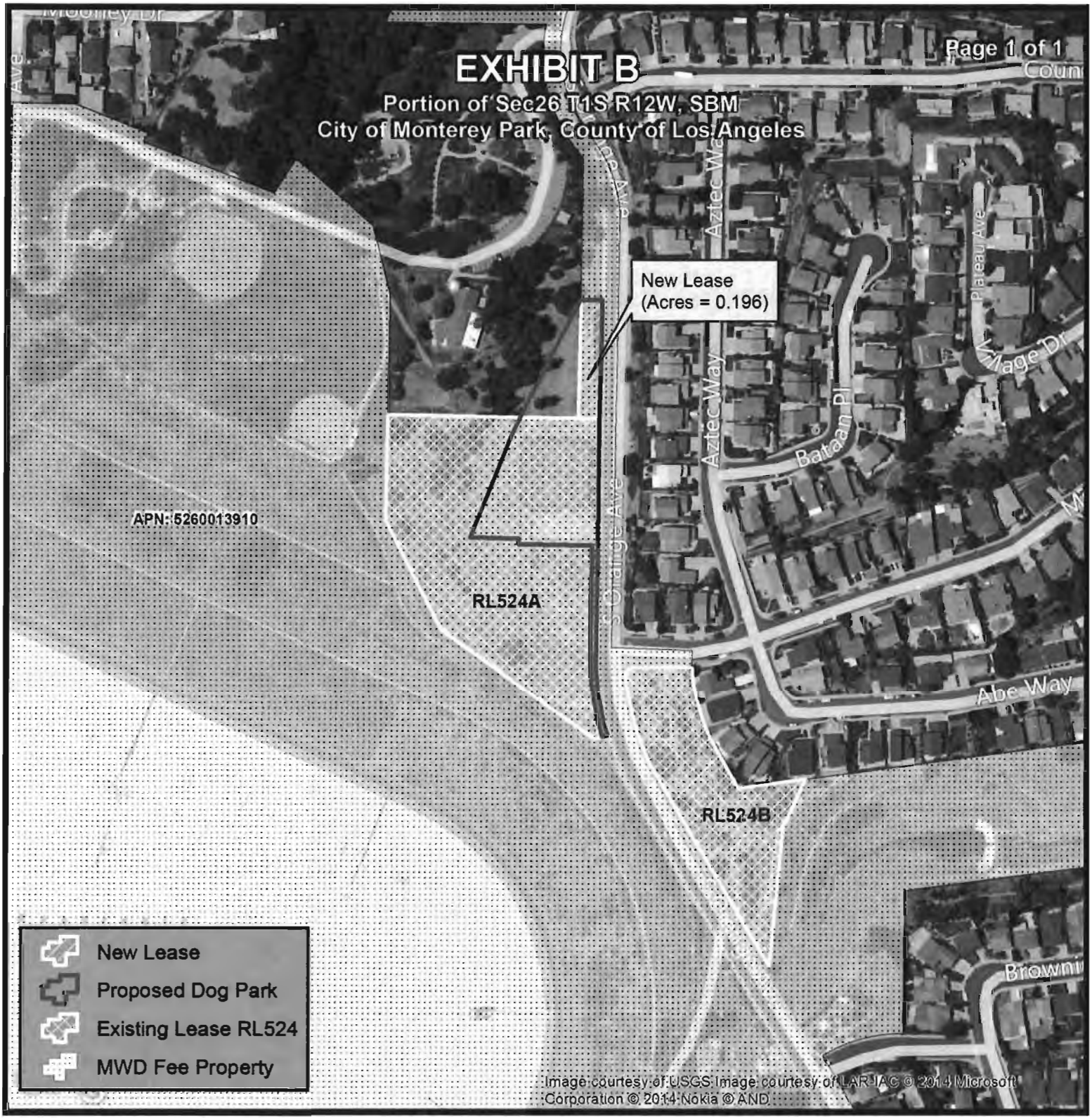
THE CITY OF MONTEREY PARK

By_____
Print:_____
Title:_____

Lessee

EXHIBIT B

Portion of Sec26 T1S R12W, SBM
City of Monterey Park, County of Los Angeles



Feet
0 62.5 125 250

THIS EXHIBIT IS TO BE USED FOR APPROXIMATE POSITIONING ONLY. IT IS NOT TO BE USED, NOR IS IT INTENDED TO BE USED FOR ENGINEERING, RECORDING OR LITIGATION PURPOSES. NO WARRANTY OF ACCURACY IS IMPLIED OR GUARANTEED.

The Metropolitan Water District of Southern California
Engineering Services Group

COLORADO RIVER AQUEDUCT
GARVEY RESERVOIR

LEASE
RL 524
MWD
to
CITY OF MONTEREY PARK

MWD ROW: 1428-1-1 (por) APN: 5260013910

J:\Projects\LLAP\mxd\RL524_Lease_to_Monterey_Park_Blk&White.mxd Photography Date: N/A Prepared by:Ayk Unanyan (Engineering Survey) Checked by:Peter Wiseman Job#:14-15-20

ATTACHMENT 9

Exhibit I – Notice to Residents

August 2014

NOTICE OF CITY OF MONTEREY PARK CITY COUNCIL MEETING

On Wednesday, August 20th at the Monterey Park City Council meeting (at the time and location set forth below), staff is recommending that the City Council adopt an amendment to the 1993 Settlement Agreement between the City of Monterey Park and the Metropolitan Water District ("MWD") concerning the Garvey Reservoir.

Under the Settlement Agreement MWD has the authority to raise the currently "reduced water level" of 561 feet to "normal capacity water level" of 573 feet when certain conditions have been met. Garvey Reservoir is permitted by the State of California Division of Safety of Dams, which regularly inspects the reservoir and reviews its performance. MWD appears to have met the conditions of the Settlement Agreement and intends to resume operating at the capacity water level. In addition to the state regulatory oversight, the Amendment provides for MWD to continue extensive monitoring and testing of the reservoir and engage in regular frequent communications with the City to provide better assurances that the reservoir is being and will continue to be operated in a safe manner.

Monterey Park City Council Chambers
320 W. Newmark Avenue
Monterey Park, CA 91754
7:00 p.m.

For further information, please contact Public Works Director Ron Bow at 626-307-1323

蒙特利公園市 *市議會會議通知*

蒙特利公園市市議會會議將於 8 月 20 日星期三舉行(會議時間地點安排如下)，職員建議市議會，採納在 1993 年通過的蒙特利公園市和都市水利局(簡稱 MWD)之間，有關嘉偉蓄水庫(Garvey Reservoir)的和解協議修正案。

根據和解協議，當某些情況與相關要求相符時，MWD 當局有權提高目前 561 呎的“減少用水高度”，到 573 呎的“正常容量用水高度”。MWD 看上去符合了這些情況，並打算恢復容量用水高度的操作。修正案賦予 MWD 權利，繼續對蓄水庫進行廣泛的監控和測試，並與市政府進行規律頻繁的交流，此舉將確保蓄水庫是並將繼續以安全方式管理提供更完善的保證。

地點：蒙特利公園市 市議會會議廳
320 W. Newmark Avenue
Monterey Park, CA 91754
時間： 晚上 7 點

若需更多相關詳情，請致電 626-307-1323，與公共工程部主任 Ron Bow 聯繫。

AVISO DE UNA JUNTA DEL CONCEJO MUNICIPAL DE LA CIUDAD DE MONTEREY PARK

Durante la junta del Concejo Municipal el miércoles 20 de Agosto (a la hora y lugar mencionado abajo), el personal recomendará que el Concejo Municipal adopte una enmienda al Acordado Convenio de 1993 entre la ciudad de Monterey Park y el Metropolitan Water District ("MWD") con relación al Embalse de Garvey.

Bajo el Acordado Convenio, el MWD está autorizado a aumentar el actualmente "reducido nivel de agua" de 561 pies hasta el "nivel normal de capacidad de agua" de 573 pies cuando ciertas condiciones hayan sido cumplidas. Al parecer MWD ha cumplido con éstas condiciones y tiene la intención de continuar operando al nivel de capacidad de agua. La enmienda provee que el MWD continúe extensiva vigilancia y pruebas del embalse y que entable comunicaciones regulares frecuentes con la Ciudad para proporcionar mejor garantía de que el embalse está y continuará siendo operado de una manera segura.

Cámara del Concejo Municipal de Monterey Park
320 W. Newmark Avenue
Monterey Park, CA 91754
7:00 p.m.

Para más información, por favor póngase en contacto con Ron Bow, Director de Obras Públicas, llamando al 626-307-1323.

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **New Business Agenda Item 6-B.**

TO: Honorable Mayor and Members of the City Council

FROM: Michael A. Huntley, Director of Community and Economic Development

SUBJECT: An Ordinance amending Monterey Park Municipal Code § 6.20.020 and § 9.100.020 to include "Electronic Cigarettes" as part of the prohibition on smoking in outdoor public areas and tobacco retailer licensing.

RECOMMENDATION:

It is recommended that the City Council consider:

1) Introducing and waiving the first reading of an ordinance amending Monterey Park Municipal Code ("MPMC") §§ 6.20.020 and 9.100.020; and

2) Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

MPMC Chapter 6.20 (Smoking Prohibited) prohibits smoking in certain public places; establishes distance requirements from specific areas where people congregate, dine, or gather; specifies those areas where individual may smoke; requires signage be installed to inform the public of the Municipal Code requirements; and identifies enforcement requirements. MPMC Chapter 9.100 (Tobacco Retailer License) establishes licensing requirements for Tobacco Retailers that should also be applied to Electronic Cigarette sales.

Since the adoption of the above Chapters in 2010 and 2012, the use of electronic smoking devices, commonly known as "e-cigarettes" or "electronic cigarettes" has gained significant popularity. As the popularity of these devices grows, policy makers are faced with the question of whether e-cigarettes should be considered in the same ways as traditional cigarettes when it comes to use in public places.

Electronic cigarettes are battery-powered devices that are designed to mimic cigarettes by vaporizing a nicotine-laced liquid that is inhaled by the user. Although some e-cigarettes are meant to look and feel like a traditional cigarette, right down to a small light at the tip that lights up like a burning cigarette, a subgenre of e-cigarettes known as "hookah pens," "e-hookahs," or "vape pipes" come in a rainbow of colors and candy-sweet flavors. The technology and hardware involved in all "e-cigarettes" is similar and

they produce a vapor from a heating element that boils the liquid, hence the term "vaping."

Due to the possible health concerns related to electronic cigarettes and similar devices, staff is recommending that the City Council consider an amendment to MPMC Chapters 6.20 and Chapter 9.100 incorporating definitions for "Electronic Cigarettes" and "Smoke or Smoking."

ANALYSIS:

Although e-cigarettes are too new for long term studies on their health effects, current research indicates that chemicals contained in e-cigarettes may be harmful and that vaping does release contents of e-cigarettes into the air. Many cities, counties and organizations are putting into place laws or policies that treat e-cigarettes the same as conventional cigarettes when it comes to acceptable locations for usage in public and semi-public places. Attached is information from the Public Health Institute, the CDC, the US Food and Drug Administration and other technical information related to Electronic Cigarettes.

It is staff's recommendation that the City Council consider an amendment to the MPMC incorporating definitions for "Electronic Cigarettes" and "Smoke or Smoking" into the City's smoking control regulations and treat electronic -cigarettes in a manner similar to conventional cigarettes and tobacco products.

FISCAL IMPACT:

No fiscal impacts are anticipated based on the proposed amendment to the existing smoking prohibited ordinance.

CEQA:

This ordinance is exempt from review under the California Environmental Quality Act (California Public Resources Code §§ 21000, *et seq.*, "CEQA") and CEQA regulations (14 California Code of Regulations §§ 15000, *et seq.*) because it establishes rules and procedures to permit operation of existing facilities; minor temporary use of land; and ensure maintenance, restoration and protection of the environment. The proposed Code Amendment and related Ordinance are therefore categorically exempt from further CEQA review under Cal. Code Regs. Title 14, §§ 15301, 15304(e), and 15308.

Respectfully submitted,

By:

Michael Huntley
Director of Community and
Economic Development

Approved by:

Paul L. Talbot
City Manager

Reviewed by:

Karl H. Berger
Assistant City Attorney

Attachment(s)

Draft Ordinance
Public Health Institute Report
CDC Update
U.S. Food and Drug Administration Health Alert
Change Lab Solutions Report

ORDINANCE NO.

AN ORDINANCE AMENDING MONTEREY PARK MUNICIPAL CODE §§ 6.20.020 AND 9.100.020 TO INCLUDE "ELECTRONIC CIGARETTES" AS PART OF THE PROHIBITION ON SMOKING IN OUTDOOR PUBLIC AREAS AND REGULATION OF TOBACCO RETAILER LICENSING.

The City Council of the City of Monterey Park does ordain as follows:

SECTION 1: The City Council finds as follows:

A. Electronic cigarettes, as defined by California law, are currently being considered for regulation by the State of California and the United States Food and Drug Administration (FDA);

B. Various studies have demonstrated that electronic cigarettes contain carcinogens, vary in nicotine content, and can be used for various controlled substances besides nicotine including, without limitation, cannabis;

C. In addition to those studies identified by the FDA at www.federalregister.gov/a/2014-09491, and as set forth in the entire administrative record, the City Council takes specific notice of the following studies that are contained within the record:

1. Corey, Wang, et al., *Notes From the Field: Electronic Cigarette Use Among Middle and High School Students—United States, 2011-2012* (2013) Morbidity and Mortality Weekly Report, 62(35):729-730;

2. Rogers, Feighery, et al., *Current Practices in Enforcement of California Laws Regarding Youth Access to Tobacco Products and Exposure to Secondhand Smoke* (2007) Survey Report — June 2007, Technical Assistance Legal Center, California Department of Public Health, Tobacco Control; and

3. *Regulating Toxic Vapor, A Policy Guide to Electronic Smoking Devices* (2014) ChangeLab Solutions;

D. The FDA asserts that electronic cigarettes should be regulated as drug delivery devices; and

E. Based upon reports from the FDA and the State of California, there are no

objective scientific reports demonstrating that electronic cigarettes can help smokers to quit smoking.

SECTION 2: Monterey Park Municipal Code ("MPMC") § 6.20.020 is amended to add the following definitions:

"6.20.020 Definitions.

* * *

"Electronic Cigarette" has the same meaning as set forth in Health and Safety Code § 119405 and similar devices intended to emulate smoking, which permit a person to inhale vapors or mists that may or may not include nicotine.

* * *

"Smoke or smoking" means (1) carrying or holding of a lighted pipe, cigar or cigarette of any kind, or any other lighted smoking equipment or the lighting or emitting or exhaling the smoke of a pipe, cigar or cigarette of any kind; and (2) operating or using an electronic cigarette."

SECTION 3: MPMC § 9.100.020 is amended to read as follows:

"9.10.020 Definitions.

* * *

"Electronic Cigarette" has the same meaning as set forth in Health and Safety Code § 119405 and similar devices intended to emulate smoking, which permit a person to inhale vapors or mists that may or may not include nicotine.

* * *

"Tobacco paraphernalia" means cigarette papers or wrappers; pipes; holders of smoking materials of all types including, without limitation, electronic cigarettes; cigarette rolling machines; and any other item designed for smoking or ingestion of tobacco products;

* * *"

SECTION 4: Repeal of any provision of the MPMC herein will not affect any penalty, forfeiture, or liability incurred before, or preclude prosecution and imposition of penalties for any violation occurring before, this Ordinance's effective date. Any such repealed part will remain in full force and effect for sustaining action or prosecuting violations occurring before the effective date of this Ordinance.

SECTION 5: If any part of this Ordinance or its application is deemed invalid by a court of competent jurisdiction, the city council intends that such invalidity will not affect the effectiveness of the remaining provisions or applications and, to this end, the provisions of this Ordinance are severable.

SECTION 6: The City Clerk is directed to certify the passage and adoption of this Ordinance; cause it to be entered into the City of Monterey Park's book of original ordinances; make a note of the passage and adoption in the records of this meeting; and, within fifteen (15) days after the passage and adoption of this Ordinance, cause it to be published or posted in accordance with California law.

SECTION 7: This Ordinance will become effective on the thirty-first (31st) day following its passage and adoption.

PASSED AND ADOPTED this ____ day of _____, 2014.

_____
Anthony Wong, Mayor

ATTEST:

_____
Vincent D. Chang, City Clerk

APPROVED AS TO FORM:
Mark D. Hensley, City Attorney

By: _____
Karl H. Berger, Assistant City Attorney

Current Practices in Enforcement of California Laws Regarding Youth Access to Tobacco Products and Exposure to Secondhand Smoke

Survey Report — June 2007

Todd Rogers, Ph.D.

Ellen C. Feighery, R.N., M.S.

Harry H. Haladjian, B.A.

Technical Assistance Legal Center

Funded by the California Department of Public Health, Tobacco Control Section under Contract #04-35336

Table of Contents

Acknowledgments i
Executive Summary ii
Introduction 1
Methods 2
Results – Enforcement of Youth Access Laws 4
Warnings and Citations for Violations by Merchants 4
Warnings and Citations for Violations by Minors 6
Illegal Sales of Tobacco to Minors 8
Predictors of Youth Access Enforcement 11
Plans for Youth Access Enforcement 15
Enforcement in Jurisdictions with Strong Retail Tobacco Ordinances 15
Results – Enforcement of Secondhand Smoke Laws 17
Smoke-free Workplaces (Excluding Bars) 17
Smoke-free Bar Provision 33
Smoke-free Doorway and Window Areas 42
Discussion 47
References 50
Attachments 51

Acknowledgments

This project would not have been possible without the exceptional survey management efforts of Christine Case-Lo. Thanks also to David Cowling and his colleagues at the California Department of Public Health, Tobacco Control Section for their support.

This report was prepared under contract #04-35336 from the California Department of Public Health, Tobacco Control Section to the Public Health Institute (Technical Assistance Legal Center).

Executive Summary

Since the inception of the tobacco control program in California, the Department of Public Health, Tobacco Control Section (TCS) has devoted considerable resources to stimulate adoption of state laws and local ordinances, conduct media advocacy and education to stimulate compliance, and train enforcement agencies to increase active enforcement of laws designed to reduce illegal sale of tobacco to minors and exposure to secondhand smoke

From 1996-2000, TCS tracked the activities of local enforcement agencies as part of the Independent Evaluation (IE) of the California Tobacco Control Prevention and Education Program. Beginning late 2003, the Technical Assistance Legal Center (TALC) took on the task of periodic assessment of local enforcement agencies activities.

This report presents findings on the amount and type of enforcement of youth access and secondhand smoke laws occurring throughout California in 2006 and early 2007, and compares these finding to the results of our 2004 statewide enforcement agency surveys. In addition, trend analyses of data collected from enforcement agencies in the 18 counties that were the focus of the IE are also included to determine changes in enforcement activity since 1996.

Methods

Youth Access Enforcement Survey

The youth access survey addressed enforcement of Penal Code (PC) §308(a), prohibiting the sale of tobacco products to people less than 18 years of age, and PC§308(b), prohibiting anyone less than 18 years of age to buy or possess tobacco. Of the 297 surveys received, 26 were removed from the analyses because they were submitted by an agency that was not the main enforcement agency, or because they were duplicates from the same agency. This resulted in a valid sample of 271 agencies.

Secondhand Smoke Enforcement Survey

The secondhand smoke (SHS) survey focused on enforcement of: Labor Code (LC) §6404.5 Smoke-free Workplaces; LC§6404.5 Smoke-free Bars; and Government Code (GC) §7596-7598 that bans smoking proximal to entrances, exits, and operable windows, and covered parking areas of city, county, and state government buildings. Of the 259 surveys received, 195 self-identified as primary enforcers for LC§6404.5, and 169 self-identified as primary enforcers for GC§7596-7598, and 58 agencies shared enforcement responsibilities with the primary enforcers.

Summary of Findings and Discussion

Youth Access

- The youth access survey results indicate that enforcement agency actions have continued to decline since 1998. Statewide, about one-quarter of enforcement agencies conducted youth decoy operations in 2007, down significantly from about 30% in 2004.

- Fewer than 5% of enforcement agencies report that warnings and citations were issued to merchants "often" or "very often." This decrease may be related to the dramatic drop in the average number of youth decoy operations from almost 11 operations per year reported in 2004 down to 3.6 per year in 2007.

- From 2004 to 2007, there was a slight drop in the proportion of law enforcement agencies reporting that they issued warnings to minors possessing tobacco products. but those issuing citations remained the same. There were no significant changes in these types of activities since the 2004 survey.

- Law enforcement agencies continue to rank various policies and procedures such as suspension/revocation of licenses, and civil and criminal penalties for owners and clerks, as effective strategies to reducing youth access to tobacco.

- The continuing reduction in the percent of agencies actively enforcing PC308(a) is disappointing, given that TCS has continued to expend resources to stimulate enforcement through trainings, and technical assistance to law enforcement agencies.

- In 2007, significant predictors of whether decoy operations were conducted were: perceptions of greater collaboration with other agencies; lower perceived barriers to enforcement; and receipt of funding. These findings confirm the importance of providing ongoing support for local law enforcement agencies.

- Agencies operating in jurisdictions with strong local retail licensing ordinances reported conducting four times as many decoy operations over the prior 12 months than did agencies in jurisdictions without strong ordinances, underscoring the value of local policy actions.

- Law enforcement agencies' perspectives on various policies and procedures as effective strategies to reducing youth access to tobacco may be useful to local programs attempting to strengthen youth access laws in their communities, and may represent an opportunity for collaboration with their local law enforcement agencies on these efforts.

Secondhand Smoke

Enforcement of LC§6404.5 — Smoke-free Workplaces (Excluding Bars)

- Almost two-thirds of enforcement agencies throughout California reported conducting at least one workplace-related SHS enforcement activity in year prior to the 2007 statewide SHS survey.

- About half the agencies reported in 2007 that they responded to inquiries and complaints and conducted compliance checks, but relatively few agencies issued fines or citations. Agencies in rural counties reported issuing significantly fewer warnings for violations of LC§6404.5 than did agencies in urban and suburban counties.

- Among the agencies that completed both the 2004 and 2007 statewide SHS surveys, there is a significant decline in the percent reporting involvement in all types of SHS workplace enforcement actions. Agencies in the IE sub-sample from 1996 to 2007 shows similar declines in nearly every enforcement actions across the five survey waves.

- Most enforcement agencies perceive that the rate of compliance with workplace SHS laws is high, and few believe that the workplace SHS problem is very serious in their community.

- Agency ratings of the relative importance of enforcement of SHS laws, as compared to other laws, is the only independent predictor of whether any SHS compliance checks were conducted in the prior year. Even so, agencies rate enforcement of laws that prohibit smoking in indoor public areas as being only moderately important.

- Significant declines are seen statewide from 2004 to 2007 in the percent of agencies reporting collaboration with businesses, voluntary health organizations, and educational organizations on SHS workplace law enforcement.

- As in 2004, salient barriers to enforcement of SHS laws are limited agency staff and insufficient budget.

Enforcement of LC§6404.5 — Smoke-free Bar Provision

- Levels of enforcement of the smoke-free bar provision are higher than for other workplace provisions included in LC§6404.5. Almost three-quarters of the responding agencies in 2007 conducted at least one bar-related SHS enforcement activity during the previous six months, about the same as in 2004.

- Half or more of a all agencies reported that they responded to inquiries and complaints, down from 2004, and about the same percentage educated bar owners and others about the law. More than two-third of agencies report conducting compliance checks, fewer than half issued warnings, and fewer than one-quarter of all agencies issued citations or fines for violation of the smoke-free bar provision, all down from 2004.

- Significant declines are seen statewide from 2004 to 2007 in the percent of agencies reporting that they had responded to inquiries, responded to complaints, conducted compliance checks, issued warnings, and issued citations related to SHS laws in bars.

- Only one variable was found to be a independent predictor of whether SHS compliance checks were conducted in bars during the previous six months: greater relative importance of enforcement of SHS laws in bars. Nevertheless, compared to other laws enforced by respondent agencies, enforcement of laws that prohibit smoking in bars specifically is rated by agencies as being only moderately important, down from the rating level reported in 2004.

- Among all agencies reporting that they issued any citations for violation of the LC§6404.5 smoke-free bar provision, only 3% reported having issued at least one citation for a hookah bar or lounge violation in the previous six months.

Enforcement of GC§7596-7598 — Smoke-free Doorway and Window Areas

- The levels of enforcement activities related to GC§7596-7598 are lower than for either of the smoke-free workplace provisions of LC§6404. Statewide, only about half of the responding agencies reported conducting any enforcement activities related to this law. Fewer than half conducted compliance checks related to this law, more than one-third responded to inquiries and complaints, and less than one-third issued warnings. Very few agencies issued citations or fines for violations of the law.

- Most of the agencies believe that this issue is less serious than other community problems, and that there is fairly good compliance in their jurisdiction..

- Barriers to enforcement, such as limited staff and insufficient funding, ranked at about the same level as the perceived barriers to enforcing smoke-free workplace laws.

- The only significant predictor of whether an agency conducted any enforcement activity regarding GC§7596-7598 is the level of collaboration with other community groups and agencies.

- Enforcement agencies believe that there are high rates of compliance in their communities with the three SHS laws that were addressed in the survey. There is, however, variability in enforcement of SHS laws at the local level.

- The findings point to important roles Local Lead Agencies and their partners can play both in educating their communities and enforcement agencies about reducing exposure to secondhand smoke through law enforcement, and in facilitating collaboration with SHS enforcement agencies.

Introduction

Since the inception of the tobacco control program in California, the Department of Public Health, Tobacco Control Section (TCS) has identified as high priorities reducing the illegal sale of tobacco to minors and reducing exposure to secondhand smoke. Strategies have been pursued at the state and local levels to stimulate adoption of state laws and local ordinances, conduct media advocacy and education to stimulate compliance, and train enforcement agencies to increase active enforcement of these laws. Technical resources [e.g., Technical Assistance Legal Center (TALC), Bar and Restaurant Employees Against Tobacco Hazards (BREATH), and the Center for Tobacco Policy and Organizing (the Center)] have been funded at varying points in time by TCS to work with local jurisdictions on policy development and enforcement strategies.

During the period 1996-2000, TCS tracked the activities of local enforcement agencies as part of the Independent Evaluation (IE) of the California Tobacco Control Prevention and Education Program . The IE tracked activities and assessed outcomes in 18 "focal counties" selected to represent the entire state, and employed multiple data collection methods that were implemented in three waves (1996, 1998, and 2000).

Independent Evaluation Focal Counties (1996-2000)

Media Markets	**Medium-Density**
Fresno	Monterey
Los Angeles	San Bernardino
Sacramento	Shasta
San Diego	Yuba
San Francisco	
High-Density	**Low-Density**
Alameda	Lake
Contra Costa	Lassen
Orange	Mono
San Mateo	Plumas
Santa Clara	

In late 2003, the TALC scope of work was amended to include the assessment of the level of enforcement of state laws pertaining to illegal tobacco sales to minors and secondhand smoke through two survey waves (2004 and 2007). The 2004 and 2007 TALC law enforcement surveys represent an extension of the earlier IE survey efforts which were limited to enforcement agencies in the 18 focal IE counties. In contrast to the IE, the TALC law enforcement surveys were disseminated to <u>all</u> enforcement agencies responsible for enforcing these two categories of laws in California.

This report presents findings on the amount and type of enforcement of youth access and secondhand smoke laws occurring throughout California in 2006 and early 2007, and compares these finding to the results of the 2004 TALC enforcement agency survey. In addition, trend analyses of data collected from enforcement agencies in the 18 counties that were the focus of the IE are also included to determine changes in enforcement activity since 1996.

Methods

Enforcement Agency Surveys

Two separate written surveys were administered to enforcement agencies in California. One survey focused on the enforcement of state policies related to youth access to tobacco while the other survey focused on the enforcement of state and local policies related to exposure to tobacco smoke.

Specifically, the youth access (YA) survey focused on enforcement of Penal Code (PC) §308(a), prohibiting the sale of tobacco products to people under 18 years of age, and PC§308(b), prohibiting anyone under 18 years of age to buy or possess tobacco. The secondhand smoke (SHS) survey focused on enforcement of: Labor Code (LC) §6404.5 Smoke-free Workplaces; LC§6404.5 Smoke-free Bars; and Government Code (GC) §7596-7598 that bans smoking proximal to entrances, exits, and operable windows, and covered parking areas of city, county, and state government buildings. Both survey instruments contained primarily closed-ended questions that asked about enforcement activities over the past six or 12 months. Areas queried in the surveys included: issue salience, perceived importance of agency enforcement, perceived compliance with policies, involvement in enforcement activities, perceived barriers to enforcement, collaboration with other agencies on enforcement efforts, and perceived effectiveness of enforcement policies/procedures.

Survey Respondents

Youth Access Enforcement Survey. All police and sheriff offices in all California counties and municipalities were initially targeted for the survey. Our 2004 survey database of enforcement agencies was reviewed and updated through phone and e-mail contacts with TCS staff, Kelly Gordon, and Capricia Borrero (TALC). Additionally, TCS staff e-mailed a request to LLAs that they update they review the 2004 contacts and update the contacts in their jurisdictions. More than 43 LLAs provided updated contact information.

Surveys were mailed to 341 police departments, 103 sheriff offices or substations, and 41 city and county agencies (including 10 code enforcement departments), for an attempted census of 485 agencies. (Note that in some jurisdictions surveys were sent to multiple agencies and/or individuals to ensure response from the correct enforcement agency.) After removing agencies stating that they were not responsible for enforcement or did not currently enforce, incorrect contacts at agencies, and duplicates where one agency was responsible for multiple jurisdictions, the total sampling pool was 392, out of which 297 agencies returned completed surveys, for a response rate of 76%. Of the 297 surveys received, 26 were removed from the analyses because they were submitted by an agency that was not the main enforcement agency, or because they were duplicates from the same agency. This resulted in a valid sample of 271 agencies. County-level data were obtained from all 58 counties except Alpine, Del Norte, Glenn County, Humboldt, Imperial, Kings, Lake, Lassen, Los Angeles, Merced, Modoc, Monterey, San Diego, San Joaquin, San Luis Obispo, Santa Barbara, Santa Cruz, Solano, Stanislaus, and Ventura;

however, information was received from at least one jurisdiction within each of these counties with the exception of Alpine.

Secondhand Smoke Enforcement Survey. Our 2004 survey database of enforcement agencies was reviewed and updated through phone and e-mail contacts with TCS staff and Dian Kiser (RESPECT). Additionally, TCS staff e-mailed a request to LLAs that they update they review the 2004 contacts and update the contacts in their jurisdictions. More than 43 LLAs provided updated contact information.

Surveys were mailed to 225 police departments, 65 sheriff offices or substations, 54 code enforcement agencies, and 124 miscellaneous city and county agencies (including city attorneys, city managers, health departments, fire departments), for an attempted census of 468 agencies. After removing agencies replied stating that they were not responsible for enforcement, incorrect contacts and duplicate agencies responsible for multiple jurisdictions, the total sampling pool was 403, out of which 259 agencies returned completed surveys, for a response rate of 64%. Of the 259 surveys received, 195 self- identified as primary enforcers for LC§6404.5, and 169 self-identified as primary enforcers for GC§7596-7598, and 58 agencies shared enforcement responsibilities with the primary enforcers. Sixteen of 58 counties were not represented by main enforcement agency respondents: Alpine, Colusa, Contra Costa, Del Norte, El Dorado, Imperial, Inyo, Kern, Kings, Lake, Lassen, Mono, Santa Cruz, Sierra, Trinity, Tulare.

Procedures

Youth Access Enforcement Survey. The youth access survey was sent to all potential respondents during the last week of January 2007. In addition to the first mailing, agencies received up to two reminder postcards, a second survey, and reminder phone calls in order to maximize the response rate. Data collection was completed by the end of April 2007.

Secondhand Smoke Enforcement Survey. The SHS survey was mailed to all potential respondents in mid-February 2004. In addition to the first mailing, agencies received up to two reminder postcards, a second survey, and reminder phone calls in order to maximize the response rate. Data collection was completed by early May 2007.

All surveys were written in English. Public Health Institute staff checked each returned survey for completeness and clarity prior to data entry. In some cases, phone calls and faxes to agencies were necessary to clarify responses. Following detailed review of each returned survey, 281 YA surveys and 261 SHS surveys were electronically key-entered and verified by Data4U in Sunnyvale. Analyses were conducted using SPSS 11.5 for Windows and SPSS 11.0 for Macintosh.

Results: Enforcement of Youth Access Laws

In this section we present our findings from the 2007 statewide survey of agencies charged with enforcing PC§308(a), prohibiting the sale of tobacco products to persons under 18 years of age, and PC§308(b), prohibiting anyone under 18 years of age to buy or possess tobacco. Data are reported from only one main agency per jurisdiction (municipality or county). The report contains results from the total samples of respondents in 2004 and 2007, and analyses of change between 2004 and 2007 in a subset of respondents with youth access (YA) data from both surveys. The report also contains data reported by enforcement agencies that are situated in the 18 focal counties of the 1996-2000 Independent Evaluation (referenced as the IE sample) and a subset of IE enforcement agencies for which we have five waves of YA enforcement data.

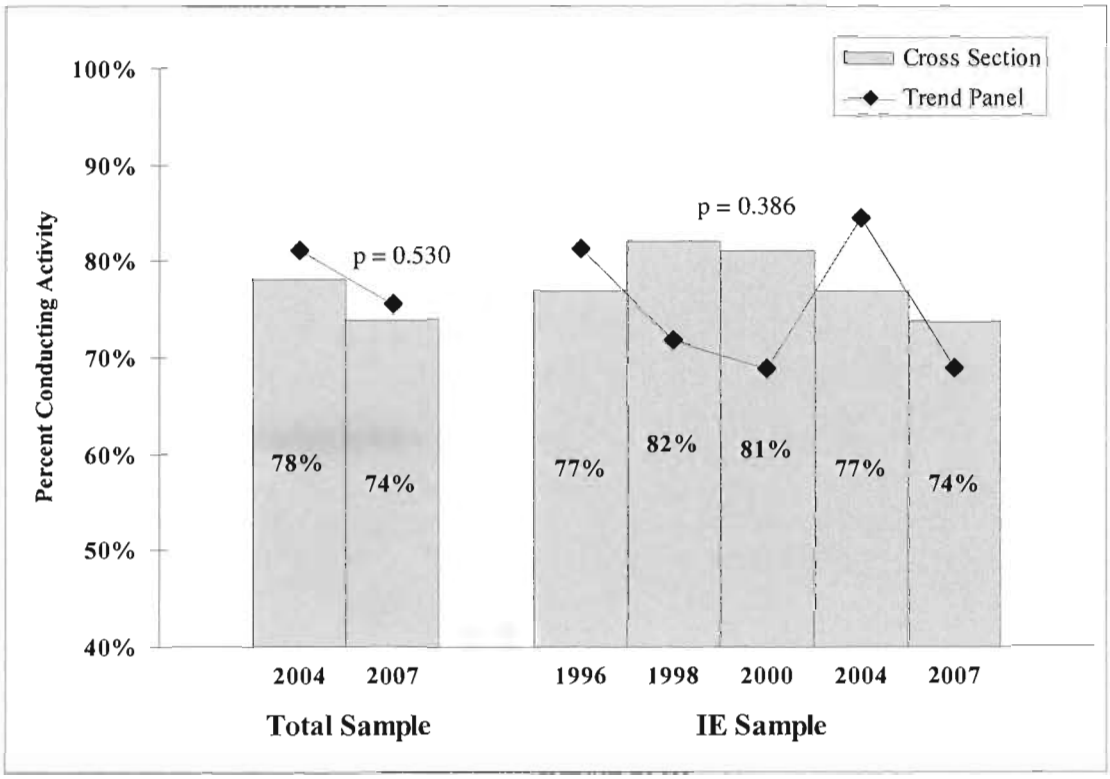
Warnings and Citations for Violations by Merchants

Warnings. On the left side of Figure YA-1a, we report data for all agencies responding to this item in the 2004 and 2007 statewide SHS surveys, both as serial cross-sections with all valid responses in either wave (bars), and for the panel of agencies that reported valid responses in both 2004 and 2007 (trend line). On the right side of the figure, we report 1996-2007 data only for those agencies from the 18 focal IE counties, also as serial cross-sections and as a panel.

Figure YA-1a shows that statewide, 74% of YA enforcement agencies reported having issued warnings to merchants selling tobacco products to minors in the year prior our 2007 survey. Of the 210 agencies responding to this question, about one-third (31%) reported that they only "rarely" issued warnings to merchants, and only 3% reported that they issued warnings "very often." There are no differences among LLA-designated urban, suburban, and rural counties on this variable, and the decrease from 81% in 2004 to 76% in the 2004-2007 statewide panel is not significant (Chi-squared = 0.40, $p = 0.530$, $n = 106$).

Among the 127 IE-county enforcement agencies that provided valid responses in 2007, 74% had issued warnings to merchants in the previous 12 months (see Figure YA-1a). In the panel of IE respondents with valid data across all survey waves, no significant differences were detected on this measure (Cochran's $Q = 4.15$, $p = 0.386$, $n = 32$).

Figure YA-1a
Percent of Agencies Issuing Warnings for Youth Access Violations by Merchants

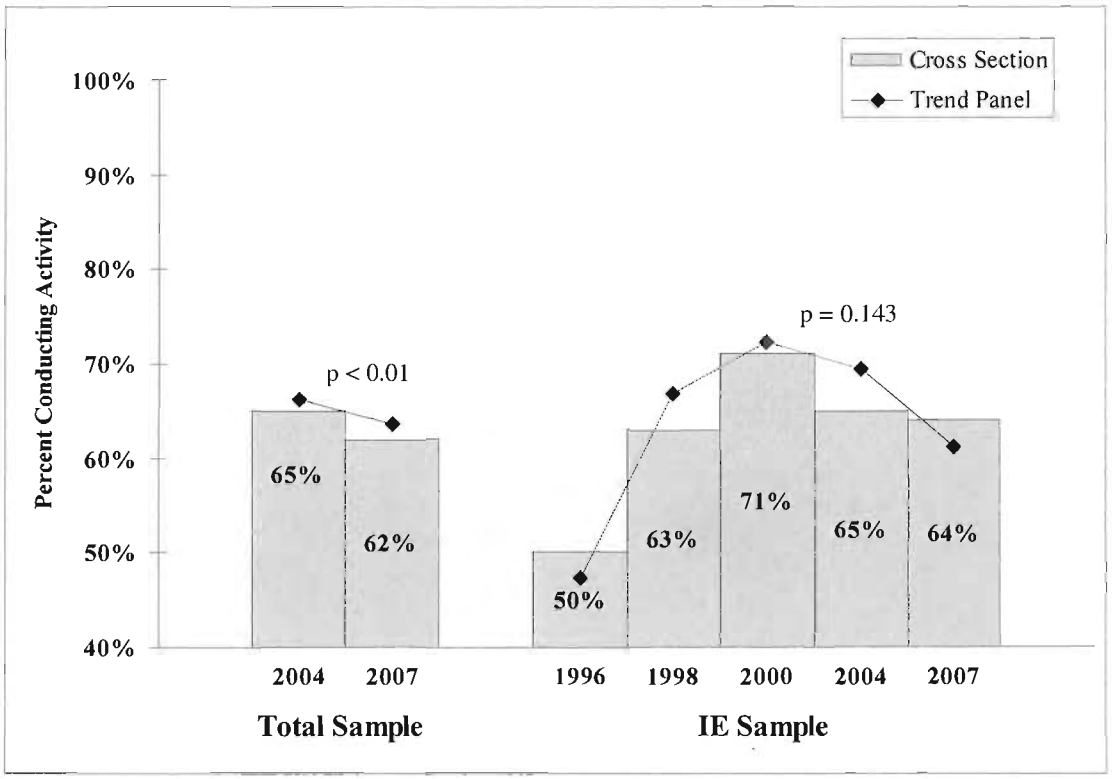


Source: IE Youth Access Enforcement Survey, 1996, 1998, 2000; Statewide Youth Access Enforcement Survey, 2004, 2007.

Citations. Figure YA-1b shows that statewide in 2007, 62% of YA enforcement agencies statewide reported having issued citations to merchants in the prior 12 months. The frequency distribution of responses to this question is skewed, with 28% of 221 agencies reporting that they "rarely" issued citations, and 4% reporting that they did so "very often." There are no differences among urban, suburban, and rural counties on this variable; however, the decline in citations issued to merchants from 2004 (66%) to 2007 (64%) is statistically significant (Chi-squared = 9.00, $p < 0.01$, $n = 118$).

The percent of agencies within the IE panel that issued citations is not significantly different across the five survey waves (Cochran's $Q = 6.87$, $p = .143$, $n = 36$).

Figure YA-1b
Percent of Agencies Issuing Citations for Youth Access Violations by Merchants



Source: 1E Youth Access Enforcement Survey, 1996, 1998, 2000; Statewide Youth Access Enforcement Survey, 2004, 2007.

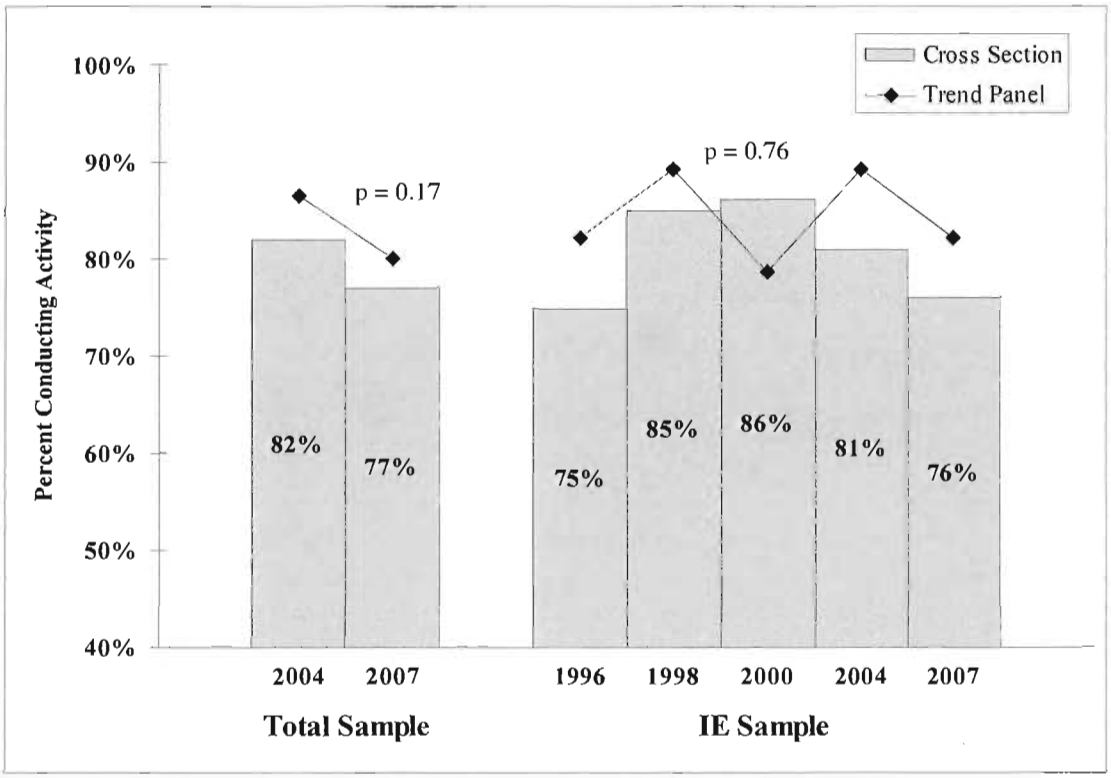
About one-third (33%) of all agencies reported having issued at least one citation to persons giving or selling tobacco products to minors (not only merchants illegally selling tobacco products). This rate did not differ significantly across agencies in urban (34%), suburban (40%), or rural (24%) counties ($p = 0.013$). Among the agencies that reported having issued at least one citation for violations of PC§308(a), a mean of 8.3 citations were issued during the prior year. Averages for agencies in urban (mean = 10.6 citations issued), suburban (mean = 7.6), or rural (mean = 6.0) counties did not differ significantly ($p = 0.32$). Of the agencies that responded to the 2004 and 2007 surveys, only 16% reported having issued at least one citation to persons giving or selling tobacco products to minors.

Warnings and Citations for Violations by Minors

Warnings. Figure YA-2a shows that 77% of YA enforcement agencies statewide reported in 2007 having issued YA warnings to minors in the previous 12 months. Of the 210 agencies responding to this question, fewer than one-third (30%) reported that they "rarely" issued such warnings to minors, and only five agencies (2%) reported that they issued warnings "very often."

There were no differences among urban, suburban, and rural counties on this variable, and no significant change was detected statewide from 2004 to 2007 (p = 0.17) or across the five waves for the IE panel (p = 0.76).

Figure YA-2a
Percent of Agencies Issuing Warnings for Youth Access Violations by Minors



Source: IE Youth Access Enforcement Survey, 1996, 1998, 2000; Statewide Youth Access Enforcement Survey, 2004, 2007.

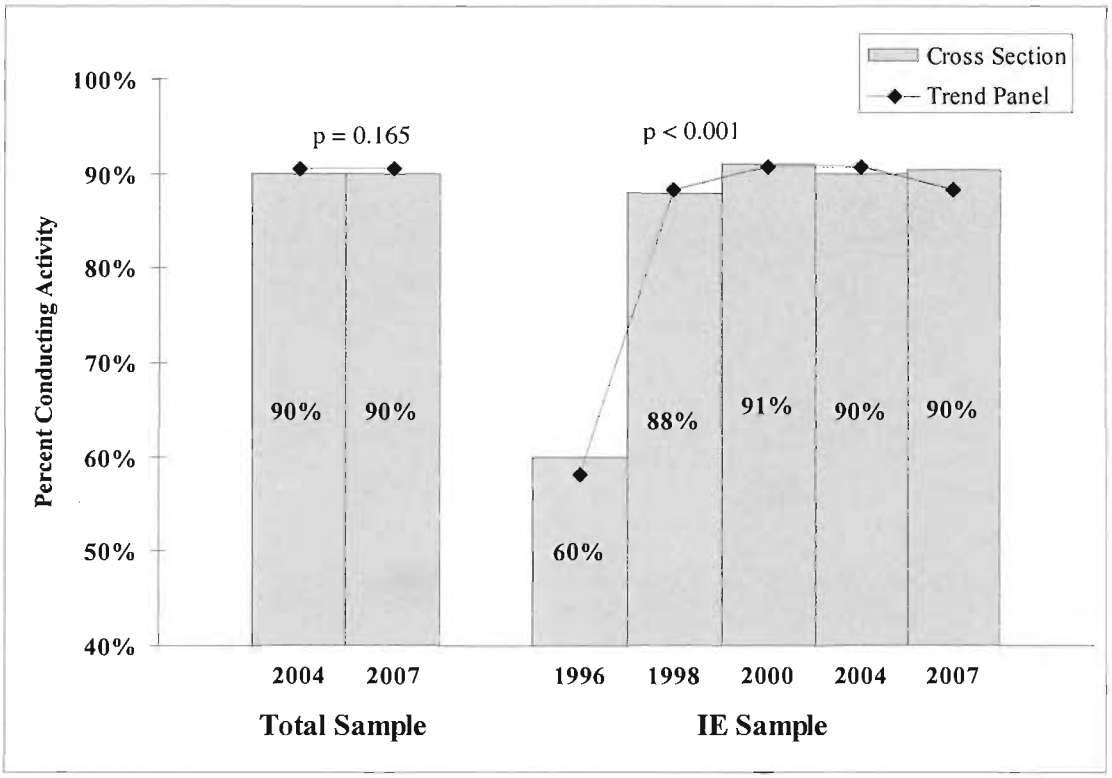
Citations. Figure YA-2b also shows that 90% of YA enforcement agencies statewide in 2007 reported having issued citations to minors in the previous 12 months. This is unchanged from 2004. The frequency distribution of responses to this question shows that 17% of 249 agencies reported that they "rarely" issued citations, and 24% reported that they did so "often" or "very often." There were no differences among urban, suburban, and rural counties on this variable (p = 0.68), and no significant changes were detected statewide from 2004 to 2007 (p > 0.9).

In the 12 months prior to the 2007 survey, agencies across the state reported issuing an average of 24.1 citations to minors for possession of tobacco products [PC§308(b)]. Among those agencies that issued at least one citation to a minor for violation of PC§308(b), the average was 29.4 citations in the prior 12 months. Citation activity for agencies from urban (mean = 42.3

citations issued), suburban (mean = 28.8) or rural (mean = 16.3) counties differed significantly in the 2007 survey ($p = 0.014$).

The agencies in the IE panel reported that citations to minors for PC§308(b) violations increased from 1996 to 1998, but have remained relatively flat since (Figure YA-2b). Our five-wave analysis reveals a significant difference over time, but this is due to the low rate in 1996 ($p < 0.001$). No significant changes on this variable were detected statewide between 2004 and 2007 ($p = 0.165$).

Figure YA-2b
Percent of Agencies Issuing Citations for Youth Access Violations by Minors



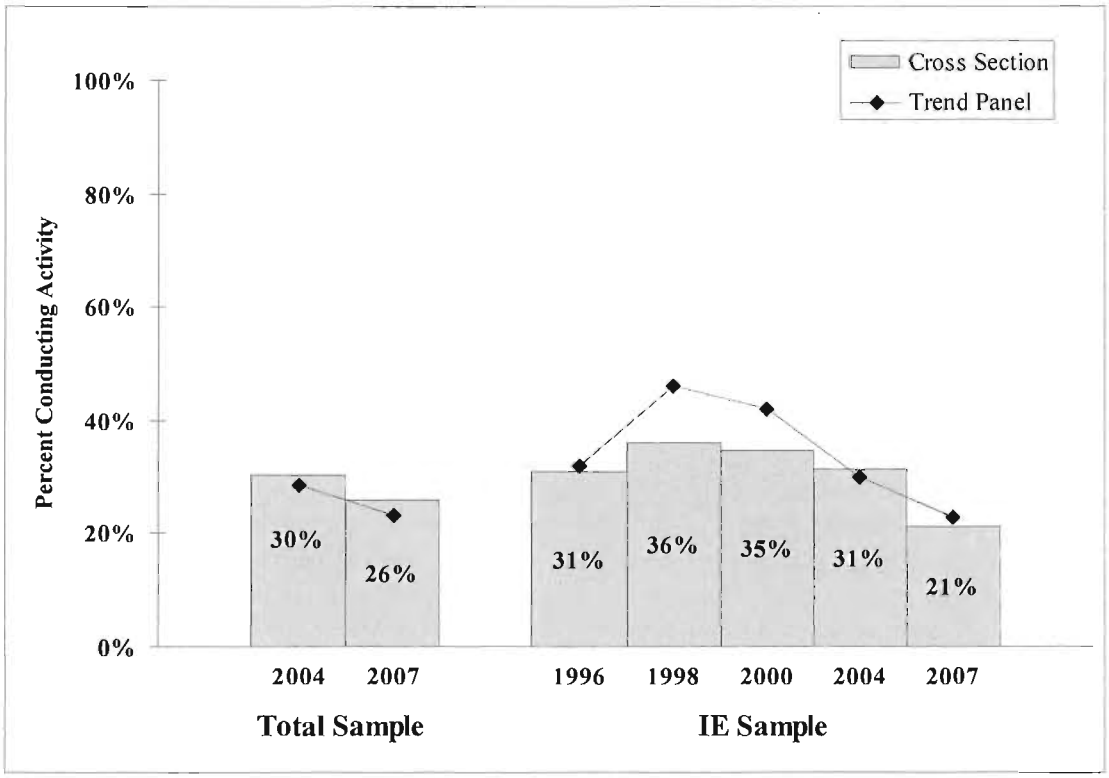
Source: IE Youth Access Enforcement Survey, 1996, 1998, 2000; Statewide Youth Access Enforcement Survey, 2004, 2007.

Illegal Sales of Tobacco to Minors

Decoy Operations. Decoy operations (also known as stings or undercover buying attempts) are conducted by enforcement agencies to determine if retail tobacco outlets are in compliance with the law. Figure YA-3 shows that 26% of all YA enforcement agencies statewide reported having conducting at least one decoy operation in the 12 months prior to the 2007 survey. Among the agencies reporting data in both 2004 and 2007, there is a significant decline in decoy operations (Chi-squared = 22.46, $p < 0.001$, $n = 161$). Similarly, we see a significant difference in the

percentage of agencies conducting decoy operations among the sub-sample of IE-county agencies that had responded to this item (or the earlier "sting" IE survey item) in all five waves of the YA survey (Cochran's Q = 10.20, p = 0.037, n = 57).

Figure YA-3
Percent of Agencies Conducting Decoy Operations



Source: IE Youth Access Enforcement Survey, 1996, 1998, 2000; Statewide Youth Access Enforcement Survey, 2004, 2007.

Among the agencies that conducted at least one decoy operation in the previous year, an average of 64% of local tobacco outlets in the enforcement jurisdiction were included in one or more decoy operation. Most stores visited in decoy operations were chosen: (a) in response to complaints (27% of agencies reporting); (b) selected at random (21%); or (c) as part of a census of all stores in the jurisdiction (18%). Among those conducting at least one decoy operation, agencies statewide conducted an average of 3.6 operations in the prior year, down from almost 11 operation per year reported in 2004. Agencies in urban, suburban, and rural counties conducted an average of 5.9, 3.7 and 1.5 operations, respectively, a significant overall difference (p = 0.02).

Estimates of Illegal Tobacco Sales. Agencies that conducted decoy operations during the 12 months prior to the 2007 survey reported that an average of 13.7% of retail outlets visited made illegal sales to youth decoys. The rates estimated by agencies in urban (14%), suburban (10%), and rural (19%) counties were not significantly different from one another (p = 0.085).

Prosecution of Illegal Sales. In 2007, enforcement agencies statewide reported that, on average, about 57% of citations issued to retailers were prosecuted in the prior 12 months. The prosecution rate reported from agencies in urban (68%), suburban (56%), and rural (47%) counties did not differ significantly ($p = 0.50$). The serial cross-sectional differences between 2004 (19% of citations issued to retailers were reported to have been prosecuted) and 2007 (57% reported prosecuted), but the apparent effect vanishes in the analysis of the panel of agencies that report both 2004 (51%) and 2007 (52%) prosecutions.

Summary data on PC §308 (a) and (b) activities by enforcement agencies responding to the 2007 survey are presented in Table YA-1.

Table YA-1

Frequency of enforcement activities related to Penal Code §308 conducted by agency during the last 12 months

	*Mean (SD)**	*Ever ** (% agencies)*	*Valid N*
a. Issued warnings to minors attempting to purchase tobacco products	2.74 (1.53)	77	210
b. Issued warnings to merchants selling tobacco products to minors	2.66 (1.59)	74	210
c. Issued citations to minors for illegal possession or purchase of tobacco products	3.95 (1.80)	90	249
d. Issued citations to merchants for illegal sales of tobacco products to minors	2.51 (1.76)	62	221
e. Issued warnings or citations to individuals (other than merchants) for giving tobacco products to minors	2.10 (1.19)	67	202
f. Issued warnings or citations to merchants for selling bidis to minors	1.79 (1.34)	39	185
g. Issued warnings or citations to merchants for selling individual cigarettes or packages of less than 20	1.73 (1.30)	39	204
h. Issued warnings or citations to merchants for not posting 1-800-ASK4ID sign	1.89 (1.51)	40	207

* 1= Never, 2 = Rarely, 7 = Very Often
** Ever is any valid response other than "Never"

Predictors of Youth Access Enforcement

Data on the following factors were collected in the 2007 YA survey to determine their influence on youth access enforcement: impact of the problem; relative importance of enforcement; barriers to enforcement; collaboration between enforcement and health groups; beliefs about the effectiveness of youth access laws; and funding for local enforcement. We first review the findings on these individual factors that may influence youth access enforcement and then report on results of multivariate analyses focusing on the 2004 and 2007 statewide surveys.

Seriousness of the Problem. In 2007, most enforcement agencies reported that kids getting tobacco products is "not at all serious" (18% of 248 valid responses) or only "somewhat serious" (51%). Fewer than one-third of agencies reported that this problem is "serious" (22%) or "very serious" (9%). and, there was a significant overall difference in mean ratings of the seriousness of this community problem among urban (mean = 2.89 on a 4-point scale, with 1 = "very serious" and 4 = "not at all serious"), suburban (mean = 2.91), and rural agencies (mean = 2.51) ($F = 5.55$, $df = 2$, $p = 0.004$).

Importance of Enforcement. As compared to other policies that the agency enforces, only 3% of agencies (9 of 267) reported that enforcement of policies that prevent retailers from selling tobacco products to minors is "not at all important." Relative to other policy enforcement responsibilities, enforcement of tobacco sales to minors policies is, on average, neither unimportant or very important to reporting agencies (mean = 4.34 on a 7-point scale, with 1= "not at all important" and 7 = "very important"). Likewise, only 3% (8 of 265) agencies reported that enforcement of policies regulating youth possession of tobacco products is "not at all important" as compared to other policies that the agency enforces, and the distribution of responses is relatively flat (mean = 4.45 on the 7-point importance scale). There were no differences in ratings of the importance of enforcement of youth access policies among agencies from urban, suburban, or rural counties.

Barriers to Enforcement. In the 2007 statewide survey, agencies rated two factors as the top barriers to enforcement of youth tobacco access policies: limited staff (mean = 5.57 on a 7-point scale with 1 = "not at all a barrier" and 7 = "a large barrier"), and insufficient budget (mean = 4.6) (see Table YA-2). Perceived lack of support from community leaders (mean = 2.36), the belief that the District or City Attorney will not prosecute (mean = 2.49), and issues around working with juveniles on decoy operations (mean = 2.70) were the three lowest-rated barriers to enforcement.

The mean of all barriers to enforcement items was calculated as a factor for use in multivariate analyses (mean = 3.37, SD = 1.26, n = 260). The mean barrier factor did not differ across agencies from urban, suburban or rural counties, nor did any of the individual barriers listed in Table YA-2.

Table YA-2

Perceived extent of barriers to enforcement of youth tobacco access policies in enforcement agency's community

	*Mean (SD)**	*Valid N*
a. No money in our budget	4.56 (2.19)	255
b. Limited staff	5.57 (1.69)	258
c. Issues around working with juveniles (e.g., safety, parental consent, agency liability involving youth)	2.70 (1.84)	251
d. Problem getting youth volunteers	3.02 (1.97)	249
e. District Attorney will not prosecute	2.49 (1.82)	240
f. Not a priority in our community	3.10 (1.69)	252
g. Lack of support from community leaders	2.36 (1.57)	247
h. Judge reluctant to assess fines	2.35 (1.61)	236
i. Other (e.g., limited time, funding)	2.93 (2.31)	15

* 1= Not at all a barrier, 7 = A large barrier

Perceived Effectiveness of Youth Access Laws. Agency respondents were asked to rate the perceived effectiveness of various enforcement policies or procedures in reducing youth access to tobacco. As shown in Table YA-3, the most highly rated policies were: suspension or revocation of a tobacco license for stores repeatedly selling tobacco to minors (mean = 6.38 on a 7-point scale with 1 = "not at all effective" to 7 = "very effective"); civil or criminal penalties for store clerks caught illegally selling tobacco to minors (mean = 5.89); civil penalties for store owners caught illegally selling tobacco to minors (mean = 5.88); criminal penalties for store owners caught illegally selling tobacco to minors (mean = 5.76); and tobacco decoy operations (mean = 5.58). Promotion of 18005ASK4ID, merchant education, and fines for minors in possession of tobacco products ranked the lowest (means of 3.97, 4.90, and 5.00, respectively). The mean of all perceived policy effectiveness items was calculated as a factor for use in multivariate analyses (mean = 5.41, SD = 1.00, n = 249). The effectiveness factor did not differ across agencies from urban, suburban, or rural counties, nor did any of the individual items listed in Table YA-3.

Table YA-3

Perceived effectiveness of enforcement policies or procedures in reducing youth access to tobacco

	*Mean (SD)**	*Valid N*
a. Tobacco decoy operations (undercover tobacco purchase surveys)	5.58 (1.37)	234
b. Merchant education regarding illegal sale of tobacco products to minors	4.90 (1.52)	243
c. Tobacco merchant licensing	5.07 (1.62)	224
d. Civil penalties for store owners caught illegally selling tobacco to minors	5.88 (1.28)	241
e. Criminal penalties for store owners caught illegally selling tobacco to minors	5.76 (1.43)	241
f. Civil or criminal penalties for store clerks caught illegally selling tobacco to minors	5.89 (1.27)	246
g. Suspension or revocation of a tobacco license for stores repeatedly selling tobacco to minors	6.38 (0.97)	145
h. Fines for minors in possession of tobacco products	5.00 (1.78)	145
i. Promotion of 1-800-ASK4ID	3.97 (1.86)	202

* 1= Not at all effective, 7 = Very effective

Collaboration. As shown in Table YA-4, enforcement agencies reported in 2007 collaborating on youth access enforcement activities most frequently during the prior 12 months with educational organizations (64% of agencies ever having collaborated), local government officials (59%), and county health departments (51%). Collaboration was reported to be lowest with voluntary health organizations (32%), merchants or business organizations (40%) and tobacco prevention coalitions (42%).

The mean of all collaboration items was calculated as a factor for use in multivariate analyses (mean = 2.27, SD = 1.23, n = 265). The collaboration factor did not differ across agencies from urban, suburban, or rural counties; however, as compared to agencies from urban counties, agencies from rural counties reported higher levels of collaboration with county health departments (mean diff = 0.85 on a 7-point scale, Tukey HSD p = 0.010), and with tobacco prevention coalitions (mean diff = 0.71, Tukey HSD p = 0.028.

Table YA-4

Frequency of agency collaboration on enforcing policies to reduce youth access to tobacco, during the last 12 months

	*Mean (SD)**	*Ever ** (% agencies)*	*Valid N*
a. County health department (e.g., local tobacco control programs)	2.43 (1.91)	51	260
b. Local government officials (e.g., city council, code enforcement, District Attorney)	2.38 (1.66)	59	261
c. Voluntary health organizations (e.g., American Cancer Society)	1.65 (1.22)	32	262
d. Educational organizations (e.g., local schools)	3.03 (2.06)	64	262
e. Merchant and business organizations (e.g., Chamber of Commerce)	1.84 (1.30)	40	261
f. Tobacco prevention coalitions	2.20 (1.83)	42	265
g. State law enforcement agencies	2.23 (1.66)	48	258
h. Other (e.g., merchants, Probation Dept.)	2.53 (2.24)	43	30

* 1= Never, 7 = Very Often
** Ever is any valid response other than "Never"

Funding. Agencies were asked to indicate all sources of funding for enforcement activities during calendar year 2006. Approximately 11% of the 271 agencies responding to this question received some funding. Funding was received from local health departments (6%), state law enforcement (4%), CDHS/TCS (4%), or from the local tobacco retail licensing program (3%).

Multivariate Analyses. Table YA-5 presents findings from logistic regression analyses using data from our 2004 and 2007statewide YA surveys. In 2007, three of seven variables measured were found to be statistically independent predictors of whether decoy operations were conducted: perceptions of greater collaboration with other groups on enforcing youth access policies ($p < 0.01$), lower perceived barriers to enforcement ($p < 0.01$), and receipt of any funding for local enforcement ($p < 0.01$). This model explained 47% of the variance in whether decoy operations were conducted in the previous 12 months. This is an improvement over the 38% explained by the 2004 model, which also included an enforcement training variable that was excluded from the 2007 survey due to an end to the PC§308(a) statewide training program.

Table YA-5

Associations between independent enforcement variables and whether decoy operations were conducted in the previous 12 months

Independent Variables	*Survey Year*	*Odds Ratio*	*Confidence Interval*	*P value*
Importance of problem	2004	1.61	0.98 – 2.62	0.06
	2007	1.46	0.90 – 2.37	0.13
Relative importance of enforcement	2004	0.97	0.76 – 1.24	0.80
	2007	1.04	0.80 – 1.37	0.79
Barriers to enforcement	2004	0.81	0.58 – 1.12	0.21
	2007	0.51	0.35 – 0.74	< 0.01
Collaboration	2004	1.71	1.30 – 2.29	< 0.01
	2007	2.08	1.51 – 2.88	< 0.01
Effectiveness of youth access laws	2004	1.38	0.94 – 2.03	0.10
	2007	0.74	0.51 – 1.09	0.13
Funding for local enforcement	2004	4.66	1.45 – 14.70	< 0.01
	2007	15.52	4.39 – 54.90	< 0.01
Training for local enforcement	2004	2.57	1.23 – 5.39	< 0.05
	2007	---	---	---

NOTE: 2004 and 2007 analyses include non-missing data from 227 agencies statewide; factor scores (means) were used for barriers to enforcement, barriers to compliance, and collaboration on enforcement independent variables; Hosmer Lemeshow Goodness of Fit: p = 0.26 (2004); p = 0.53 (2007).
Source: Statewide Youth Access Enforcement Survey, 2004, 2007.

Plans for Youth Access Enforcement

In 2007, agencies were asked to rate their agreement with the statement: "In the next six months, my agency will be actively enforcing PC§308(a)." Statewide, agencies somewhat agreed with this statement (mean = 3.58 on a 7-point scale where 1 = "strongly disagree" and 7 = "strongly agree"), and there were no differences among agencies from urban, suburban, or rural counties.

Enforcement in Jurisdictions with Strong Retail Tobacco Ordinances

In recent years, TCS has encouraged the passage of strong local licensing ordinances in an effort to drive down rates of illegal sales to minors. As defined by the Center for Tobacco Policy and Organizing (http://www.californialung.org/thecenter/), a strong local tobacco licensing includes: all retailers that sell tobacco products must obtain a license and renew it annually; a fee to sufficiently fund an effective program including administration and enforcement; an enforcement plan; coordination of tobacco regulations so that a violation of any existing local, state or federal

tobacco regulation violates the license; and a financial deterrent through fines and penalties including the suspension and revocation of the license.

In an effort to evaluate the impact of strong local licensing ordinances on enforcement, we identified ten agencies situated in jurisdictions with strong ordinances as defined above that were in effect as of January 1, 2006. We chose this date because our survey questions referenced specific activities within the previous 12 months. Our 2007 YA enforcement survey revealed that agencies in jurisdictions with strong ordinances reported conducting significantly more decoy operations over the prior 12 months (mean = 80%) than did agencies in jurisdictions without strong ordinances (mean = 24%) ($p < 0.001$). Additionally, agencies in jurisdictions with strong ordinances also perceived fewer barriers to enforcement than did agencies in jurisdictions without strong ordinances (mean = 2.7 and 3.4, respectively, $p = 0.09$), and they reported greater collaboration with other community groups (mean = 3.0 and 2.2, respectively, $p = 0.07$). Although the latter two differences were not statistically significant, they are promising particularly in light of the extreme imbalance in group size (10 agencies in the strong ordinance group vs. 261 agencies with no or weak ordinances).

Results: Enforcement of Secondhand Smoke Laws

In this section we present our findings from the 2007 statewide survey of agencies charged with enforcement of two selected California laws protecting people from exposure to secondhand smoke (SHS): Labor Code (LC) §6404.5, which requires that smoking be prohibited in virtually all enclosed places of employment; and Government Code (GC) §7596-7598, which prohibits smoking within 20 feet of government building entrances, exits, and operable windows.

California SHS laws are enforced by a variety of local agencies including county health departments, police and sheriff departments, fire departments, code enforcement officers, building officials, and others. Each jurisdiction (municipality or county) typically designates one agency to be responsible for enforcement; however, in some jurisdictions more than one agency has responsibility. Data are reported in this section only for one primary agency per jurisdiction, and only for those agencies responsible for enforcement of LC§6404.5 or GC§7596-7598, as appropriate. We also compare 2007 SHS law enforcement results with data from our statewide survey conducted in 2004, and report on trends among the subset of enforcement agencies surveyed in 2007 that were also in the 18 focal counties of the 1996-2000 IE.

Enforcement of LC§6404.5 — Smoke-free Workplaces (Excluding Bars)

Current Enforcement Activities. Table SHS-1 shows that half of enforcement agencies conducted compliance checks (50% of responding agencies statewide) and responded to inquiries and complaints (49% and 51% respectively) to enforce LC§6404.5 provisions governing restaurants and other indoor workplaces during one year prior to the 2007 survey. Nearly half (44%) also educated owners and others about LC§6404.5. Relatively few agencies issued fines (9%) or citations (11%) in response to violations detected. Almost two-thirds of agencies statewide (61%) reported conducting at least one SHS enforcement activity during the year prior to survey completion, which did not differ significantly among agencies located in LLA-designated urban (62%), suburban (55%), or rural (56%) counties ($p = 0.49$).

Figure SHS-1 displays rates for specific SHS enforcement activities in workplaces (excluding bars) for agencies located in urban, suburban, and rural counties. As compared to agencies in urban and suburban counties, significantly fewer rural-county agencies reported that they had issued any warnings for violations of LC§6404.5 ($p = 0.03$). There were no differences in the percent of agencies conducting any other type of SHS enforcement in workplaces across urban, suburban, or rural counties.

Among the 145 agencies stating that they are responsible for issuing LC§6404.5 citations at non-bar workplaces, only 5.5% reported having issued at least one citation in the previous year. The average number of citations issued by these 8 agencies was 7.1 (SD = 8.66), with no significant differences among urban, suburban, or rural agencies. Only about half of all citations issued, however, were prosecuted (mean = 4.17, SD = 4.22).

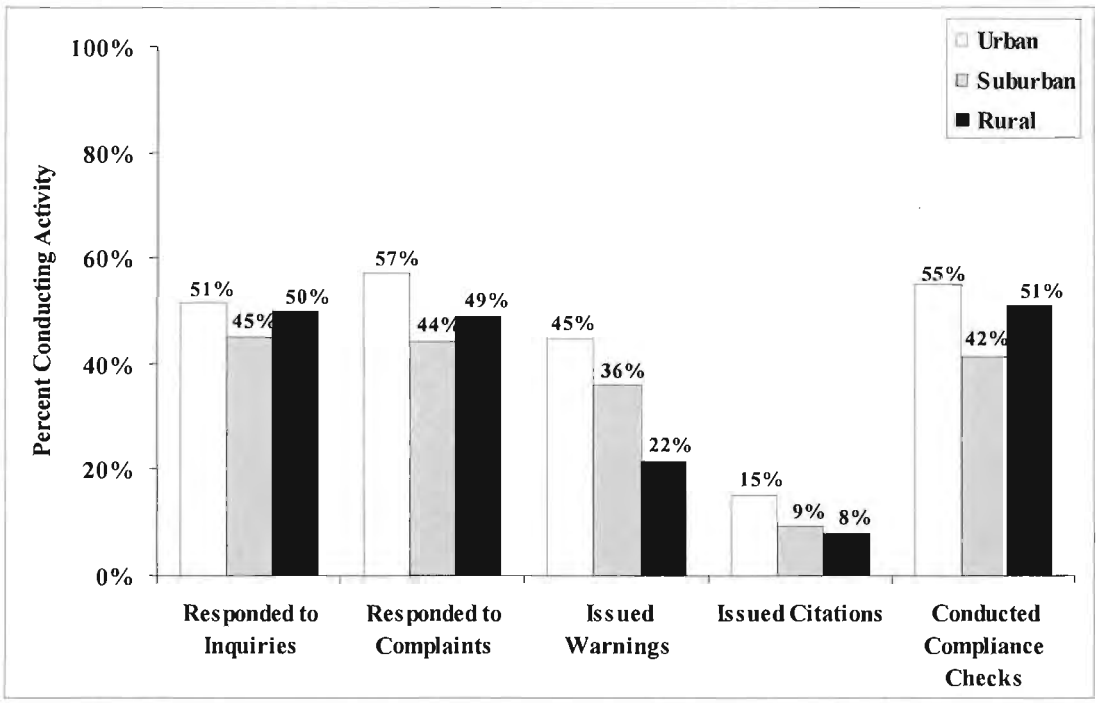
Table SHS-1

Frequency of enforcement activities related to LC§6404.5 conducted by agency, during the last year

	*Mean (SD)**	*Ever ** (% agencies)*	*Valid N*
a. Responded to inquiries	1.97 (1.47)	49	169
b. Responded to complaints	2.01 (1.51)	51	173
c. Issued warnings	1.69 (1.32)	35	171
d. Issued citations	1.27 (0.98)	11	171
e. Issued fines	1.22 (0.91)	9	162
f. Conducted compliance checks	2.40 (1.93)	50	175
g. Educated owners about LC §6404.5	2.14 (1.72)	44	170
h. Educated others about LC §6404.5	2.01 (1.66)	39	168
i. Other (e.g., training officers)	1.25 (1.01)	10	40

* 1= Never, 2 = Rarely, 7 = Very Often
** Ever is any valid response other than "Never"

Figure SHS-1
Secondhand Smoke Enforcement Activities in Indoor Workplaces for Agencies in Urban, Suburban, and Rural Counties

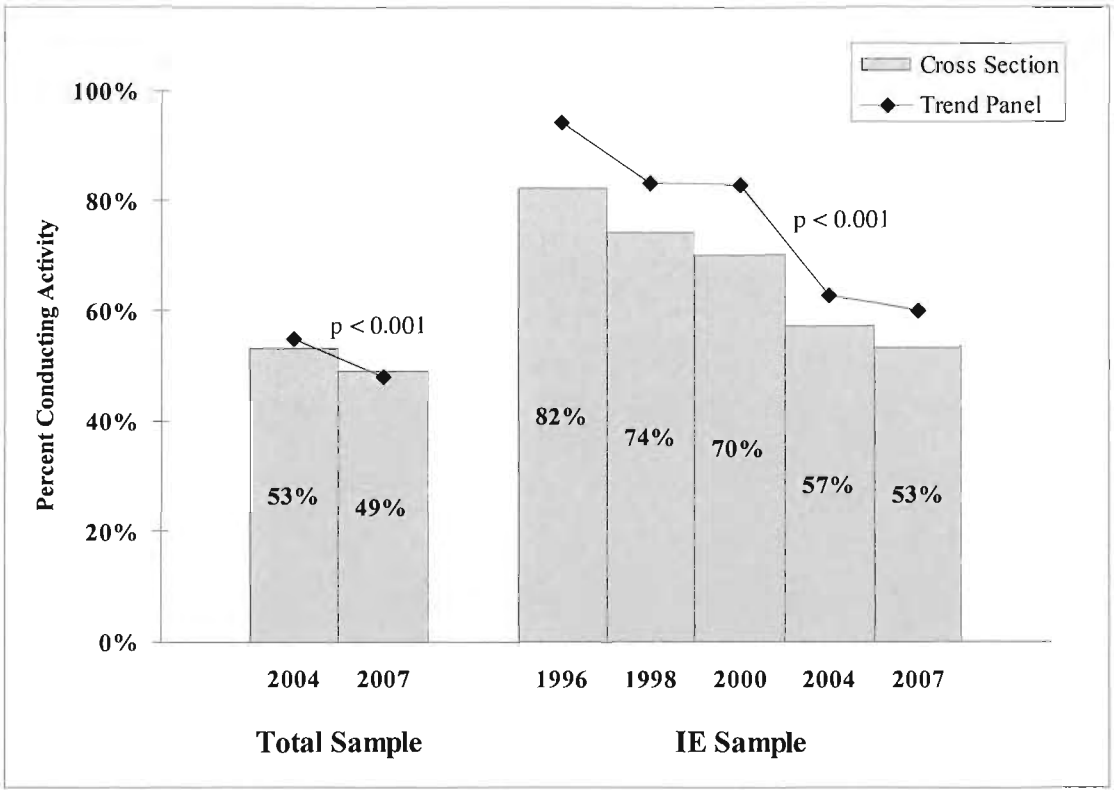


Note: Percentages reflect the number of agencies that reported doing at least one enforcement activity in the year prior to the survey. Source: SHS Enforcement Survey 2007.

Trends in Enforcement. Figure SHS-2a presents data on the percent of surveyed agencies that reported they had **responded to inquiries** regarding enforcement of workplace SHS laws activities in the 2004 and 2007 Statewide SHS Surveys, and among the sub-sample of agencies in the three IE survey waves (1996, 1998, and 2000) and 2004 and 2007 surveys. On the left side of the figure, we report data for all agencies responding to this item in the 2004 and 2007 statewide SHS surveys, both as serial cross-sections with all valid responses in either wave (bars), and for the panel of agencies that reported valid responses in both 2004 and 2007 (trend line). On the right side of the figure, we report 1996-2007 data only for those agencies from the 18 focal IE counties, also as serial cross-sections and as a panel.

As shown in Figure SHS-2a, there is a significant decline in the percent of agencies reporting that they had responded to workplace SHS inquiries among the agencies in the statewide sample that completed both the 2004 and 2007 surveys (Chi-squared = 23.73, $p < 0.001$, n = 108). Similarly, we see a significant difference in the percentage of agencies responding to workplace SHS inquiries among the sub-sample of IE-county agencies that had responded to this item in all five waves of the SHS survey (Cochran's Q = 20.55, $p < 0.001$, n = 35).

Figure SHS-2a
Secondhand Smoke Enforcement Agency Activities in Restaurants and Indoor Workplaces (Excluding Bars): Respond to Inquiries

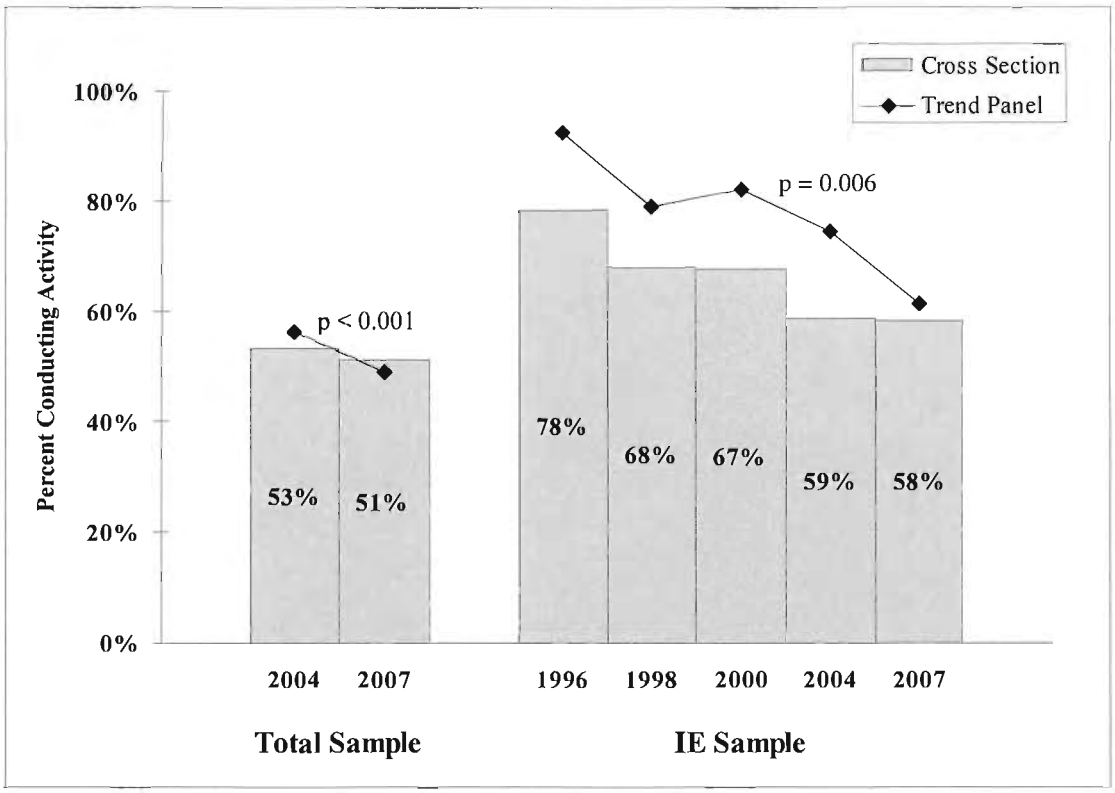


Note: Percentages reflect the number of agencies that reported doing at least one enforcement activity in the six months prior to the survey (1996-2000) or one year prior to the survey (2004-2007).
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figures SHS-2b through SHS-2e present cross-sectional and panel data for the percent of responding agencies involved in other workplace SHS enforcement activities: respond to complaints (2b); issue warnings (2c); issue citations (2d); and conduct compliance checks (2e). Significant declines are seen statewide from 2004 to 2007 in the percent of agencies reporting involvement in all types of enforcement actions: respond to complaints (Chi-squared = 26.22, $p < 0.001$, n = 114); issue warnings (Chi-squared = 7.62, $p = 0.006$, n = 112); issue citations (Chi-squared = 18.44, $p < 0.001$, n = 105); and conduct compliance checks (Chi-squared = 25.11, $p < 0.001$, n = 113).

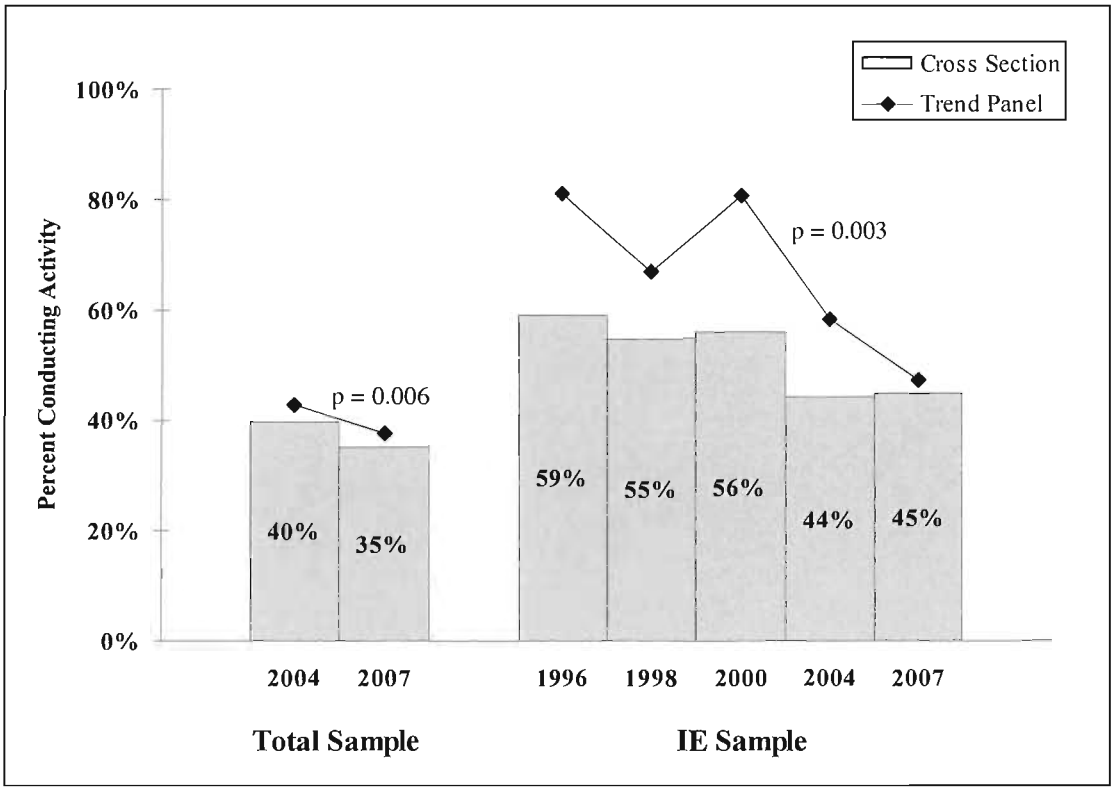
Similarly, the IE panel also shows some differences in the percent of agencies reporting workplace SHS enforcement activity across the five waves: respond to complaints (Cochran's Q = 14.57, $p = 0.006$, n = 39); issue warnings (Cochran's Q = 16.36, $p = 0.003$, n = 36); issue citations (Cochran's Q = 3.55, $p = 0.471$, n = 37); and conduct compliance checks (Cochran's Q = 3.79, $p = 0.436$, n = 36).

Figure SHS-2b
Secondhand Smoke Enforcement Agency Activities in Restaurants and Indoor Workplaces (Excluding Bars): Respond to Complaints



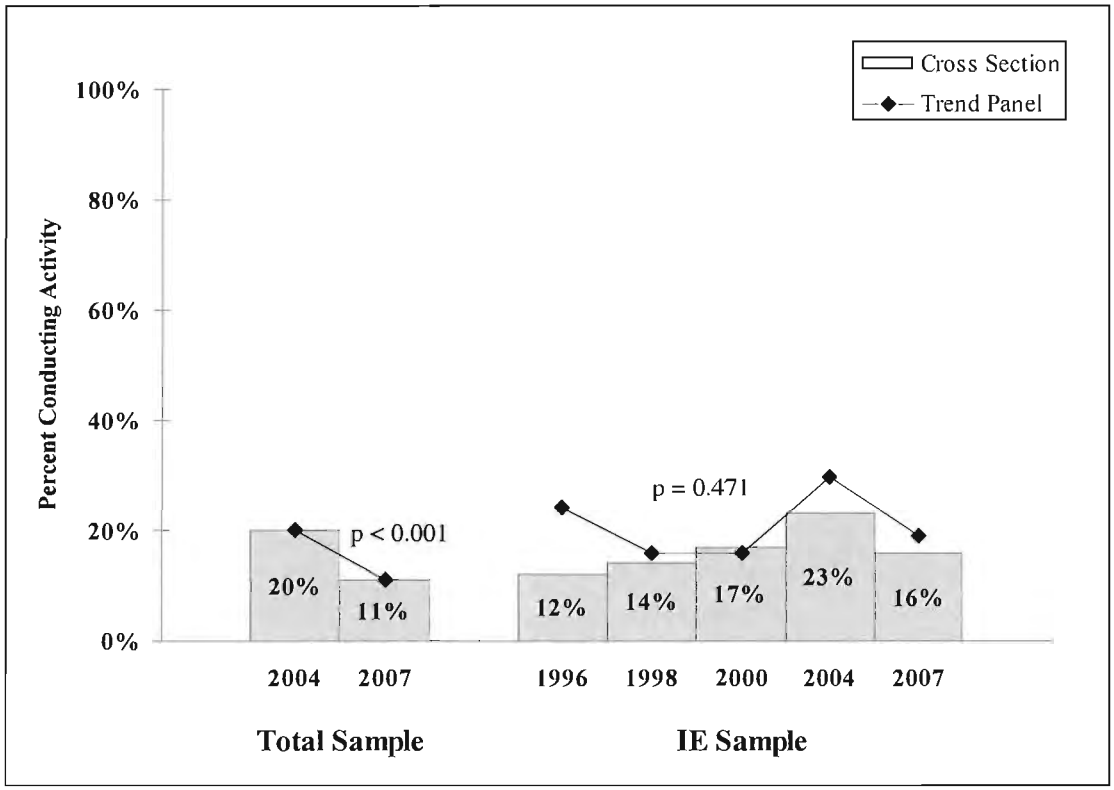
Note: Percentages reflect the number of agencies that reported doing at least one enforcement activity in the six months prior to the survey (1996-2000) or one year prior to the survey (2004-2007).
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-2c
Secondhand Smoke Enforcement Agency Activities in Restaurants and Indoor Workplaces (Excluding Bars): Issue Warnings



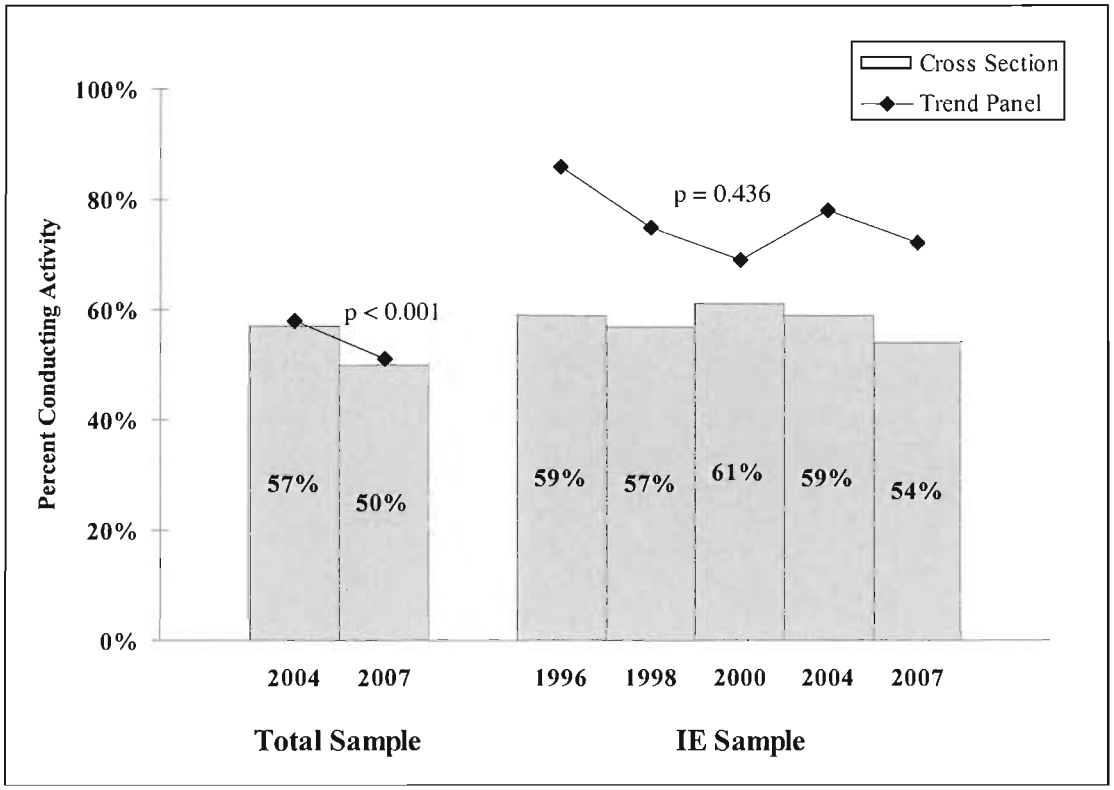
Note: Percentages reflect the number of agencies that reported doing at least one enforcement activity in the six months prior to the survey (1996-2000) or one year prior to the survey (2004-2007).
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-2d
Secondhand Smoke Enforcement Agency Activities in Restaurants and Indoor Workplaces (Excluding Bars): Issue Citations



Note: Percentages reflect the number of agencies that reported doing at least one enforcement activity in the six months prior to the survey (1996-2000) or one year prior to the survey (2004-2007).
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-2e
Secondhand Smoke Enforcement Agency Activities in Restaurants and Indoor Workplaces (Excluding Bars): Conduct Compliance Checks



Note: Percentages reflect the number of agencies that reported doing at least one enforcement activity in the six months prior to the survey (1996-2000) or one year prior to the survey (2004-2007).
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

It should be noted that the relatively large differences in trend and cross-sectional values in the IE sample on several of enforcement variables suggests that agencies that were consistent respondents across the five survey waves were more actively engaged in certain SHS enforcement actions than were those agencies that did not consistently respond to all waves of the survey. Thus, the IE panel data should not be used to estimate statewide levels of enforcement, only to demonstrate a continuing downward trend in SHS enforcement actions, even among those agencies most engaged in SHS enforcement.

Predictors of Enforcement. We looked at various factors that have in the past been shown to be predictors of local enforcement activities related to LC§6404.5, including: relative seriousness of SHS as a community problem; relative importance of enforcement of SHS laws; perceived compliance with SHS laws; beliefs about the barriers to conducting enforcement operations of SHS laws; beliefs about the barriers to achieving compliance with LC§6404.5; and the extent of enforcement agency collaboration with other groups on enforcing SHS laws.

Seriousness of SHS problem. Compared to other community problems, most agencies believe that it is "not at all serious" (25%) or only "somewhat serious" (35%) that non-smokers breathe other people's smoke when in indoor public areas such as restaurants and workplaces. Only 14% of the 166 agencies providing valid responses to this question rated the SHS problem as "very serious" compared to other problems, down from 20% in 2004. As seen in the 2004 survey, there were no differences in ratings of the relative seriousness of SHS as a community problem among urban, suburban, or rural agencies.

Importance of enforcement. Compared to other laws enforced by respondent agencies, enforcement of laws that prohibit smoking in indoor public areas is only moderately important (mean = 4.02 on a 7-point scale where 1 = "not at all important" and 7 = "very important", SD = 2.03). This variable did not differ across agencies from urban, suburban, or rural counties, but the statewide mean importance rating was slightly lower than reported in 2004 survey (mean = 4.42).

Perceived compliance. Most enforcement agencies (92%) believe that workplaces are compliant with SHS laws (mean = 6.23 on a 7-point scale, SD = 1.02). This variable did not differ significantly across agencies from urban, suburban, or rural counties, and these statewide results are also nearly identical to that found in the 2004 SHS enforcement survey.

Barriers to enforcement. Statewide, limited staff ranked as the top barrier to agencies conducting enforcement activities related to SHS laws (mean = 4.55 on a 7-point scale with 1 = "not at all a barrier" and 7 = "a large barrier") (see Table SHS-2). Additionally, insufficient budget (mean = 3.72), low community priority (mean = 3.05) and other issues (e.g., lack of training, no complaints) were moderately rated barriers to enforcement. The mean of all barriers to enforcement items was calculated as a factor for use in multivariate analyses (mean = 3.49, SD = 1.75). There were no significant differences in perceived barriers to enforcement among rural, suburban or urban agencies.

Table SHS-2

Perceived extent of barriers to enforcing secondhand smoke/clean indoor air laws

	*Mean (SD)**	*Valid N*
a. No money in our budget	3.72 (2.41)	179
b. Limited staff	4.55 (2.37)	181
c. Not a priority in our community	3.05 (2.06)	179
d. Lack of support from community leaders	2.25 (1.71)	175
e. Other (e.g., lack of training, no complaints)	3.04 (2.54)	25

* 1= Not at all a barrier, 7 = A large barrier

Barriers to compliance. All barriers to achieving compliance contained in the survey were rated very low by agencies statewide (see Table SHS-3), and none of the individual barriers differed significantly among agencies from urban, suburban, or rural counties. We calculated the mean of all barriers to compliance items for use in multivariate analyses (mean = 2.24, SD = 1.26), and this value did not differ by county type.

Table SHS-3

Perceived extent of barriers to achieving compliance with Labor Code 6404.5

		*Mean (SD)**	*Valid N*
a.	Insufficient enforcement operations conducted	2.86 (2.02)	175
b.	Fines/penalties are insufficient deterrents	2.28 (1.69)	169
c.	Exemptions, such as owner-operated bars and worksite with five or fewer employees, create an uneven playing field	2.21 (1.61)	175
d.	Lack of signage posted for English-speakers	1.79 (1.28)	177
e.	Lack of signage posted for Spanish-speakers	1.87 (1.35)	177
f.	Lack of awareness among worksites regarding the requirements of the law	2.05 (1.51)	176
g.	Lack of stories in the local media supporting and/or covering results of enforcement operations	2.36 (1.71)	174
h.	Other (e.g., lack of training, no complaints)	2.14 (1.73)	22

* 1= Not at all a barrier, 7 = A large barrier

Collaboration. Most enforcement agencies statewide in 2007 reported that they have collaborated on education or enforcement of SHS laws at least once in the past year with county or state health departments (55% of agencies reporting) (see Table SHS-4). Just under half reported having collaborated at least once with other law enforcement agencies (49%), local government officials (47%), local tobacco control programs (45%), educational organizations (45%), and businesses (42%). Only about one-third of agencies reported that they had collaborated with tobacco control coalitions or voluntary health organizations during the prior year (36% each).

We calculated the mean of all collaboration items for use in multivariate analyses (mean = 2.16, SD = 1.44, n = 186). The collaboration factor did not differ across agencies from urban, suburban, or rural counties, nor did any individual collaboration item listed in Table SHS-4.

Table SHS-4

Frequency of agency collaboration on education or enforcement of secondhand smoke/clean indoor air laws, during the last year

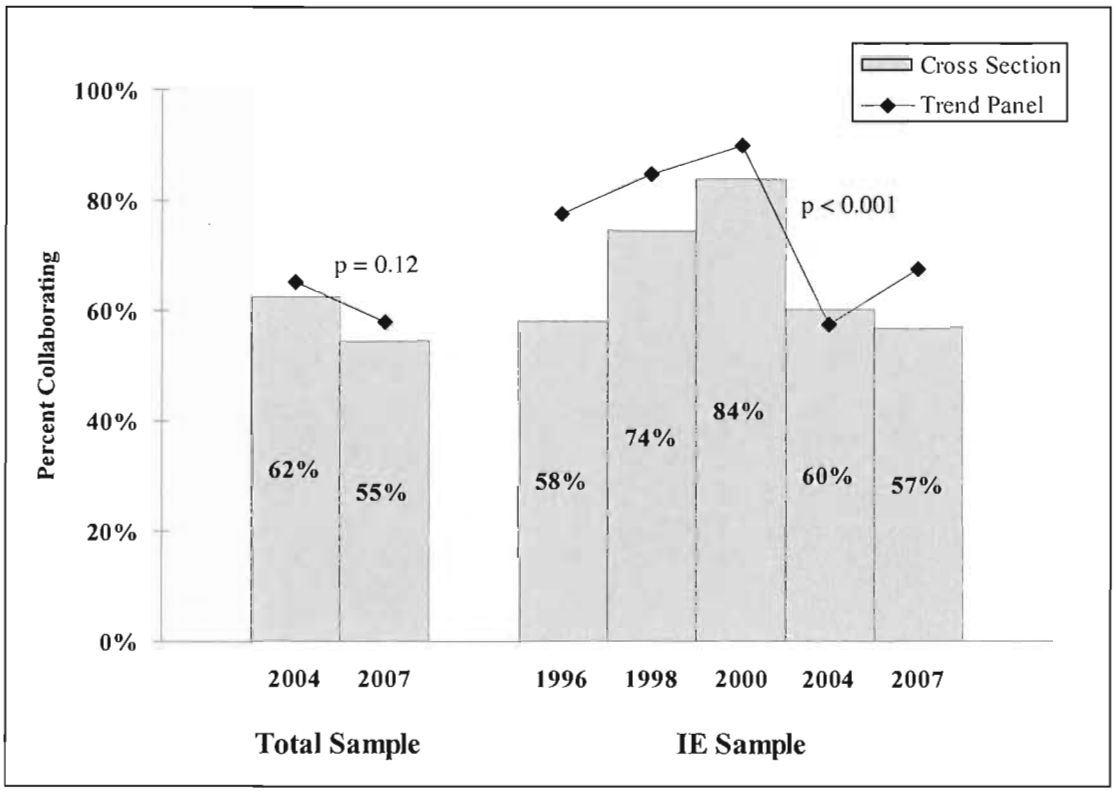
	*Mean (SD)**	*Ever ** (% agencies)*	*Valid N*
a. County or state health department	2.63 (2.05)	55	183
b. Local tobacco control programs	2.28 (1.90)	45	185
c. Local government officials (e.g., city council, board of supervisors)	2.07 (1.53)	47	186
d. Park and recreation programs	1.90 (1.48)	40	182
e. Voluntary health organizations (e.g., ACS)	1.89 (1.60)	36	183
f. Educational organizations (e.g., local schools)	2.24 (1.79)	45	183
g. Businesses (e.g., restaurant associations)	2.00 (1.57)	42	184
h. Tobacco control coalitions	2.10 (1.91)	36	183
i. Other law enforcement agencies (e.g., fire department, code enforcement, city manager)	2.28 (1.74)	49	179
j. Other (e.g., DA's office, Park Ranger)	1.40 (1.04)	17	30

* 1= Never, 7 = Very Often
** Ever is any valid response other than "Never"

Trends in Collaboration. Figures SHS-3a through SHS-3e present cross-sectional and panel data for the percent of responding agencies reporting that they had collaborated with various others on SHS enforcement at least once during the prior year: county health departments (3a); local government officials (3b); businesses (3c); tobacco coalitions (3d); voluntary health organizations (3e), and educational organizations (3f). Significant declines are seen statewide from 2004 to 2007 in the percent of agencies reporting collaboration with: businesses (Chi-squared = 4.43, $p = 0.035$, $n = 131$); voluntary health organizations (Chi-squared = 8.25, $p = 0.004$, $n = 130$); and educational organizations (Chi-squared = 14.34, $p < 0.001$, $n = 128$). No significant changes were seen in the percent of enforcement agencies collaborating with county health departments, local government officials, and tobacco coalitions.

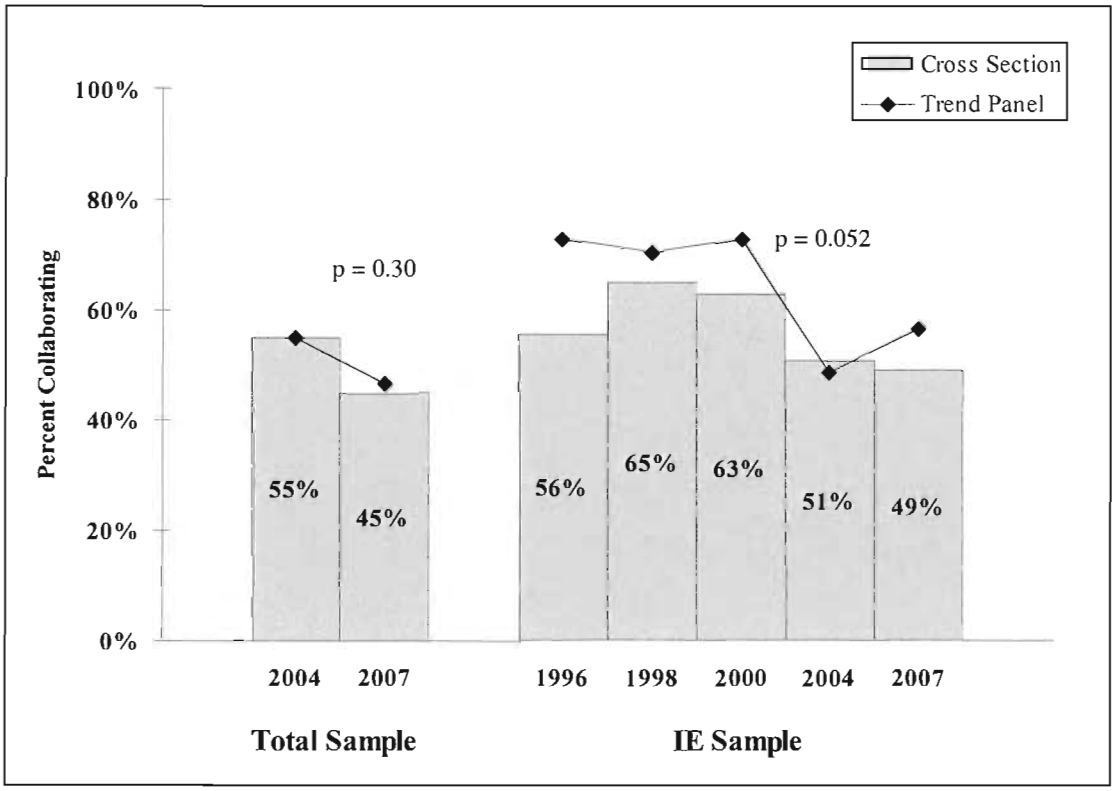
In contrast, the IE panel only showed significant differences in the percent of agencies reporting collaboration on workplace SHS enforcement with county health departments (Cochran's $Q = 20.15$, $p < 0.001$, $n = 40$); collaboration among all other agencies in the IE focal counties was not significantly different across the five survey waves.

Figure SHS-3a
Secondhand Smoke Enforcement Agency
Collaboration with Other Groups: County Health Departments



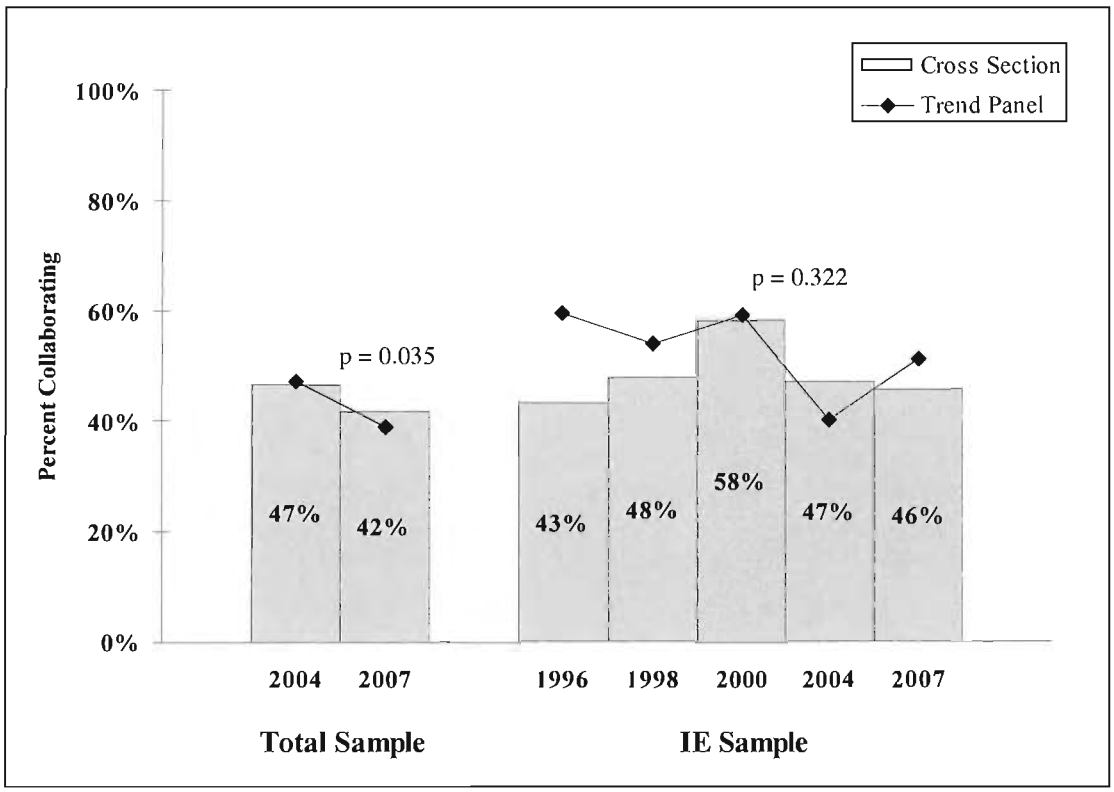
Total Sample includes data for all agencies statewide, not only those from Independent Evaluation counties.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-3b
Secondhand Smoke Enforcement Agency
Collaboration with Other Groups: Local Government Officials



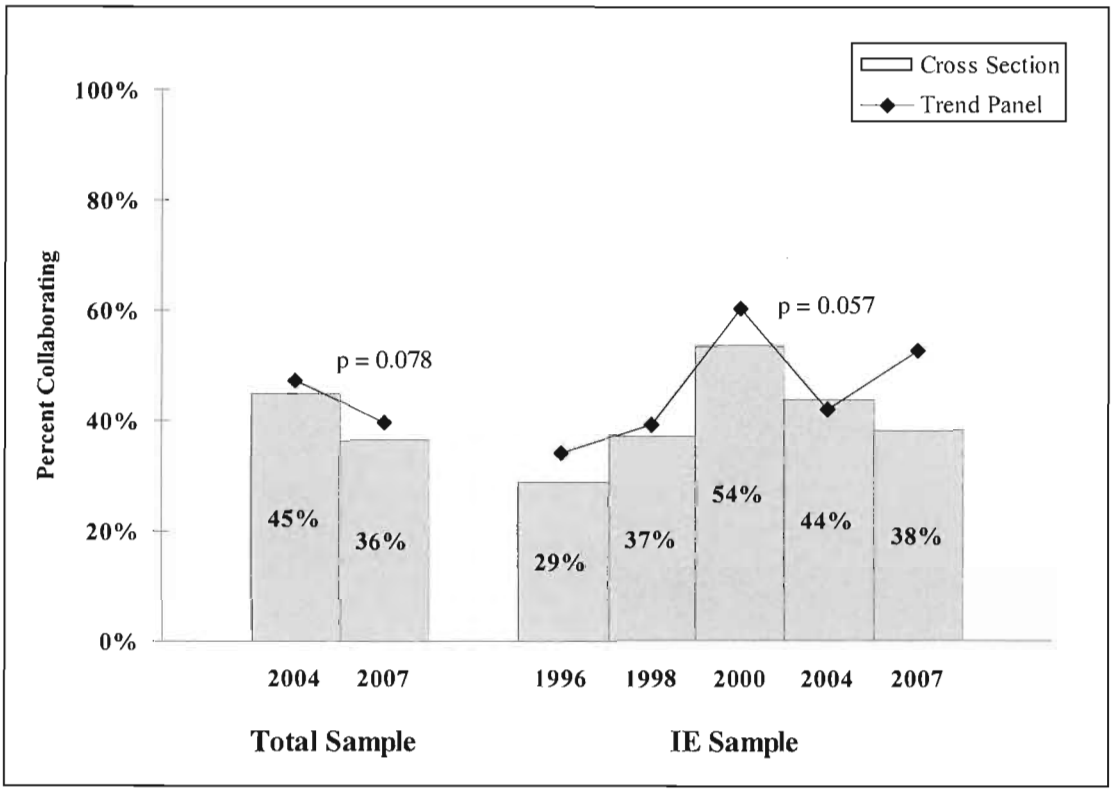
Total Sample includes data for all agencies statewide, not only those from Independent Evaluation counties.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-3c
Secondhand Smoke Enforcement Agency
Collaboration with Other Groups: Businesses



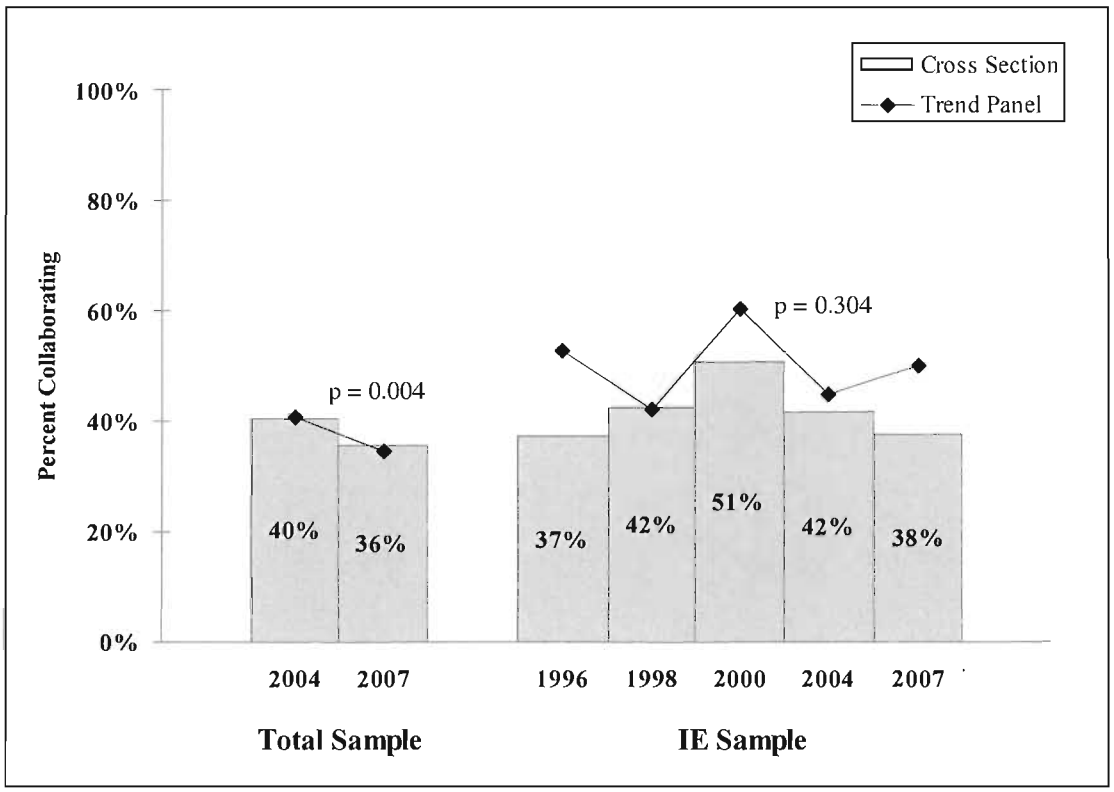
Total Sample includes data for all agencies statewide, not only those from Independent Evaluation counties.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-3d
Secondhand Smoke Enforcement Agency
Collaboration with Other Groups: Tobacco Coalitions*



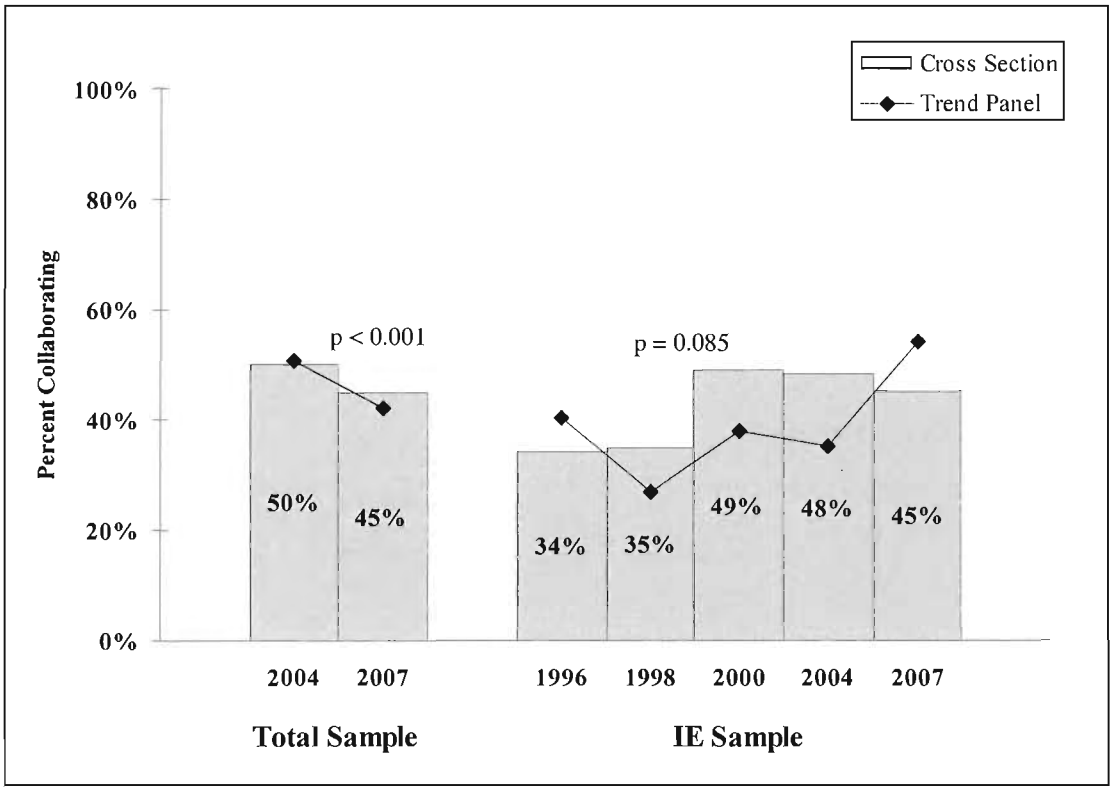
Total Sample includes data for all agencies statewide, not only those from Independent Evaluation counties.
* Collaboration was not measured for this group in 1996.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-3e
Secondhand Smoke Enforcement Agency
Collaboration with Other Groups: Voluntary Health Organizations



Total Sample includes data for all agencies statewide, not only those from Independent Evaluation counties.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-3f
Secondhand Smoke Enforcement Agency
Collaboration with Other Groups: Educational Organizations



Total Sample includes data for all agencies statewide, not only those from Independent Evaluation counties.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Multivariate analyses. In our multivariate analyses we looked at the degree to which the above six variables/factors were independent predictors of three different dependent variables: whether agencies engaged in any type of workplace SHS enforcement activity in the prior year (as enumerated in Table SHS-1); whether agencies engaged in any high-level SHS enforcement activity in the prior year (any Table SHS-1 enforcement activity except educating owners or educating others); and whether agencies conducted any compliance checks during the prior year. Results of these analyses were generally comparable, so we report here only on predictors of SHS compliance check activities in workplaces, excluding bars.

Table SHS-5 presents findings from logistic regression analyses using data from 138 agencies statewide. Only one variable measured was shown to be a statistically independent predictor of whether compliance checks were conducted in the prior year: greater relative importance of enforcement of laws that prohibit smoking in indoor public areas such as restaurants and workplaces ($p = 0.023$). This model, however, explained only 11% of the variance in whether SHS compliance checks were conducted in the prior year.

Table SHS-5

Associations between independent variables and whether any SHS compliance checks were conducted in workplaces (excluding bars)

Independent Variables	*Odds Ratio*	*Confidence Interval*	*P value*
Relative seriousness of SHS problem	0.98	0.64 – 1.50	0.94
Relative importance of enforcement	1.28	1.03 – 1.59	0.02
Perceived compliance	0.90	0.61 – 1.32	0.59
Barriers to enforcement	1.00	0.78 – 1.30	0.99
Barriers to compliance	1.21	0.84 – 1.75	0.30
Collaboration on enforcement	1.09	0.83 – 1.43	0.53

NOTE: Analyses include non-missing data from 138 agencies statewide; factor scores (means) were used for barriers to enforcement, barriers to compliance, and collaboration on enforcement independent variables; Hosmer Lemeshow Goodness of Fit: $p = 0.54$.

Enforcement of LC§6404.5 — Smoke-free Bar Provision

Current Enforcement Activities. Table SHS-6 shows that about half or more enforcement agencies conducted compliance checks (69% of responding agencies statewide), educated bar owners (55%), responded to complaints (53%), responded to inquiries (51%), and educated others about the law (49%). Many agencies issued warnings (42%), but few agencies issued citations (23%) or fines (14%) in response to violations detected. Most agencies statewide reported conducting at least one bar SHS enforcement activity during the previous six months (70%), which did not differ significantly among agencies located in urban (76%), suburban (60%), or rural (71%) counties ($p = 0.12$).

Statewide, agencies reported a higher level of any enforcement activities for the smoke-free bar provision of LC§6404.5 (mean = 2.13 or a 7-point scale) than for the workplace (non-bar) provision of the law (mean = 1.87) (paired T-test = 4.80, df = 160, $p < 0.001$). Also, a significantly higher percentage of agencies reported issuing citations for violations of the smoke-free bar provision (21%) than for the workplace provision of the law (11%) ($p = 0.001$).

Table SHS-6

Frequency of enforcement activities related to the smoking ban in bars during the prior six months

	*Mean (SD)**	*Ever ** (% agencies)*	*Valid N*
a. Responded to inquiries	2.16 (1.67)	51	160
b. Responded to complaints	2.19 (1.68)	53	163
c. Issued warnings	1.95 (1.57)	42	155
d. Issued citations	1.53 (1.21)	23	160
e. Issued fines	1.33 (1.03)	14	144
f. Conducted compliance checks	3.17 (2.09)	69	166
g. Educated bar owners about Labor Code 6404.5	2.48 (1.92)	55	160
h. Educated others about Labor Code 6404.5	2.25 (1.81)	49	152
i. Other (e.g., no complaints)	1.64 (1.79)	14	22

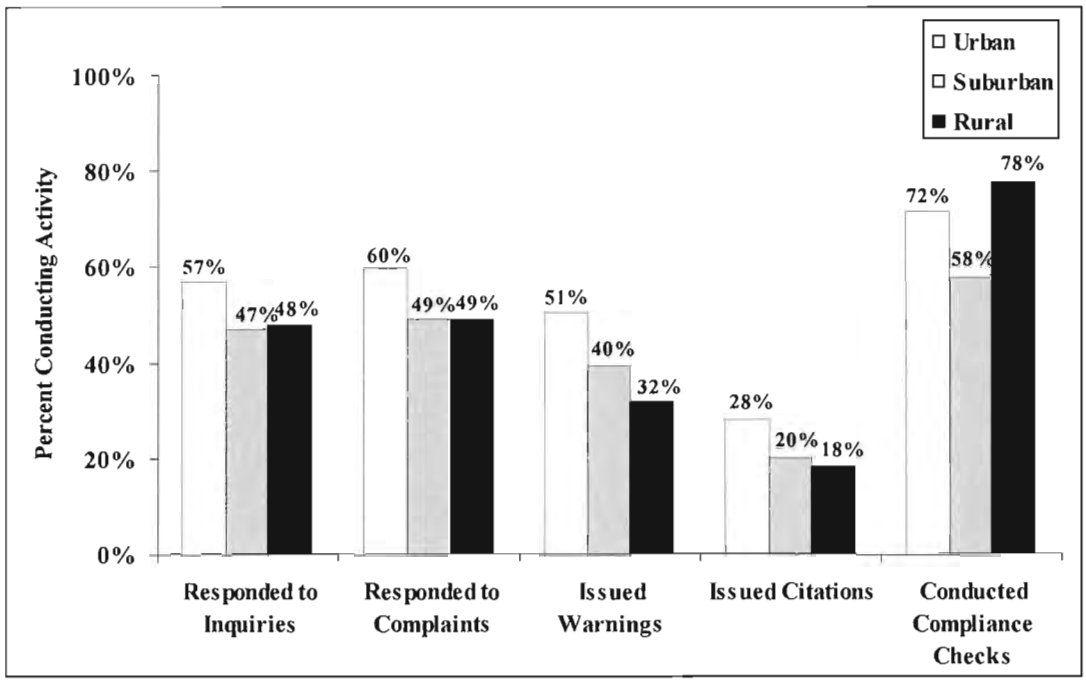
* 1= Never, 2 = Rarely, 7 = Very Often
** Ever is any valid response other than "Never"

Stand-alone and in-restaurant bars were reported to be in the jurisdiction of 184 enforcement agencies that responded to the 2007 survey. Agencies in LLA-designated urban counties reported a significantly higher concentration of bars than did agencies in suburban or rural counties (Chi-squared = 31.47, $p < 0.001$). Figure SHS-4 displays rates for specific SHS enforcement activity in bars for agencies located in urban, suburban, and rural counties. Despite apparent difference, enforcement activity rates were not significantly different among urban, suburban, or rural agencies.

Among the 146 agencies stating that they are responsible for issuing LC§6404.5 smoke-free bar citations, only 8% reported having issued at least one citation for a **restaurant/bar** violation in the previous six months. The average number of citations issued by these 11 agencies was 4.6 (SD = 3.4), with most prosecuted (mean = 3.9, SD = 3.8). There were no significant differences among urban, suburban, or rural agencies on reported restaurant/bar citations.

Only 10% of agencies reported that they issued any LC§6404.5 smoke-free bar citations for violations in **stand-alone bars** during the previous six months. The average number of citations issued by these 14 agencies was 4.64 (SD = 4.2), with no significant differences among urban, suburban, or rural agencies. Again, most stand-alone bar citations issued were prosecuted (mean = 3.4, SD = 3.5).

Figure SHS-4
Secondhand Smoke Enforcement Activities in Bars for Agencies in Urban, Suburban, and Rural Counties



Note: Percentages reflect the number of agencies that reported doing at least one enforcement activity in the six months prior to the survey. Source: SHS Enforcement Survey 2007.

Among all agencies reporting that they issued any citations for violation of the LC§6404.5 smoke-free bar provision, a mean of 7% of citations were issued to patrons and a mean of 3% were issued to bar owners or employees. There was no statistically significant difference in the estimated percentage of citations issued to patrons or bar owners/employees across agencies in urban, suburban, or rural counties.

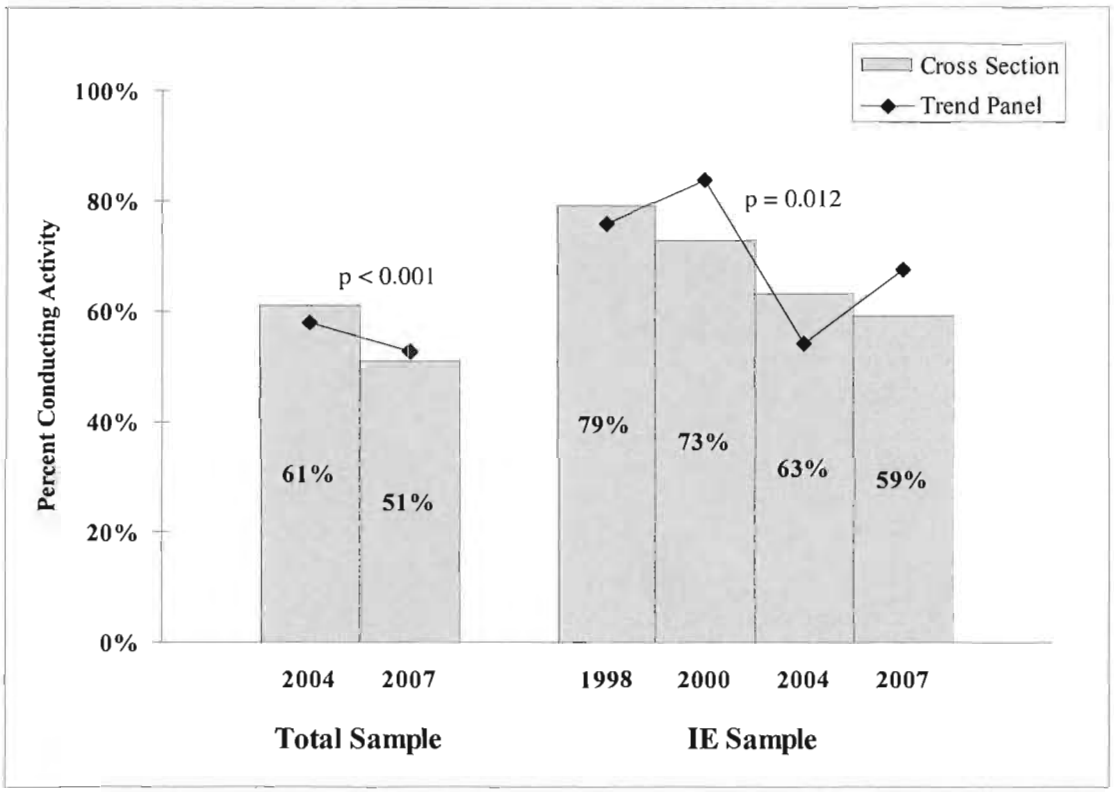
Among all agencies reporting that they issued any citations for violation of the LC§6404.5 smoke-free bar provision, only 3% reported having issued at least one citation for a **hookah bar or lounge** violation in the previous six months. The average number of citations issued by these 5 agencies was 5.6 (SD = 3.4), and three of these agencies prosecuted all 8 cited hookah bars.

Trends in Enforcement. Figures SHS-5a through SHS-5e present cross-sectional and panel data on specific smoke-free bar enforcement activities reported by respondents to the 2004 and 2007 statewide SHS surveys and for the two IE surveys (1998 and 2000) in which these data were collected: respond to inquiries (5a); respond to complaints (5b); issue warnings (5c); issue citations (5d); and conduct compliance checks (5e). Significant declines are seen statewide from 2004 to 2007 in the percent of agencies reporting that they had: responded to inquiries (Chi-squared = 17.50, $p < 0.001$, n = 95); responded to complaints (Chi-squared = 22.48, $p < 0.001$, n = 101); issued warnings (Chi-squared = 16.15, $p < 0.001$, n = 94); issued citations (Chi-squared

= 20.96, $p < 0.001$, n = 92); and conducted compliance checks (Chi-squared = 18.18, $p < 0.001$, n = 105).

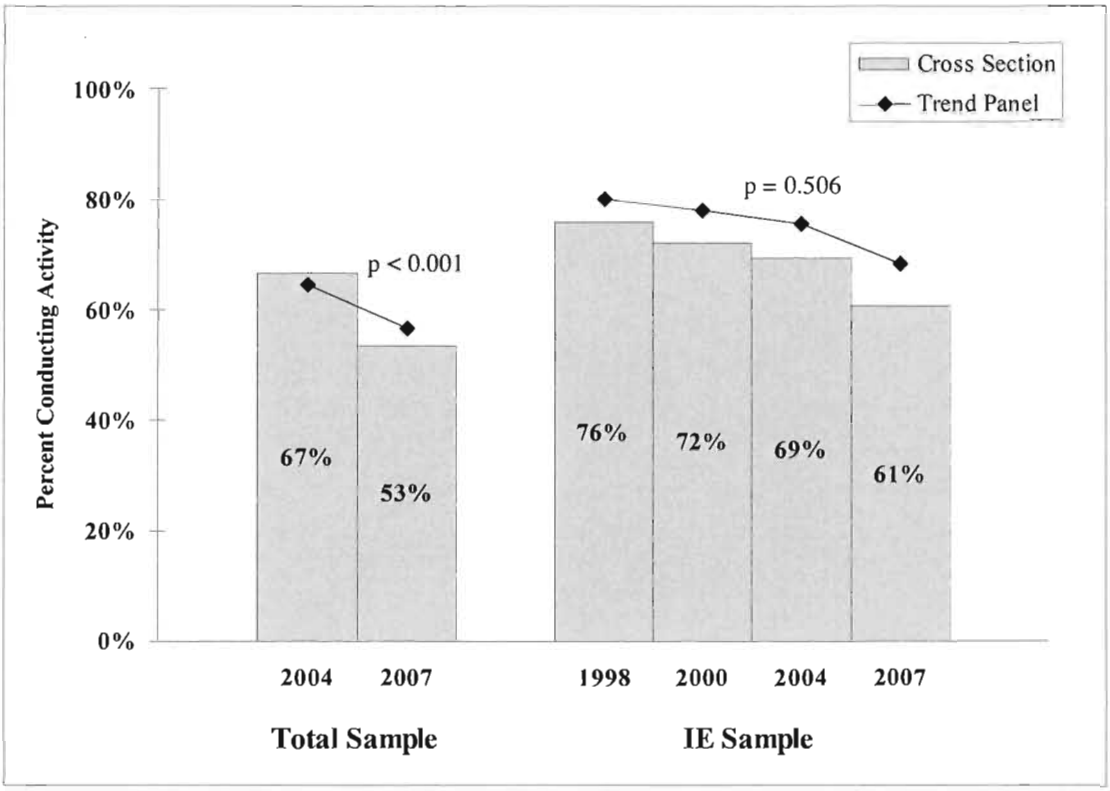
In contrast, the IE panel only showed significant differences across the 1998-2007 surveys in the percent of agencies reporting that they had responded to inquiries (Cochran's Q = 11.00 p = 0.012, n = 37).

Figure SHS-5a
Secondhand Smoke Enforcement Agency Activities in Bars: Respond to Inquiries



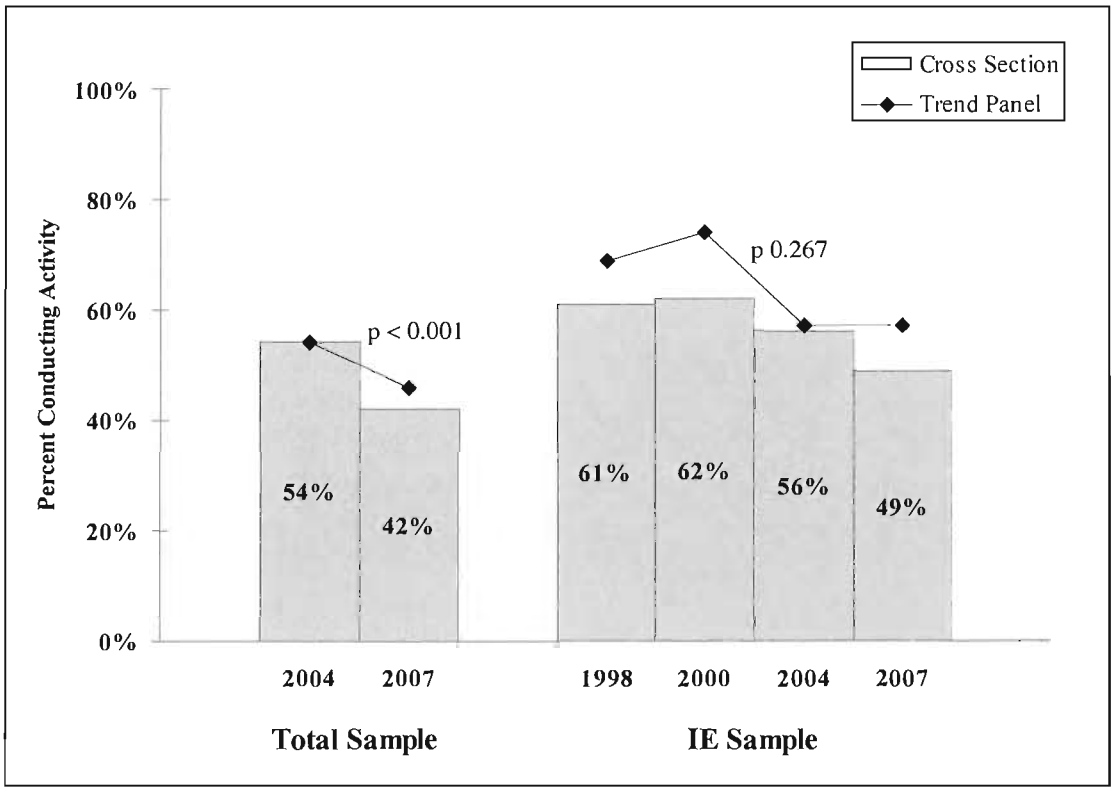
Note: Percentages reflect the number of agencies that reported doing at least one instance of enforcement in the six months prior to the survey.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-5b
Secondhand Smoke Enforcement Agency Activities in Bars:
Respond to Complaints



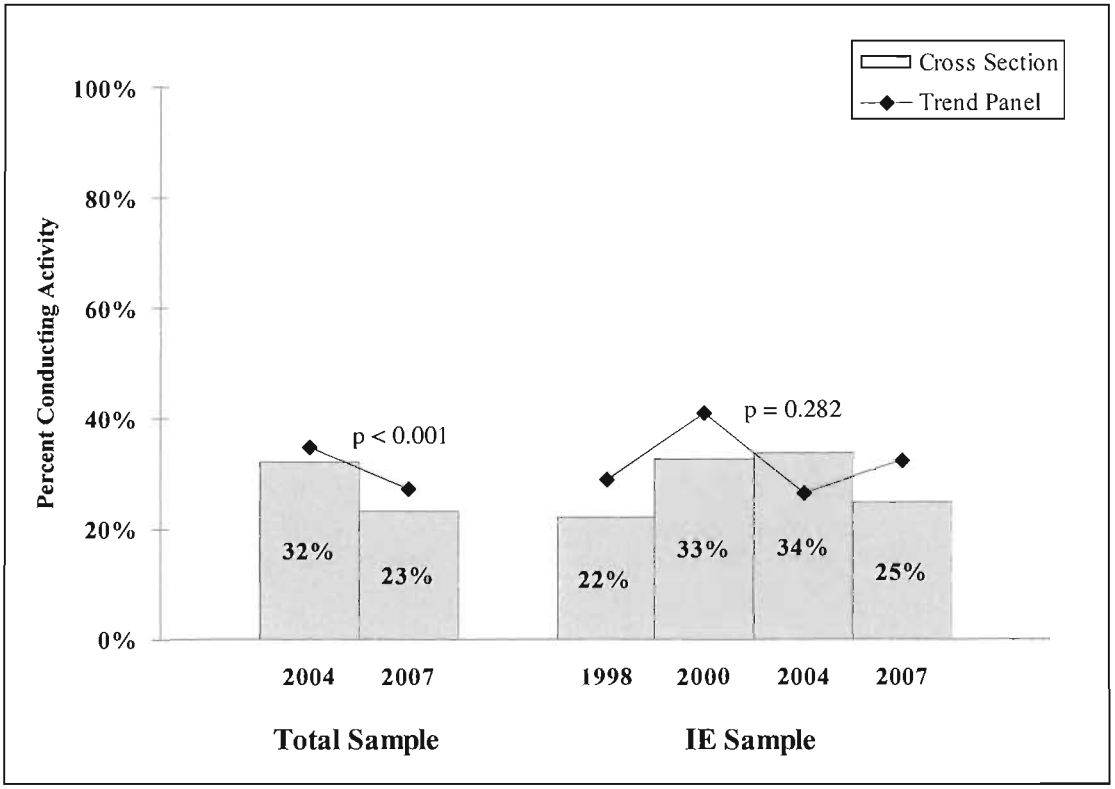
Note: Percentages reflect the number of agencies that reported doing at least one instance of enforcement in the six months prior to the survey.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-5c
Secondhand Smoke Enforcement Agency Activities in Bars:
Issue Warnings



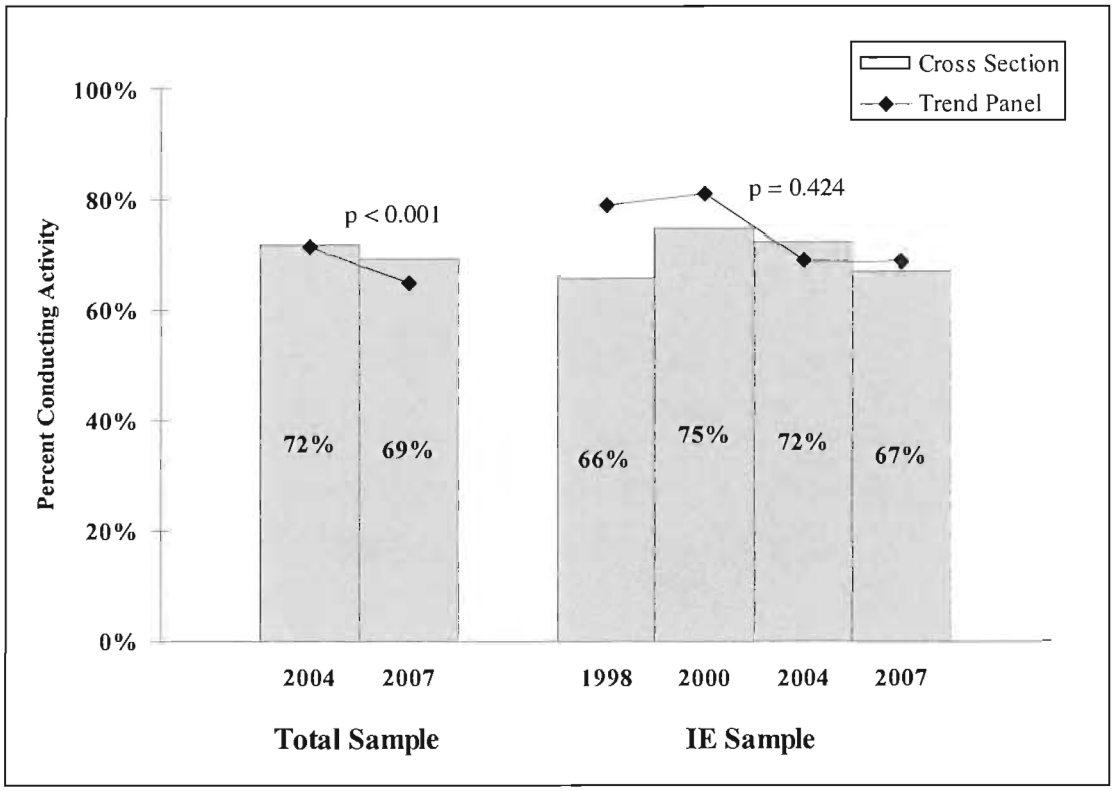
Note: Percentages reflect the number of agencies that reported doing at least one instance of enforcement in the six months prior to the survey.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-5d
Secondhand Smoke Enforcement Agency Activities in Bars:
Issue Citations



Note: Percentages reflect the number of agencies that reported doing at least one instance of enforcement in the six months prior to the survey.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Figure SHS-5e
Secondhand Smoke Enforcement Agency Activities in Bars:
Conduct Compliance Checks



Note: Percentages reflect the number of agencies that reported doing at least one instance of enforcement in the six months prior to the survey.
Source: SHS Enforcement Survey, 1996, 1998, 2000, 2004, and 2007.

Predictors of Enforcement. Most of the factors used as predictors of local enforcement of smoke-free bar laws are the same as those used to predict enforcement of the non-bar provisions of LC§6404.5: relative seriousness of SHS as a community problem; beliefs about the barriers to conducting enforcement operations of SHS laws; beliefs about the barriers to achieving compliance with SHS laws; and the extent of enforcement agency collaboration with other groups on enforcing SHS laws. Each of these variables/factors has been described above as predictors of enforcement of the non-bar provisions of LC§6404.5. In addition to these items, we asked about two specific predictors of smoke-free bar enforcement: relative importance of enforcement of smoke-free bar laws; and perceived compliance with smoke-free bar laws.

Importance of enforcement. Compared to other laws enforced by respondent agencies, enforcement of laws that prohibit smoking in bars specifically is only moderately important (mean = 3.77 on a 7-point scale where 1 = "not at all important" and 7 = "very important", SD = 1.95, n = 183). This variable did not differ across agencies from urban, suburban, or rural counties, and is down slightly from that reported statewide in 2004 (mean = 4.3).

Perceived compliance. The vast majority of enforcement agencies (90%) believe that bars are compliant with SHS laws (mean = 5.92 on a 7-point scale, SD = 1.12, n = 180). This variable did not differ significantly across agencies from urban, suburban, or rural counties, and these statewide results are also nearly identical to those found in the 2004 SHS enforcement survey (mean = 5.92).

Multivariate analyses. In our multivariate analyses of smoke-free bar enforcement data we looked at the degree to which the above six variables/factors were independent predictors of three different dependent variables: whether agencies engaged in any type of smoke-free bar enforcement activity in the previous six months (as enumerated in Table SHS-6); whether agencies engaged in any high-level SHS enforcement activity in the previous six months (any enforcement activity except educating bar owners or educating others); and whether agencies conducted any compliance checks in bars during the previous six months. Results of these analyses were generally comparable, so we report here only on predictors of SHS compliance check activities in bars.

Table SHS-7 presents findings from logistic regression analyses using data from 131 agencies statewide. Only one variable was found to be a statistically independent predictor of whether compliance checks were conducted in the previous six months: greater relative importance of enforcement of SHS laws in bars ($p < 0.03$). This model explained only 9% of the variance in whether compliance checks were conducted in bars during the previous six months.

Table SHS-7

Associations between independent variables and whether any SHS compliance checks were conducted in bars

Independent Variables	*Odds Ratio*	*Confidence Interval*	*P value*
Relative seriousness of problem	0.84	0.50 – 1.41	0.50
Relative importance of enforcement	1.40	1.04 – 1.88	0.03
Perceived compliance	0.75	0.48 – 1.18	0.22
Barriers to enforcement	1.05	0.77 – 1.44	0.74
Barriers to compliance	0.94	0.61 – 1.43	0.76
Collaboration on enforcement	1.09	0.76 – 1.57	0.64

NOTE: Analyses include non-missing data from 144 agencies statewide; factor scores (means) were used for barriers to enforcement, barriers to compliance, and collaboration on enforcement independent variables; Hosmer Lemeshow Goodness of Fit: $p = 0.54$.

Enforcement of GC§7596-7598 — Smoke-free Doorway and Window Areas

Current Enforcement Activities. Government Code §7596-7598 (AB 846) went into effect January 1, 2004 banning smoking within near entrances, exits, and covered parking lots and operable windows of municipal, county, regional, state buildings, and buildings of the University of California, California State University, and community colleges. About half of all agencies statewide (47%) reported conducting any GC§7596-7598-related enforcement activities in the year prior to the 2007 survey. The activity rate did not differ at all among agencies located in LLA-designated urban, suburban, or rural counties.

Table SHS-8 shows that about one-third of local agencies reported specific enforcement activities related to GC§7596-7598 during the previous year: conducting compliance checks (42% of responding agencies statewide), responding to complaints (38%) and inquiries (37%), issuing warnings (30%), and educating other agencies about the law (25%). No differences were observed on these enforcement activities among agencies located in urban, suburban, or rural counties.

Table SHS-8

Frequency of enforcement activities conducted by agency related to Government Code §7596-7598 during prior year

	*Mean (SD)**	*Ever ** (% agencies)*	*Valid N*
a. Responded to inquiries	1.77 (1.35)	37	136
b. Responded to complaints	1.75 (1.28)	38	138
c. Issued warnings	1.54 (1.04)	30	136
d. Issued citations	1.10 (0.41)	7	134
e. Issued fines	1.10 (0.45)	6	129
f. Conducted compliance checks	2.23 (1.80)	42	137
g. Educated other agencies about Government Code §7596-7598	1.59 (1.28)	25	134
h. Other (e.g., no complaints)	1.58 (1.74)	11	19

* 1= Never, 2 = Rarely, 7 = Very Often
** Ever is any valid response other than "Never"

Among the agencies stating that they issued any GC§7596-7598 citations in the prior year, the average number of citations issued was 6.33 (SD = 2.88), and all of these were prosecuted. There were no significant differences among urban, suburban, or rural agencies on reported GC§7596-7598 citations or prosecutions.

Predictors of Enforcement. We looked at various factors that may be predictors of local enforcement activities related to GC§7596-7598, including: relative seriousness of smoking near entrances, exists, covered parking lots, and operable windows as a community problem; relative importance of enforcement of these laws; perceived compliance with these laws; beliefs about the barriers to conducting enforcement operations of these laws; beliefs about the barriers to achieving compliance with these laws; and the extent of enforcement agency collaboration with other groups on enforcing GC§7596-7598.

Seriousness of the problem. Compared to other community problems, most agencies believe that the issue of smoking near entrances, exits, and windows is "not at all serious" (45%) or only "somewhat serious" (29%). Only 9% of the 145 agencies providing valid responses rated the problem as "very serious" compared to other problems. There were no differences in ratings of the relative seriousness of this problem among urban, suburban, or rural agencies.

Importance of enforcement. Compared to other laws enforced by respondent agencies, enforcement of GC§7596-7598 is only moderately important (mean = 3.74 on a 7-point scale where 1 = "not at all important" and 7 = "very important", SD = 1.93, n = 164). This variable did not differ across agencies from urban, suburban, or rural counties.

Perceived compliance. Most enforcement agencies (80%) believe that people in their jurisdiction are compliant with GC§7596-7598 (mean = 5.69 on a 7-point scale, SD = 1.48, n = 164). This variable did not differ significantly across agencies from urban, suburban, or rural counties.

Barriers to enforcement. In 2007, one issue ranked as the top barrier to agencies conducting enforcement activities related to smoking near entrances, exits, and windows: limited staff (mean = 4.41 on a 7-point scale with 1 = "not at all a barrier" and 7 = "a large barrier"; SD = 2.43, n = 157), followed by limited funds for enforcement (mean = 3.73, SD = 2.42, n = 154) (see Table SHS-9). Low community priority (mean = 3.08) and lack of support from community leaders (mean = 2.26) were lower-rated barriers to enforcement.

Table SHS-9

Perceived extent of barriers to enforcing laws that prohibit smoking near building entrances and windows

	*Mean (SD)**	*Valid N*
a. No money in our budget	3.73 (2.42)	154
b. Limited staff	4.41 (2.43)	157
c. Not a priority in our community	3.08 (2.08)	153
d. Lack of support from community leaders	2.26 (1.61)	152
e. Other (e.g., lack of need, no enforcement money)	1.55 (1.23)	20

* 1= Not at all a barrier, 7 = A large barrier

The mean of all barriers to enforcement items was calculated as a factor for use in multivariate analyses (mean = 3.40, SD = 1.79, n = 157). There were no differences on mean enforcement barrier scores among agencies from urban, suburban or rural counties. Agencies from suburban counties, however, rated lack of community priority as a significantly higher barrier to enforcement than did agencies from rural or urban counties (Tukey HSD, p = 0.017 and p = 0.051, respectively).

Barriers to compliance. None of the barriers to achieving compliance with GC§7596-7598 was rated especially high by agencies statewide, with the exception of insufficient enforcement operations conducted (mean = 3.04, SD = 2.21, n =152) (see Table SHS-10). Nor did we detect differences in perceived barriers among agencies from urban, suburban or rural counties.

Table SHS-10

Perceived extent of barriers to achieving compliance with laws that prohibit smoking near building entrances and windows

	*Mean (SD)**	*Valid N*
a. Insufficient enforcement operations conducted	3.04 (2.21)	152
b. Fines/penalties are insufficient deterrents	2.17 (1.67)	147
c. Lack of signage posted for English speakers	2.22 (1.68)	152
d. Lack of signage posted for Spanish speakers	2.24 (1.68)	152
e. Lack of awareness among English speakers	2.29 (1.75)	150
f. Lack of awareness among Spanish speakers	2.36 (1.84)	151
g. Lack of stories in the local media about the law	2.66 (2.00)	149
h. Other (e.g., no enforcement money)	1.65 (1.35)	20

* 1= Not at all a barrier, 7 = A large barrier

Collaboration. About half (49%) of all enforcement agencies reported having worked at least once with county or state health departments on education or enforcement of GC§7596-7598 during the year prior to the 2007 survey (see Table SHS-11). And, about one-third of agencies reported having collaborated at least once with other groups and agencies: other law enforcement agencies (39% of agencies reporting); local tobacco control programs (38%); local government officials (38%); educational organizations (36%); park and recreation programs (32%) businesses (31%); and tobacco control coalitions (30%). But, the level of collaboration was not high with any of these groups (see Table SHS-11). The mean of all collaboration items was calculated as a factor for use in multivariate analyses (mean = 1.83, SD = 1.22, n = 156). Neither this collaboration factor nor any individual collaboration item differed significantly across agencies from urban, suburban, or rural counties.

Table SHS-11

Frequency of collaboration on education or enforcement of laws that prohibit smoking near building entrances and windows during prior year

	*Mean (SD)**	*Ever ** (% agencies)*	*Valid N*
a. County or state health department	2.18 (1.68)	49	155
b. Local tobacco control programs	1.91 (1.56)	38	154
c. Local government officials (e.g., city council, board of supervisors)	1.87 (1.42)	38	154
d. Park and recreation programs	1.69 (1.33)	32	154
e. Voluntary health organizations (e.g., ACS)	1.58 (1.30)	25	154
f. Educational organizations (e.g., local schools)	1.91 (1.54)	36	154
g. Businesses (e.g., restaurant associations)	1.66 (1.29)	31	154
h. Tobacco control coalitions	1.81 (1.62)	30	153
i. Other law enforcement agencies (e.g., fire department, code enforcement, city manager)	1.82 (1.37)	39	153
j. Other	1.12 (0.43)	8	26

* 1= Never, 7 = Very Often
** Ever is any valid response other than "Never"

Multivariate analyses. Because GC§7596-7598 is a relatively new set of laws, we focused our multivariate analysis on whether agencies engaged in *any* type of law enforcement activity regarding smoking proximal to entrances, exits, and windows in the prior year (as enumerated in Table SHS-8). Table SHS-12 presents findings from a logistic regression analysis using data from 136 agencies statewide. Only one variable measured is a statistically independent predictor of whether any GC§7596-7598 law enforcement activities were conducted during the prior year: more frequent collaboration with other groups on enforcing GC§7596-7598 ($p = 0.01$). This model explained only 16% of the variance in whether any GC§7596-7598 law enforcement activities were conducted during the prior year.

Table SHS-12

Associations between independent variables and whether any enforcement activities were conducted regarding the smoking near entrances or windows law

Independent Variables	*Odds Ratio*	*Confidence Interval*	*P value*
Relative seriousness of problem	1.19	0.72 – 1.97	0.49
Relative importance of enforcement	1.14	0.87 – 1.48	0.35
Perceived compliance	0.93	0.71 – 1.22	0.60
Barriers to enforcement	1.20	0.93 – 1.56	0.16
Barriers to compliance	1.02	0.77 – 1.35	0.90
Collaboration on enforcement	1.63	1.13 – 2.37	0.01

NOTE: Analyses include non-missing data from 136 agencies statewide; factor scores (means) were used for barriers to enforcement, barriers to compliance, and collaboration on enforcement independent variables; Hosmer Lemeshow Goodness of Fit: $p = 0.65$.

Discussion

Youth Access

The youth access survey results indicate that enforcement agency actions have declined somewhat much since the 2004 survey. About one-quarter of enforcement agencies conducted youth decoy operations in 2007, down from about 30% in 2004 and from 35% in 2000. The further reduction in the percent of agencies actively enforcing PC308(a) is disappointing, given that TCS has continued to expend resources to stimulate enforcement through trainings, and technical assistance to law enforcement agencies.

Agencies report a dramatic drop in the average number of youth decoy operations ("stings") from almost 11 operations per year reported in 2004 to 3.6 per year in 2007. Despite the low rates of decoy operations, most agencies report that they issued warnings and citations to merchants selling tobacco products to minors, although these rates have declined from 2004. Fewer than 5% of enforcement agencies report, however, that warnings and citations were issued to merchants "often" or "very often." The low rate of warnings and citations may also reflect the 14% illegal sales rate estimated by the agencies.

From 2004 to 2007, there was a slight drop in the proportion of law enforcement agencies reporting that they issued warnings to minors possessing tobacco products, but those issuing citations remained the same. There were no significant changes in these types of activities since the 2004 survey.

Three variables were identified as independent predictors of whether an agency enforced PC§308: perceptions of greater collaboration with other agencies; lower perceived barriers to enforcement; and receipt of funding for enforcement. These findings confirm the importance of maintaining support for local enforcement agencies through collaboration and funding.

Finally, agencies operating in jurisdictions with strong local retail licensing ordinances reported conducting four times as many decoy operations over the prior 12 months than did agencies in jurisdictions without strong ordinances, underscoring the considerable value of local policy actions.

Secondhand Smoke

Enforcement of LC§6404.5 — Smoke-free Workplaces (Excluding Bars). Almost two-thirds (61%) of enforcement agencies throughout California reported conducting at least one workplace-related SHS enforcement activity in year prior to the 2007 statewide SHS survey. Cross-sectionally, this level of activity did not change from what was reported from the 2004 statewide SHS survey. About half the agencies reported in 2007 that they responded to inquiries and complaints and conducted compliance checks, but relatively few agencies issued fines or citations. Agencies in rural counties reported issuing significantly fewer warnings for violations of LC§6404.5 than did agencies in urban and suburban counties of California.

Among the agencies that completed both the 2004 and 2007 statewide SHS surveys, there is a significant decline in the percent reporting involvement in all types of enforcement actions: responding to workplace SHS inquiries; responding to complaints; issuing warnings; issuing citations; and conducting compliance checks. An analysis of data collected from agencies in the IE sub-sample from 1996 to 2007 shows similar declines in nearly all enforcement actions across the five survey waves.

Multivariate analyses revealed that agency ratings of the relative importance of enforcement of SHS laws, as compared to other laws, is the only independent predictor of whether any SHS compliance checks were conducted by the agency in the prior year. Even so, agencies rate enforcement of laws that prohibit smoking in indoor public areas as being only moderately important, somewhat of a decline from the 2004 ratings. Most enforcement agencies perceive that the rate of compliance with workplace SHS laws is high, and few believe that the workplace SHS problem is very serious in their community. As in 2004, salient barriers to enforcement of SHS laws are limited agency staff and insufficient budget. In 2004, enforcement agency collaboration with other groups was shown to be an independent predictor of SHS compliance checks, but this is not the case in 2007. In fact, significant declines are seen statewide from 2004 to 2007 in the percent of agencies reporting collaboration on SHS workplace law enforcement with businesses, voluntary health organizations, and educational organizations. Non-significant declines were seen in the percent of enforcement agencies collaborating with county health departments, local government officials, and tobacco coalitions.

Enforcement of LC§6404.5 — Smoke-free Bar Provision. Enforcement of the smoke-free bar provision is higher than for other workplace provisions included in LC§6404.5. Almost three-quarters of the responding agencies in 2007 conducted at least one bar-related SHS enforcement activity during the previous six months, about the same as in 2004, and responses did not vary significantly among agencies in urban, suburban and rural counties. Half or more of a all agencies reported that they responded to inquiries and complaints, down from 2004, and about the same percentage educated bar owners and others about the law. More than two-third of agencies report conducting compliance checks, fewer than half issued warnings, and fewer than one-quarter of all agencies issued citations or fines for violation of the smoke-free bar provision, all down from 2004. Bar-related SHS enforcement activity rates were not significantly different among urban, suburban, or rural agencies

Among all agencies reporting that they issued any citations for violation of the LC§6404.5 smoke-free bar provision, only 3% reported having issued at least one citation for a hookah bar or lounge violation in the previous six months.

Significant declines are seen statewide from 2004 to 2007 in the percent of agencies reporting that they had responded to inquiries, responded to complaints, conducted compliance checks, issued warnings, and issued citations related to SHS laws in bars. Agencies in the IE sub-sample only show significant differences across the four 1998-2007 surveys in the percent of agencies reporting that they had responded to inquiries.

Only one variable was found to be a independent predictor of whether SHS compliance checks were conducted in bars during the previous six months: greater relative importance of

enforcement of SHS laws in bars. Nevertheless, compared to other laws enforced by respondent agencies, enforcement of laws that prohibit smoking in bars specifically is rated by agencies as being only moderately important, down from the rating level reported in 2004.

Enforcement of GC§7596-7598— Smoke-free Doorway and Window Areas. The levels of enforcement activities related to GC§7596-7598 is lower than for either of the smoke-free workplace provisions of LC§6404. Statewide, only about half of all agencies reported conducting any GC§7596-7598-related enforcement activities in the year prior to the 2007 survey, and the activity rate did not differ among agencies located in urban, suburban, or rural counties. More than 40% of the responding agencies reported conducting compliance checks related to this law, and more than one-third responded to inquiries and complaints, and less than one-third issued warnings. Very few agencies issued citations or fines for violations of the law.

Most of the agencies believe that this issue is less serious than other community problems, and that there is fairly good compliance in their jurisdiction. Barriers to enforcement, such as limited staff and insufficient funding, ranked at about the same level as the perceived barriers to enforcing smoke-free workplace laws. The only significant predictor of whether an agency conducted any enforcement activity regarding GC§7596-7598 is the level of collaboration with other community groups and agencies.

In general, enforcement agencies believe that there are high rates of compliance in their communities with the three SHS laws that were addressed in the survey. There is, however, variability in enforcement of SHS laws at the local level. Smoke-free bar provisions appear to be more actively enforced than other workplace provisions, while the law requiring smoke-free doorway, window and parking areas is enforced less than either of the other two laws. Perceptions about the importance of the laws and the amount of collaboration with other agencies on enforcement activities both predict whether an agency actively enforces these laws. The findings point to important roles Local Lead Agencies and their partners can play both in educating their communities and enforcement agencies about reducing exposure to SHS through law enforcement and in facilitating collaboration with SHS enforcement agencies.

References

Independent Evaluation Consortium. *Final Report. Independent Evaluation of the California Tobacco Control Prevention and Education Program: Waves 1, 2, and 3 (1996-2000).* Rockville, Maryland: The Gallup Organization, 2002.

Rogers T, Feighery EC, Haladjian HH. *Current Practices in Enforcement of California Laws Regarding Youth Access to Tobacco Products and Exposure to Secondhand Smoke. Survey Report — June 2004.* Oakland, California: Public Health Institute, 2004.

Attachments

1. Youth access packet (letter and survey)
2. Secondhand smoke packet (letter and survey)
3. Reminder postcards
4. CD-ROM containing:
    - Codebooks
    - SPSS Files
    - Report
    - Attachments

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™
Morbidity and Mortality Weekly Report (*MMWR*)

Notes from the Field: Electronic Cigarette Use Among Middle and High School Students — United States, 2011–2012

Weekly
September 6, 2013 / 62(35);729-730

Electronic cigarettes, or e-cigarettes, are battery-powered devices that provide doses of nicotine and other additives to the user in an aerosol. Depending on the brand, e-cigarette cartridges typically contain nicotine, a component to produce the aerosol (e.g., propylene glycol or glycerol), and flavorings (e.g., fruit, mint, or chocolate) (*1*). Potentially harmful constituents also have been documented in some e-cigarette cartridges, including irritants, genotoxins, and animal carcinogens (*1*). E-cigarettes that are not marketed for therapeutic purposes are currently unregulated by the Food and Drug Administration, and in most states there are no restrictions on the sale of e-cigarettes to minors. Use of e-cigarettes has increased among U.S. adult current and former smokers in recent years (*2*); however, the extent of use among youths is uncertain.

Data from the 2011 and 2012 National Youth Tobacco Survey (NYTS), a school-based, pencil-and-paper questionnaire given to U.S. middle school (grades 6–8) and high school (grades 9–12) students, were used to estimate the prevalence of ever and current (≥1 day in the past 30 days) use of e-cigarettes, ever and current (≥1 day in the past 30 days) use of conventional cigarettes, and use of both. NYTS consists of a cross-sectional, nationally representative sample of students in grades 6–12 from all 50 states and the District of Columbia (*3*).

During 2011–2012, among all students in grades 6–12, ever e-cigarette use increased from 3.3% to 6.8% ($p<0.05$) (Figure); current e-cigarette use increased from 1.1% to 2.1% ($p<0.05$), and current use of both e-cigarettes and conventional cigarettes increased from 0.8% to 1.6% ($p<0.05$). In 2012, among ever e-cigarette users, 9.3% reported never smoking conventional cigarettes; among current e-cigarette users, 76.3% reported current conventional cigarette smoking.

Among middle school students, ever e-cigarette use increased from 1.4% to 2.7% during 2011–2012 ($p<0.05$) (Figure); current e-cigarette use increased from 0.6% to 1.1% ($p<0.05$), and current use of both e-cigarettes and conventional cigarettes increased from 0.3% to 0.7% ($p<0.05$). In 2012, among middle school ever e-cigarette users, 20.3% reported never smoking conventional cigarettes; among middle school current e-cigarette users, 61.1% reported current conventional cigarette smoking.

Among high school students, ever e-cigarette use increased from 4.7% to 10.0% during 2011–2012 ($p<0.05$) (Figure); current e-cigarette use increased from 1.5% to 2.8% ($p<0.05$), and current use of both e-cigarettes and conventional cigarettes increased from 1.2% to 2.2% ($p<0.05$). In 2012, among high school ever e-cigarette users, 7.2% reported never smoking conventional cigarettes; among high school current e-cigarette users, 80.5% reported current conventional cigarette smoking.

E-cigarette experimentation and recent use doubled among U.S. middle and high school students during 2011–2012, resulting in an estimated 1.78 million students having ever used e-cigarettes as of 2012. Moreover, in 2012, an estimated 160,000 students who reported ever using e-cigarettes had never used conventional cigarettes. This is a serious concern because the overall impact of e-cigarette use on public health remains uncertain. In youths, concerns include the potential negative impact of nicotine on adolescent brain development (*4*), as well as the risk for nicotine addiction and initiation of the use of conventional cigarettes or other tobacco products.

CDC and the Food and Drug Administration will continue to explore ways to increase surveillance and research on e-cigarettes. Given the rapid increase in use and youths' susceptibility to social and environmental influences to use tobacco, developing strategies to prevent marketing, sales, and use of e-cigarettes among youths is critical.

Reported by

Catherine Corey, MSPH, Baoguang Wang, MD, Sarah E. Johnson, PhD, Benjamin Apelberg, PhD, Corinne Husten, MD, Center for Tobacco Products, Food and Drug Administration. Brian A. King, PhD, Tim A. McAfee, MD, Rebecca Bunnell, PhD, René A. Arrazola, MPH, Shanta R. Dube, PhD, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC. ***Corresponding contributor:*** *Brian A. King,* baking@cdc.gov*, 770-488-5107.*

References

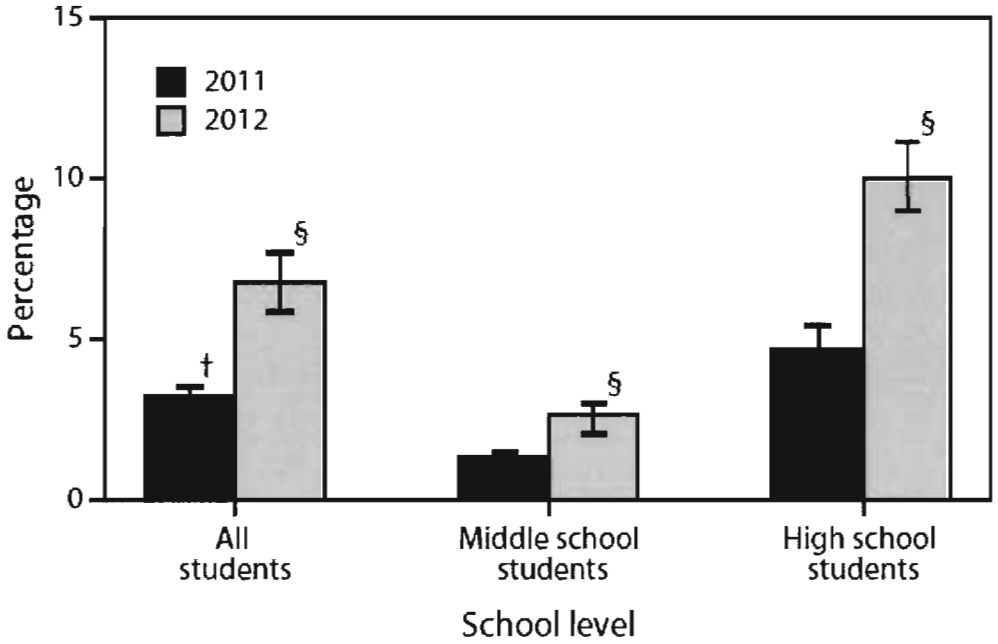
1. Cobb NK, Byron MJ, Abrams DB, Shields PG. Novel nicotine delivery systems and public health: the rise of the "e-cigarette." Am J Public Health 2010;100:2340–2.
2. King BA, Alam S, Promoff G, Arrazola R, Dube SR. Awareness and ever use of electronic cigarettes among U.S. adults, 2010–2011. Nicotine Tob Res 2013;15:1623–7.
3. CDC. National Youth Tobacco Survey. Atlanta, GA: US Department of Health and Human Services, CDC; 2013. Available at http://www.cdc.gov/tobacco/data_statistics/surveys/nyts.
4. Dwyer JB, McQuown SC, Leslie FM. The dynamic effects of nicotine on the developing brain. Pharmacol Ther 2009;122:125–39.

* Ever electronic cigarette use defined as having ever used electronic cigarettes, even just one time.

† 95% confidence interval.

§ Statistically significant difference between 2011 and 2012 (chi-square, $p<0.05$).

FIGURE. Ever electronic cigarette use* among middle and high school students, by year — National Youth Tobacco Survey, United States, 2011–2012



Alternate Text: The figure above shows ever electronic cigarette (e-cigarette) use among middle and high school students, by year, in the United States during 2011-2012. During 2011-2012, among all students in grades 6-12, ever e-cigarette use increased from 3.3% to 6.8% ($p<0.05$); current e-cigarette use increased from 1.1% to 2.1% ($p<0.05$), and current use of both e-cigarettes and conventional cigarettes increased from 0.8% to 1.6% ($p<0.05$).

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

References to non-CDC sites on the Internet are provided as a service to *MMWR* readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of pages found at these sites. URL addresses listed in *MMWR* were current as of the date of publication.

All *MMWR* HTML versions of articles are electronic conversions from typeset documents. This conversion might result in character translation or format errors in the HTML version. Users are referred to the electronic PDF version (http://www.cdc.gov/mmwr) and/or the original *MMWR* paper copy for printable versions of official text, figures, and tables. An original paper copy of this issue can be obtained from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402-9371; telephone: (202) 512-1800. Contact GPO for current prices.

**Questions or messages regarding errors in formatting should be addressed to mmwrq@cdc.gov.

Page last reviewed: September 06, 2013
Page last updated: September 06, 2013
Content source: Centers for Disease Control and Prevention

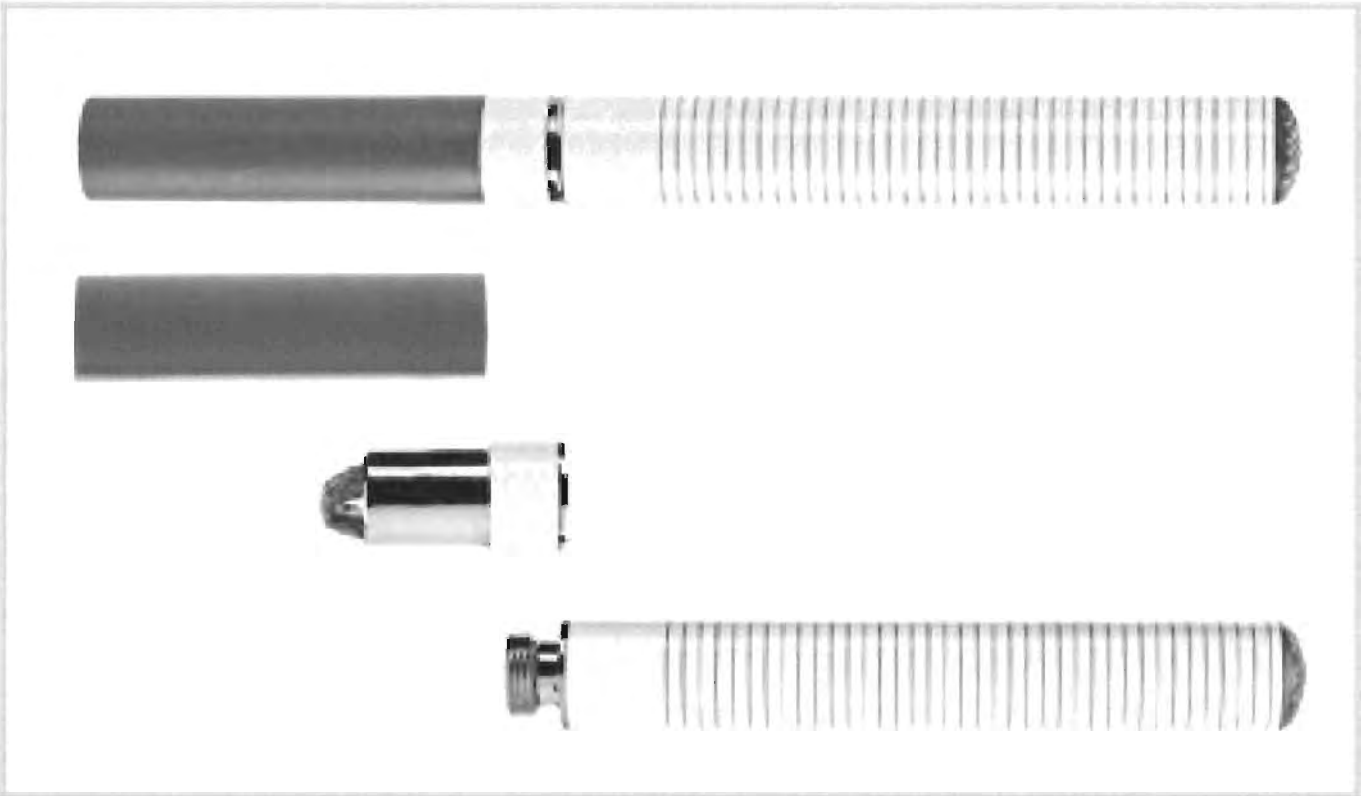
Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC–INFO

U.S. Food and Drug Administration
Protecting and Promoting *Your* Health

Electronic Cigarettes (e-Cigarettes)

What are electronic cigarettes?

Electronic cigarettes, also known as e-cigarettes, are battery-operated products designed to deliver nicotine, flavor and other chemicals. They turn chemicals, including highly addictive nicotine, into an aerosol that is inhaled by the user.



Most e-cigarettes are manufactured to look like conventional cigarettes, cigars, or pipes. Some resemble everyday items such as pens and USB memory sticks.

E-cigarettes have not been fully studied, so consumers currently don't know:

- the potential risks of e-cigarettes when used as intended,

- how much nicotine or other potentially harmful chemicals are being inhaled during use, or
- whether there are any benefits associated with using these products.

Additionally, it is not known whether e-cigarettes may lead young people to try other tobacco products, including conventional cigarettes, which are known to cause disease and lead to premature death.

FDA Regulation of e-Cigarettes

Only e-cigarettes that are marketed for therapeutic purposes are currently regulated by the FDA Center for Drug Evaluation and Research (CDER). Currently, the FDA Center for Tobacco Products (CTP) regulates

- cigarettes,
- cigarette tobacco,
- roll-your-own tobacco, and
- smokeless tobacco.

FDA has issued a proposed rule that would extend the agency's tobacco authority to cover additional products that meet the legal definition of a tobacco product, such as e-cigarettes. FDA's **Extending Authorities to Additional Tobacco Products webpage (/TobaccoProducts/Labeling/ucm388395.htm)** offers more information on the proposed rule, including how to submit comments.

For more information on current regulation:

- **Tobacco Product Regulation (/TobaccoProducts/ResourcesforYou/ucm335294.htm)**
- **Nicotine-Containing Products (/Drugs/GuidanceComplianceRegulatoryInformation/ucm345928.htm)**

How to Comment

To comment on the proposed rule:

1. **Read the proposed rule (http://www.regulations.gov/#!documentDetail;D=FDA-2014-N-0189-20870)**.
2. Through August 8, 2014, **go to Regulations.gov to submit comments**

(http://www.regulations.gov/#!submitComment;D=FDA-2014-N-0189-20870).

Comment Now (http://www.regulations.gov/#!submitComment;D=FDA-2014-N-0189-20870)

eCigarettes and Adverse Events

What is an Adverse Event?
An adverse event is an undesirable side effect or unexpected health or product quality problem that an individual believes was caused by the use of a tobacco product.

Reporting an Adverse Event
Anyone can report an adverse event to the FDA. In fact, these reports help us identify safety concerns with tobacco products that could cause health or safety problems beyond those normally associated with tobacco product use.

Please report adverse events with e-cigarettes via:

- The **HHS Safety Reporting Portal (https://www.safetyreporting.hhs.gov/)** or
- By calling 1-800-FDA-1088

Please send other information or inquiries regarding e-cigarettes to:

- 1-877-CTP-1373 or
- **AskCTP@fda.hhs.gov (mailto:AskCTP@fda.hhs.gov)**

Adverse Event Reports for e-Cigarettes

We regularly receive voluntary reports[1] of adverse events involving e-cigarettes from consumers, health professionals and concerned members of the public. The adverse events described in these reports have included hospitalization for illnesses such as

- pneumonia,

- congestive heart failure,
- disorientation,
- seizure,
- hypotension, and
- other health problems.

Whether e-cigarettes caused these reported adverse events is unknown. Some of the adverse events could be related to a pre-existing medical condition or to other causes that were not reported to FDA. You can review the adverse event reports for e-cigarettes that were voluntarily reported to FDA from 6/22/2009 to 3/12/2014 at the **CTP FOIA Electronic Reading Room (/AboutFDA/CentersOffices/OfficeofMedicalProductsandTobacco/AbouttheCenterforTobaccoProducts/ucm221165.htm)**.

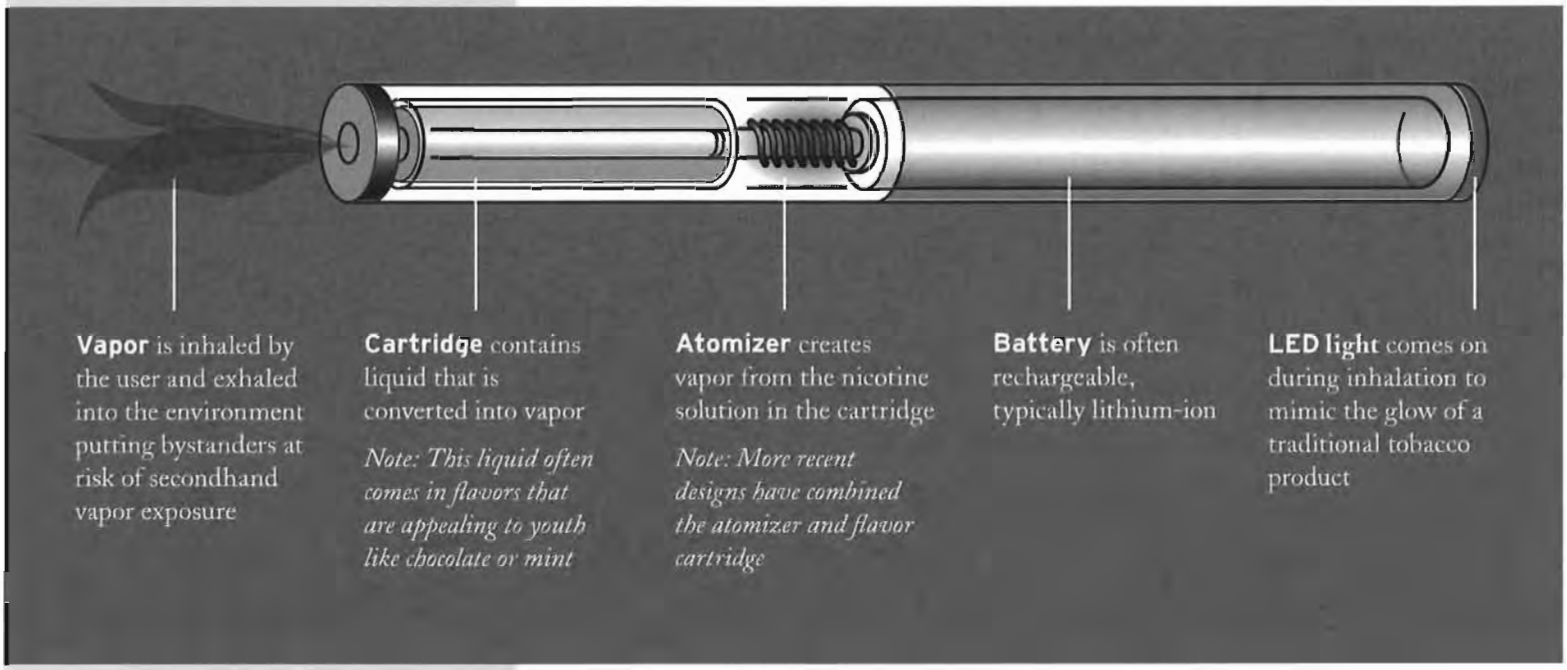
1. Under the Food, Drug and Cosmetic Act, as amended by the Family Smoking Prevention and Tobacco Control Act, FDA may accept voluntarily submitted information related to tobacco products, even if some of the information concerns tobacco products that are not yet regulated by FDA. **(back)**

This fact sheet provides information about the public health concerns related to electronic smoking devices, the steps that have been taken to regulate electronic smoking devices, and what additional measures communities can take to limit access to and the availability of electronic smoking devices.

Regulating Toxic Vapor

A Policy Guide to Electronic Smoking Devices

Electronic smoking devices (also known as "electronic cigarettes," "e-cigarettes," "electronic nicotine delivery systems," "e-cigars," "e-cigarillos," "e-pipes," "e-hookahs," "hookah pens," etc.) are battery operated devices often designed to look like and be used in a similar manner to conventional tobacco products.[1] Electronic smoking devices are used to inhale a vaporized liquid solution that frequently, though not always, contains nicotine. Because the liquid solution is converted into vapor, electronic smoking device use is sometimes referred to as "vaping," rather than smoking. The increasing popularity of electronic smoking devices, combined with loopholes in some existing tobacco control laws, have the potential to renormalize tobacco use.[2]



Policy Rationales for Restricting the Availability & Use of Electronic Smoking Devices

Hazardous Contents

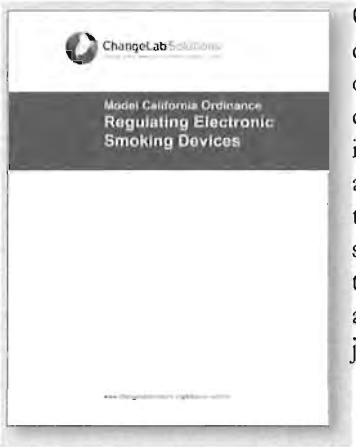
Liquid solutions have addictive levels of nicotine sometimes 20 mg or higher[3] and contain potentially life-threatening carcinogens and toxic chemicals.[4,5] More than one study, including one conducted by the U.S. Food and Drug Administration (FDA), have found that electronic smoking devices contain a number of dangerous substances including tobacco-specific nitrosamines, which are human carcinogens;[6] tobacco-specific impurities suspected of being harmful to humans like anabasine, myosmine, and ß-nicotyrine;[7,8] and inconsistent labeling of nicotine levels in electronic smoking device products.[9,10] In one instance, diethylene glycol, an ingredient used in antifreeze and toxic to humans, was found.[11]

ChangeLab Solutions

Law & policy innovation for the common good.

This fact sheet includes information about model language ChangLab Solutions has developed to assist California cities and counties interested in regulating electronic smoking devices. ChangeLab Solutions' model ordinances offer a variety of policy options that can be tailored to the specific goals and needs of a particular community. For more information, please visit *www.changelabsolutions.org/landing-page/model-policies.*

While ChangeLab Solutions' *Model California Ordinance Regulating Electronic Smoking Devices* was designed for California communities, it can be adapted for use in other states. It is important to carefully review the existing law in your state, to understand the allowable regulations of other tobacco products, like electronic smoking devices. The best way to do this is to consult with an attorney licensed in your jurisdiction.



Exposure to Secondhand Vapor

The composition of the vapor emitted by an electronic smoking device has been found to contain several carcinogens, such as formaldehyde, acetaldehyde, lead, nickel, and chromium.[12,13,14] Additionally, electronic smoking devices have been found to contain other hazardous substances such as $PM_{2.5}$, acrolein, tin, toluene, and aluminum,[15,16,17] which are associated with a range of negative health effects such as skin, eye, and respiratory irritation,[18,19,20,21] neurological effects,[22] damage to reproductive systems,[23] and even premature death from heart attacks and stroke.[24]

Though the quantity of these harmful compounds contained in the vapor emitted by electronic smoking devices is often less than what is found in traditional cigarette smoke,[25,26] at least sodium, iron, aluminum, and nickel have been found in *higher* concentrations in emitted vapor than in cigarette smoke.[27,28]

This is especially troubling given that more than one peer reviewed study has concluded that exposure to vapor from a electronic smoking devices may cause passive or secondhand vaping.[29,30,31]

Rapid Growth in Popularity

There are over 400 brands of electronic smoking devices on the market.[32] Awareness levels of electronic smoking device products among the general population has increased dramatically, from between 40.8 and 44.1 percent in 2010, to 60.9 percent in 2011.[33] Further, the number of current smokers who have ever used an electronic smoking device more than doubled between 2010 and 2011, with 21.2 percent of current smokers reporting they have tried electronic smoking devices in 2011.[34]

Youth Appeal

The increase in use of electronic smoking devices among youth grades 6 to 12 is troubling. In 2012, 6.8 percent of all youth between 6th and 12th grade reported trying electronic smoking devices and 10 percent of high school students have tried them.[35]

Between 2011 and 2012, the percentage of all youth in grades 6 to 12 who had tried electronic smoking devices doubled.[36]

The solutions used in electronic smoking devices are often made in tempting flavors like chocolate and mint and are promoted as being healthy and environmentally friendly,[37] making them especially alluring to youth.[38] Recent national analyses of electronic smoking device users have indicated that young adults tend to be more likely to have tried them,[39] and that the perception of electronic smoking devices among smokers is that they are a safe alternative to cigarettes.[40]

Some Electronic Smoking Devices Do Not Contain Tobacco

While many electronic smoking devices contain nicotine, some devices claim to be 100 percent nicotine and tobacco free.

Determining which electronic smoking devices are truly nicotine free may be difficult for local tobacco control enforcement, given that manufacturers are not required to disclose the ingredients that make up the liquid solution used in electronic smoking devices. Further, product testing has revealed that the information and ingredients listed on the packaging of electronic smoking devices can be misleading or incorrect.[41]

In some cases, vapor lounges or individuals create their own liquid solutions, and there is no way to be sure these homemade solutions are properly labeled or even safe for consumption. For these reasons, local jurisdictions may wish to regulate all electronic smoking devices, whether or not they contain nicotine. If so, communities will need to craft their policies carefully to ensure that all the products they wish to regulate are adequately covered (see the section, *Policy Options for Regulating the Use & Sale of Electronic Smoking Devices,* on page 5).

Renormalization of Tobacco Use

As electronic smoking devices are used in places where tobacco products' use has previously been prohibited, such as workplaces, restaurants, and bars, and as marketing of electronic smoking devices expands into outlets where other tobacco products are prohibited such as television commercials,[42] electronic smoking devices have the potential to renormalize tobacco use. By encouraging experimentation with tobacco, especially among youth, electronic smoking devices have the potential to increase nicotine addiction among young people[43] and serve as a gateway to other tobacco products.[44]

Lack of Regulations Ensuring Safety & Quality Control

Electronic smoking devices have often been represented as a safe alternative to cigarettes. However, there are significant concerns about the safety of these products. For example, the vapor inhaled by electronic smoking device users often contains nicotine levels that are inconsistent with their labeling. Two separate studies found that the nicotine levels of two individual products from different manufacturers were over 20 percent higher than what their labeling indicated.[45,46]

Additionally, some cartridges can be refilled with liquid nicotine solution, creating the potential for exposure to dangerous concentrations of nicotine.[47] A recent analysis of electronic smoking device refill liquids found that "[t]he bottles of e-liquid are dangerous as they contain up to 720 mg of nicotine," which is a potentially lethal amount of nicotine.[48]

Poisonings from electronic smoking devices have increased dramatically in the last three and half years from "one [a month] in September 2010 to 215 a month in February 2014."[49]

Analysis of reports of poisonings from electronic smoking devices finds that people are more likely to report adverse health effects when compared to traditional cigarettes.[50]

Clinical studies about the safety and efficacy of electronic smoking devices for their intended use have not been submitted to the FDA.[51] This means that consumers have no way of knowing whether electronic smoking devices are safe for their intended use, what types or concentrations of potentially harmful chemicals the products contain, and what dose of nicotine the products deliver.

Public Health Support for the Regulation of Electronic Smoking Devices

The World Health Organization has strongly advised consumers against the use of electronic smoking devices until they are "deemed safe and effective and of acceptable quality by a competent national regulatory body."[52] The World Medical Association has determined electronic smoking devices "are not comparable to scientifically-proven methods of smoking cessation" and that "neither their value as therapeutic aids for smoking cessation nor their safety as cigarette replacements is established.[53]

Moreover, the State of California's Tobacco Education and Research Oversight Committee (TEROC) "opposes the use of [electronic smoking devices] in all areas where other tobacco products are banned."[54]

The Legal & Regulatory Landscape

In many places, electronic smoking devices are completely unregulated. However, there is a growing patchwork of laws throughout the U.S. that regulate how electronic smoking devices are sold and, in some cases, where they are used. Here is an overview of the laws governing electronic smoking devices, as of May 2014. The current gaps in regulation are highlighted and the policy options available to local governments are explained.

At the Federal Level

As of February, 2014, the only existing federal restrictions on electronic smoking device use are as follows:

- The U.S. Department of Transportation interprets existing federal regulations against smoking on airplanes to apply to electronic smoking devices.[55]
- The U.S. Air Force and U.S. Navy have both stated that their existing regulations governing tobacco use will apply to electronic smoking devices.[56, 57]

The 2009 Family Smoking Prevention and Tobacco Control Act ("the Tobacco Control Act"), which regulates the manufacturing and marketing of tobacco products, does not apply to electronic smoking devices, nor are electronic smoking devices subject to federal taxes. Therefore, no federal regulations currently exist for electronic smoking devices. There are also no federal regulatory standards for safety or quality control for electronic smoking devices before they can be sold to consumers. Under federal law, it is entirely legal to sell electronic smoking devices to children. Electronic smoking device advertisements are routinely seen on television, where conventional tobacco advertisements have not been seen for decades, and electronic smoking device manufacturers may freely introduce new products that have not been evaluated for safety.

The FDA issues the "deeming rule"

On April 25, 2014, the FDA took a significant step toward regulating these products by releasing its proposed "deeming rule," which would extend the agency's regulatory authority to a variety of tobacco products, including electronic smoking devices.[58] Although the Tobacco Control Act does not explicitly list all tobacco products by name, Congress gave FDA authority to issue a regulation deeming that any or all tobacco products are covered by the Tobacco Control Act. If the proposed deeming rule is finalized, it would extend several provisions of the Tobacco Control Act to electronic smoking devices. These provisions include the federal prohibition on sales to minors, the federal prohibition on free sampling, federal warning label requirements, and the requirement that tobacco manufacturers register with the FDA and seek the agency's review of new tobacco products.

Until such time as the deeming rule is adopted, the FDA's Center for Tobacco Products does not have authority to regulate the sale or use of electronic smoking devices as tobacco products. The FDA Center for Drug Evaluation and Research has limited authority to regulate electronic smoking devices as drugs or devices, but only if they are marketed for therapeutic purposes.[59]

The popularity of electronic smoking devices has boomed, and calls to regulate them have increased at all jurisdictional levels.

The FDA's proposed deeming rule must go through a public notice and comment process before the agency can implement the rule, and the FDA will likely make changes to the rule in response to this process. Given the large volume of comments the agency has received, it will take at least a year, if not longer, for the FDA to implement the final rule. Thus, it is unclear when the FDA will release final regulations on electronic smoking devices.

The Deeming Rule & Preemption

Many jurisdictions have questions about whether the FDA deeming rule would affect state or local laws. The proposed deeming rule makes clear that state and local governments can continue to adopt and enforce laws relating to tobacco product sales, use, distribution, and advertising (within constitutional limitations). According to the deeming rule, these state and local laws can be "in addition to, or more stringent, than the requirements of the Tobacco Control Act and its implementing regulations."[60] For example, the deeming rule would not affect states' and localities' ability to pass laws regulating where electronic smoking devices can be used, taxing electronic smoking devices, or requiring retailers to obtain a local license to sell electronic smoking devices. The deeming rule does identify some areas where local and state action could be preempted if the rule is finalized as written, including laws relating to manufacturing standards and labeling.

At the State Level

In California, it is illegal to sell or otherwise furnish an electronic smoking device to a person under 18 years of age. For purposes of this state law, an electronic device is defined as a device that can deliver a dose of nicotine to the user through a vaporized solution.[61] Local law enforcement agencies have the general authority to enforce this law under California Penal Code Section 830.1. Violators are subject to a fine of up to $200 for a first violation; $500 for a second violation; and $1,000 for a third or subsequent violation.

The California smokefree workplace law, by contrast, does not expressly prohibit the use of electronic smoking devices in enclosed workplaces.[62]

Local Policy Options for Regulating the Use & Sale of Electronic Smoking Devices

Regulating Use

Because the California state smokefree workplace law does not expressly prohibit the use of electronic smoking devices in places covered by that law,[63] many California communities are interested in prohibiting electronic smoking device use wherever conventional smoking is already prohibited. As discussed, it has been found that electronic smoking device vapor contains a variety of substances that are known to be toxic or carcinogenic. When electronic smoking devices are used in public places, bystanders may be involuntarily exposed to those chemicals resulting from secondhand vapor.

There is also considerable concern that the use of electronic smoking devices in places that are covered by a smokefree air law hinders enforcement of those laws.[64] Certain types of electronic smoking devices are often hard to distinguish from conventional cigarettes, and the confusion that results from inconsistently allowing their use in places where smoking is prohibited could have a chilling effect on enforcement of those laws altogether.[65] Relaxed enforcement of smokefree air laws could open the door for people to smoke conventional tobacco products in violation of smokefree laws without fear of consequences. Allowing electronic smoking device use in places that are otherwise smokefree also bears the risk of "re-normalizing" tobacco use, giving the mistaken impression that electronic smoking devices are safe or healthy rather than simply "less dangerous" than conventional cigarettes.[66]

There are different ways for local governments to regulate electronic smoking device use. The most appropriate solution depends on whether there is an existing law in the jurisdiction that regulates smoking, and what the scope of any such law is.

The first step in regulating electronic smoking device use is therefore to review your local laws that govern smoking. In some cases, electronic smoking devices may actually be covered by an existing smokefree law.

To determine whether electronic smoking devices are covered by an existing smokefree law, look to see if the ordinances definition of "smoke" is broad enough to cover vapor or aerosol, or if the definition of "smoking" expressly includes the use of electronic smoking devices, electronic cigarettes, electronic nicotine delivery systems, personal vaporizers, etc.

If it is determined that a jurisdiction's existing smokefree air law already applies to electronic smoking devices, the next step is to determine if that law is being enforced. It's possible that law enforcement may not be aware that the law applies to electronic smoking devices.

Amending an existing smokefree air law

For California jurisdictions that already have a local smokefree air law, one way to address electronic smoking devices is to amend the definitions of "smoke" and "smoking" in the law to explicitly include "electronic smoking device vapor" and "electronic smoking device use." For model definitions of "smoke" and "smoking" that cover electronic smoking devices, see ChangeLab Solutions' *Model Comprehensive Smokefree Places Ordinance.*[70] Advocates who take this approach should be mindful of the fact that opening up any law to add an amendment gives potential opponents the opportunity to weaken it. For example, opponents might try to narrow the scope of places where smoking is prohibited.

More than one peer reviewed study has concluded that exposure to vapor from a electronic smoking devices may cause passive or secondhand vaping.[67,68,69]

In California, many cities and counties have smokefree air laws that cover some outdoor areas, but do not cover indoor workplaces, which are smokefree under state law. If one of these cities were to amend its ordinance to cover electronic smoking devices merely by updating its definitions of "smoke" and "smoking", it would still not cover electronic smoking device use in indoor workplaces because the change still only applies to those places covered by *local* law. For this reason, in addition to updating its definitions of "smoke" and "smoking," the jurisdiction would also need to amend its local smokefree air law to expressly prohibit the use of electronic cigarettes in those places of employment covered by the state smokefree workplace law.

Adopting a stand-alone law

Another option is to pass a stand-alone law specifically to prohibit electronic smoking device use in any place where smoking is prohibited by law. The advantage of this approach is that it provides a catch-all to regulate electronic smoking device use in exactly the same way as conventional tobacco use, regardless of whether existing smokefree air laws are local, state, or federal, and would apply prospectively to any future smokefree air laws passed in that jurisdiction. This approach does not require any existing law to be amended, reducing the likelihood that opponents could use the opportunity to weaken or repeal it. For model language prohibiting electronic smoking device use in places where smoking is prohibited, see ChangeLab Solutions' *Model California Ordinance Regulating Electronic Smoking Devices.*[71]

Adopting a new smokefree air law & working with private companies

Finally, there are some jurisdictions where there may not yet be a local smokefree air law. These jurisdictions are completely free to include electronic smoking devices in any smokefree air law drafted in the future.

It's important to remember that many locations are also subject to voluntary smokefree policies created by individual property owners/managers or businesses. For example, the Starbucks Coffee Company prohibits smoking in all outdoor seating areas in its cafes.[72] Many hotel chains, such as Marriot and Westin, have also adopted policies to prohibit smoking entirely on their premises.[73] Private entities have a free hand to prohibit electronic smoking device use, and communities can work with them to develop or enhance such policies.

To help determine the most appropriate solution for a specific community to address electronic smoking device use, ChangeLab Solutions has developed a visual flow chart, which is available on our website at: *www.changelabsolutions.org/publications/e-cig-ord.*

Regulating Sales

In California, localities can regulate how electronic smoking devices are sold in a variety of ways, up to and including prohibiting the sale of electronic smoking devices altogether. In practice, when deciding precisely how to regulate electronic smoking devices, many jurisdictions seek to achieve consistency with existing laws governing conventional cigarettes and other tobacco products. For example, jurisdictions may: prohibit the sale of electronic smoking devices to minors and require retailers to check ID; require retailers to keep electronic smoking device paraphernalia/accessories behind the counter; and prohibit the distribution of free samples of electronic smoking devices.

As of May 2014 "71 cities and counties in California [require] retailers to obtain a license to sell e-cigarettes."[74]

Any jurisdiction wishing to regulate sales of electronic smoking devices should first become familiar with the scope of existing laws regarding tobacco. It is possible that existing laws regulating tobacco sales (e.g. a local tobacco retailer licensing law) already apply to electronic smoking devices. To determine whether an existing sales restriction applies to electronic smoking devices, look to the definitions in the law ("tobacco," "tobacco product," etc.). In many cases, a law has a very inclusive definition of tobacco that includes all products that contain nicotine (and would therefore apply to electronic smoking devices that contain nicotine, or that are packaged with cartridges or e-liquid containing nicotine). In other cases, electronic smoking devices may be mentioned directly. If it is determined that existing tobacco laws in a jurisdiction already apply to electronic smoking devices, the next step is to determine if those laws are being enforced. It's possible that law enforcement may not be aware that the law(s) apply to electronic smoking devices.

Amending an existing tobacco retailer licensing law

In cases where a local jurisdiction has an existing law governing tobacco sales that does not apply to electronic smoking devices, it is possible to amend that law to cover those products. One way to do this is to broaden the definitions of "tobacco product" and "tobacco paraphernalia," to cover electronic smoking devices and their associated products, such as e-liquid. This can be done simply by referencing these products by name in the definitions.

For model definitions that cover electronic smoking devices in this way, contact ChangeLab Solutions for assistance.*
The advantage of this approach is that it is a simple way to uniformly and consistently apply a variety of tobacco laws to electronic smoking devices.

However, there are some reasons to be cautious with this approach. For example, opening up an existing law to the amendment process creates an opportunity for opponents of the law to limit the law's scope to (for instance) exempt certain types of products from the definition of "tobacco product" like new dissolvable tobacco or nicotine lozenges. This approach is also problematic in that it only affects the laws of the specific jurisdiction. If a city or county has a law prohibiting tobacco vending machines, and they amend the definition of "tobacco product" in their municipal code so that it includes electronic smoking devices, it would not address regulatory gaps at the state level, e.g. a state law like California's which prohibits self-service displays of tobacco products but does not prohibit self-service displays of electronic smoking devices.

Adopting a stand-alone law

In lieu of amending an existing tobacco retailer licensing law, a jurisdiction can adopt a stand-alone ordinance that regulates electronic smoking device in all the same ways that conventional tobacco products are regulated. For example, local governments can require retailers to check the ID of people who purchase electronic smoking device, prohibit self-service displays of electronic smoking devices, and prohibit retailers from giving out free samples to the public. Several states including California[75] have passed stand-alone laws that prohibit the sale of electronic smoking devices to minors. Many local governments in jurisdictions around the country have passed similar laws.[76] For communities that are interested in stand-alone laws such as these, see ChangeLab Solutions' *Model California Ordinance Regulating Electronic Smoking Devices* as a reference.[77]

Adopting a new tobacco retailer licensing (TRL) law

Local jurisdictions that don't already have a tobacco retailer licensing law might consider adopting one that covers both traditional tobacco products and electronic smoking devices and the various liquids sold with them as tobacco products and tobacco or smoking paraphernalia. Tobacco retailer licensing laws require retailers to abide by all applicable local, state and federal tobacco laws in order to maintain their license, and can contain a wide variety of additional conditions. For example, a TRL law may require retailers to agree not to sell electronic smoking devices to minors, to keep all electronic smoking devices behind the counter, or to agree not to give out electronic smoking device samples to prospective customers.

The advantage of including electronic smoking devices in a TRL law is that the requirements for tobacco retailing can be consistently applied to electronic smoking devices and other tobacco products in a uniform way, simplifying and streamlining enforcement. There are numerous city and county governments which have enacted TRL laws that apply to electronic smoking devices along with all other tobacco products.[78] For more information about tobacco retailer licensing, see *License to Kill? Tobacco Retailer Licensing as an Effective Enforcement Tool*, as well as ChangeLab Solutions' *Model Tobacco Retailer Licensing Ordinance.*[79]

* *Note, in some cases a jurisdiction may wish to regulate only those electronic smoking devices that contain nicotine or that can be used to deliver nicotine. This can be done by amending the definition of "tobacco product" to include all products containing nicotine that is either derived from tobacco or synthetically produced, and by changing the definition of tobacco or smoking-related "paraphernalia" to include devices that can be used to deliver a tobacco or nicotine product. For more on this approach, see ChangeLab Solutions' Model Tobacco Retailer Licensing Ordinance at: www.changelabsolutions.org/publications/model-TRL-Ordinance*

Taxing Electronic Smoking Devices

Finally, it may be possible for state and/or local governments to levy taxes on electronic smoking devices. In most jurisdictions, electronic smoking devices are currently not taxed the way that cigarettes and other tobacco products are, and federal law does not preempt state or local governments from taxing electronic smoking devices.

Numerous studies have shown that one of the most clearly effective ways of reducing tobacco use, particularly among minors, is to increase the price of those products.[80] Not only do higher excise taxes on tobacco products lower rates of use, but they also create a source of revenue that can be used to offset health costs related to tobacco and to fund public health efforts.[81]

If there is not an existing state or local law that levies a tax on electronic smoking devices, it may be possible to enact one in order to bring taxes on these products more in line with the taxes on conventional cigarettes and/or other tobacco products. Policy questions that may arise include how to set the taxation rate given the many different forms in which electronic smoking devices and their components are sold, and whether the taxation rate should be lower than the rate for conventional tobacco products. Minnesota is the first state in the country to tax electronic smoking devices as a tobacco product. Although the law itself does not explicitly mention electronic smoking devices, the definition of "tobacco products" is broad enough to cover any product that contains or is derived from tobacco.[82] The Minnesota Department of Revenue has issued a notice clarifying that in its opinion the tobacco products tax applies to electronic smoking devices.[83] As of January 2014, several other states are considering this strategy, for example Delaware, Maine, Massachusetts, New Mexico, Oklahoma, and Utah.[84]

Electronic Smoking Devices & the Minnesota Department of Revenue

In October, 2012, the Minnesota Department of Revenue clarified its position that the state's tobacco products tax applies to electronic smoking devices. More specifically, the notice states that electronic smoking devices (or any components thereof) that contain nicotine constitute tobacco products under the assumption that all nicotine is derived from tobacco. Products containing nicotine that are not derived from tobacco are exempt from the tax; however, the burden is on the taxpayer to prove this to the department. Furthermore, the sales price of an entire electronic smoking device "kit" or package is subject to the tax unless a wholesaler sells the nicotine-containing component (such as a cartridge or liquid bottle) separately and can isolate the cost of the product.

How We Can Help

Additional materials related to electronic smoking devices are available on our *website* including our *Model California Ordinance Regulating Electronic Smoking Devices.*

This material was made possible by funds received from the California Department of Public Health, under contract #09-11182. ChangeLab Solutions is a nonprofit organization that provides legal information on matters relating to public health. The legal information provided in this document does not constitute legal advice or legal representation. For legal advice, readers should consult a lawyer in their state.

© 2014 ChangeLab Solutions

June 2014

Photos by ChangeLab Solutions and Douglas Litchfield/iStock (p.4).

[1] Legacy Foundation. (2012). Tobacco Fact Sheet: Electronic Cigarettes (E-Cigarettes). Available at: *www.legacyforhealth.org/PDFPublications/ECIGARETTE_0909_temp.pdf*

[2] McMillen, R., Maduka, J., & Winickoff, J. (2012) Use of emerging tobacco products in the United States. *Journal of Environmental Public Health.* Doi:10.1155/2012/989474

[3] Cobb, N. et al. (2010). "Novel Nicotine Delivery Systems and Public Health: The Rise of the 'E-Cigarette.'" *American Journal of Public Health*, 100 (12): 2340-2342.

[4] U.S. Food and Drug Administration. (2009). News Release: FDA and Public Health Experts Warn About Electronic Cigarettes. Available at: *www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm173222.htm*

[5] Cobb, N, et al. (2010). "Novel Nicotine Delivery Systems and Public Health: The Rise of the 'Electronic smoking device.'" *American Journal of Public Health*, 100(12): 2340-2342.

[6] Department of Health and Human Services Food and Drug Administration. (2009). "FDA Evaluation of E-Cigarettes." Available at: *www.fda.gov/downloads/drugs/Scienceresearch/UCM173250.pdf*

[7] Etter, J.-F., Zäther, E., & Svensson, S. (2013). Analysis of refill liquids for electronic cigarettes. *Addiction (Abingdon, England)*, 1–9. doi:10.1111/add.12235

[8] Department of Health and Human Services Food and Drug Administration. (2009). "FDA Evaluation of E-Cigarettes." Available at: *www.fda.gov/downloads/drugs/Scienceresearch/UCM173250.pdf*

[9] Department of Health and Human Services Food and Drug Administration. (2009). "FDA Evaluation of E-Cigarettes." Available at: *www.fda.gov/downloads/drugs/Scienceresearch/UCM173250.pdf*

[10] German Cancer Research Center. (2013). Red Series Tobacco Prevention and Tobacco Control Volume 19: Electronic Cigarettes - An Overview. Available at: *www.dkfz.de/de/tabakkontrolle/download/Publikationen/RoteReihe/Band_19_ecigarettes_an_overview.pdf*

[11] Department of Health and Human Services Food and Drug Administration. (2009). "FDA Evaluation of E-Cigarettes." Available at: *www.fda.gov/downloads/drugs/Scienceresearch/UCM173250.pdf*

[12] State of California Environmental Protection Agency Office of Environmental Health Hazard Assessment Safe Drinking Water and Toxic Enforcement Act of 1986. (2013). Chemicals known to the State of California to cause cancer or reproductive toxicity. Available at: *http://oehha.ca.gov/prop65/prop65_list/files/P65single091313.pdf*

[13] German Cancer Research Center. (2013). Red Series Tobacco Prevention and Tobacco Control Volume 19: Electronic Cigarettes - An Overview. Available at: *www.dkfz.de/de/tabakkontrolle/download/Publikationen/RoteReihe/Band_19_ecigarettes_an_overview.pdf*

[14] Goniewicz, M. et al. (2013). Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. Tob. Control. 1:1–8. Available at: *www.ncbi.nlm.nih.gov/pubmed/23467656*

[15] German Cancer Research Center. (2013). Red Series Tobacco Prevention and Tobacco Control Volume 19: Electronic Cigarettes - An Overview. Available at: *www.dkfz.de/de/tabakkontrolle/download/Publikationen/RoteReihe/Band_19_ecigarettes_an_overview.pdf*

[16] Goniewicz, M. et al. (2013). Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. *Tobacco Control*,1:1–8. Available at: *www.ncbi.nlm.nih.gov/pubmed/23467656*

[17] Williams, M., Villarreal, A., Bozhilov, K., Lin, S., & Talbot, P. (2013). Metal and silicate particles including nanoparticles are present in electronic cigarette cartomizer fluid and aerosol. PloS one, 8(3), e57987. doi:10.1371/journal.pone.0057987

[18] Agency for Toxic Substances and Disease Registery (ATSDR). (2008). Toxic Substances Portal – Aluminum. Available at: *www.atsdr.cdc.gov/phs/phs.asp?id=1076&tid=34*

[19] Agency for Toxic Substances and Disease Registery (ATSDR). (2005). Toxic Substances Portal – Tin. Available at: *www.atsdr.cdc.gov/phs/phs.asp?id=541&tid=98*

[20] United States Environmental Protection Agency. (N.d.) EPA Schools Monitoring Initiative Fact Sheet. Available at: *www.epa.gov/air/sat/pdfs/acroleinupdate.pdf*

[21] Agency for Toxic Substances and Disease Registery (ATSDR). (2007). Toxic Substances Portal – Acrolein. Available at: *www.atsdr.cdc.gov/PHS/PHS.asp?id=554&tid=102*

[22] State of California Environmental Protection Agency Office of Environmental Health Hazard Assessment. (n.d.). Chronic Toxicity Summary: Toluene. CAS Registry Number: 108-88-3. Available at: *http://oehha.ca.gov/air/chronic_rels/pdf/108883.pdf*

[23] State of California Environmental Protection Agency Office of Environmental Health Hazard Assessment. (n.d.). Chronic Toxicity Summary: Toluene. CAS Registry Number: 108-88-3. Available at: *http://oehha.ca.gov/air/chronic_rels/pdf/108883.pdf*

[24] Environmental Protection Agency. (2012). "Particle Pollution and Health." Available at: *www.epa.gov/pm/2012/fshealth.pdf*

[25] German Cancer Research Center. (2013). Red Series Tobacco Prevention and Tobacco Control Volume 19: Electronic Cigarettes - An Overview. Available at: *www.dkfz.de/de/tabakkontrolle/download/Publikationen/RoteReihe/Band_19_ecigarettes_an_overview.pdf*

[26] Goniewicz, M. et al. (2013). "Levels of selected carcinogens and toxicants in vapour from electronic cigarettes." *Tob. Control.* 1:1–8. Available at: *www.ncbi.nlm.nih.gov/pubmed/23467656*

[27] German Cancer Research Center. (2013). Red Series Tobacco Prevention and Tobacco Control Volume 19: Electronic Cigarettes - An Overview. Available at: *www.dkfz.de/de/tabakkontrolle/download/Publikationen/RoteReihe/Band_19_ecigarettes_an_overview.pdf*

[28] Williams, M., Villarreal, A., Bozhilov, K., Lin, S., & Talbot, P. (2013). "Metal and silicate particles including nanoparticles are present in electronic cigarette cartomizer fluid and aerosol." PloS one, 8(3), e57987. doi:10.1371/journal.pone.0057987

[29] German Cancer Research Center. (2013). Red Series Tobacco Prevention and Tobacco Control Volume 19: Electronic Cigarettes - An Overview. Available at: *www.dkfz.de/de/tabakkontrolle/download/Publikationen/RoteReihe/Band_19_ecigarettes_an_overview.pdf*

[30] Schripp, T., Markewitz, D., Uhde, E., & Salthammer, T. (2013). "Does e-cigarette consumption cause passive vaping?" *Indoor Air.* 23(1), 25–31. Doi:10.1111/j.1600-0668.2012.00792.x

[31] Schober, W, et al. (2013). Use of electronic cigarettes (e-cigarettes) impairs indoor air quality and increases FeNO levels of e-cigarette consumers. *International Journal of Hygiene and Environmental Health.*

[32] Chen, L. (2013). "FDA Summary of Adverse Events on Electronic Cigarettes." Nicotine & Tobacco Research: Official Journal of the Society for Research on Nicotine and Tobacco. 15(2): 615–6. Doi:10.1093/ntr/nts145.

[33] King, B, et al. (2013). Awareness and Ever Use of Electronic Cigarettes Among U.S. Adults, 2010-2011. Nicotine & tobacco research: official journal of the Society for Research on Nicotine and Tobacco. 1–5. doi:10.1093/ntr/ntt013

[34] King, B, et al. (2013). Awareness and Ever Use of Electronic Cigarettes Among U.S. Adults, 2010-2011. Nicotine & tobacco research: official journal of the Society for Research on Nicotine and Tobacco. 1–5. doi:10.1093/ntr/ntt013

[35] Corey, C, et al. (2013). Notes from the Field: Electronic Cigarette Use Among Middle and High School Students - United States, 2011- 2012. Morbidity and Mortality Weekly Report (MMWR), 62(35), 729–730. Available at: *www.cdc.gov/mmwr/preview/mmwrhtml/mm6235a6.htm*

[36] Corey, C, et al. (2013). Notes from the Field: Electronic Cigarette Use Among Middle and High School Students - United States, 2011- 2012. Morbidity and Mortality Weekly Report (MMWR), 62(35), 729–730. Available at: *www.cdc.gov/mmwr/preview/mmwrhtml/mm6235a6.htm*

[37] Sutfin, E, et al. (2013). Electronic cigarette use by college students. Drug and alcohol dependence. 131(3): 214–21. doi:10.1016/j.drugalcdep.2013.05.001

[38] McMillen, R., Maduka, J., & Winickoff, J. (2012). Use of emerging tobacco products in the United States. Journal of environmental and public health. doi:10.1155/2012/989474

[39] King, B. et al. (2013). Awareness and Ever Use of Electronic Cigarettes Among U.S. Adults, 2010-2011. Nicotine & tobacco research: official journal of the Society for Research on Nicotine and Tobacco. 1–5. doi:10.1093/ntr/ntt013

[40] King, B. et al. (2013). Awareness and Ever Use of Electronic Cigarettes Among U.S. Adults, 2010-2011. Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco. 1–5. doi:10.1093/ntr/ntt013

[41] For example, the vaporized solution that people who use e-cigarettes inhale often contains nicotine levels that are different from their labeling. Two separate studies found that the nicotine levels of two individual products were over 20% higher than what their labeling indicated. See: Etter, Jean-François, Eva Zäther, and Sofie Svensson. "Analysis of Refill Liquids for Electronic Cigarettes." *Addiction* (May 23, 2013): 1–9. doi:10.1111/add.12235.; Goniewicz, Maciej L, Tomasz Kuma, Michal Gawron, Jakub Knysak, and Leon Kosmider. "Nicotine Levels in Electronic Cigarettes." *Nicotine & Tobacco Research: Official Journal of the Society for Research on Nicotine and Tobacco* 15, no. 1 (January 2013): 158–66. doi:10.1093/ntr/nts103.

[42] Hodge, J, et al. (2013). Reconsidering the legality of cigarette smoking advertisements on television public health and the law. The Journal of law, medicine & ethics : a journal of the American Society of Law, Medicine & Ethics. 41(1): 369–73. doi:10.1111/jlme.12026

[43] U.S. Food and Drug Administration. (2010). E-Cigarette: Questions and Answers. Available at: *www.fda.gov/forconsumers/consumerupdates/ucm225210.htm*

[44] McMillen, R., Maduka, J., & Winickoff, J. (2012). Use of emerging tobacco products in the United States. *Journal of Environmental and Public Health.* doi:10.1155/2012/989474

[45] Goniewicz, M, et al. (2013). Nicotine levels in electronic cigarettes. Nicotine & tobacco research: official journal of the Society for Research on Nicotine and Tobacco. 15(1): 158–66. doi:10.1093/ntr/nts103

[46] Etter, J., et al. (2013). "Analysis of Refill Liquids for Electronic smoking devices." Addiction:1–9. doi:10.1111/add.12235

[47] Etter, J., Zäther, E., & Svensson, S. (2013). Analysis of refill liquids for electronic cigarettes. Addiction 108(9): 1671-1679. doi:10.1111/add.12235

[48] Etter, J., Zäther, E., & Svensson, S. (2013). Analysis of refill liquids for electronic cigarettes. Addiction 108(9): 1671-1679. doi:10.1111/add.12235

[49] Chatham-Stephens, K., Law, R., Taylor, E., Melstrom, P., Bunnell, R., Wang, B., & Apelberg, B. (2014). Calls to Poison Centers for Exposures to Electronic Cigarettes - United States, September 2010 –February 2014. *Morbidity and Mortality Weekly Report (MMWR), 63*(13), 292–294.

[50] Chatham-Stephens, K., Law, R., Taylor, E., Melstrom, P., Bunnell, R., Wang, B., & Apelberg, B. (2014). Calls to Poison Centers for Exposures to Electronic Cigarettes - United States, September 2010 –February 2014. *Morbidity and Mortality Weekly Report (MMWR), 63*(13), 292–294.

[51] U.S. Food and Drug Administration. (2009). FDA Warns Of Health Risk Posed By E-Cigarettes. Available at: *www.fda.gov/downloads/forconsumers/consumerupdates/UCM173430.pdf*

[52] World Health Organization. (2013). Questions and Answers on Electronic Cigarettes or Electronic Nicotine Delivery Systems (ENDS). Available at: *www.who.int/tobacco/communications/statements/eletronic_cigarettes/en/*

[53] World Medical Association. (2012). Statement on Electronic Cigarettes and Other Electronic Nicotine Delivery Systems. Available at: *www.wma.net/en/30publications/10policies/e19/index.html.pdf?print-media-type&footer-right=[page]/[toPage]*

[54] State of California Tobacco Education and Research Oversight Committee. (2013). Position on Electronic Cigarettes (e-cigarettes). Available at: *www.cdph.ca.gov/services/boards/teroc/Documents/Positions/TEROC%20Official%20Position%20of%20E-Cigs_June%202013_final.pdf*

[55] U.S. Department of Transportation. (2013). DOT Policy on E Cigarettes. Available at: *www.dot.gov/airconsumer/air-consumer/dot-policy-e-cigarettes*

[56] *See* U.S Air Force. (2012). Air Force Instruction 40-102, Tobacco Use in the Air Force. Available at: *http://static.e-publishing.af.mil/production/1/af_sg/publication/afi40-102/afi40-102.pdf*

[57] Navy and Marine Corps Public Health Center. (2013). Frequent Questions about Electronic Cigarettes (citing U.S. Department of the Navy, SECNAV Instruction 5100.13E (2008)). Available at: *www.med.navy.mil/sites/nmcphc/Documents/health-promotion-wellness/tobacco-free-living/Frequent_Questions_about_Electronic_Cigarettes_March_2013.pdf*

[58] Deeming Tobacco Products To Be Subject to the Federal Food, Drug, and Cosmetic Act, as Amended by the Family Smoking Prevention and Tobacco Control Act; Regulations on the Sale and Distribution of Tobacco Products and Required Warning Statements for Tobacco Products; Proposed Rule, 79 Fed. Reg. 23,142 (proposed Apr. 25, 2014) [hereinafter Proposed Deeming Rule].

[59] *See* Sottera, Inc. v. FDA, 627 F.3d 891 (D.C. Cir. 2010).

[60] Proposed Deeming Rule, 79 Fed. Reg. at 23, 195.

[61] California Health and Safety Code § 119405.

[62] California Labor Code § 6404.5.

[63] California Labor Code § 6404.5.

[64] American Cancer Society Cancer Action Network, American Heart Association, Campaign for Tobacco Free Kids, American Lung Association. *Policy Guidance Document Regarding E-Cigarettes.* (2011). Available at: *www.acscan.org/content/wp-content/uploads/2013/06/Policy-Guidance-on-E-Cigarettes-.pdf*

[65] American Cancer Society Cancer Action Network, American Heart Association, Campaign for Tobacco Free Kids, American Lung Association. *Policy Guidance Document Regarding E-Cigarettes.* (2011). Available at: *www.acscan.org/content/wp-content/uploads/2013/06/Policy-Guidance-on-E-Cigarettes-.pdf*

[66] McMillen, R., Maduka, J., and Winickoff, J. (2011). "Use of Emerging Tobacco Products in the United States" *Journal of Environmental and Public Health.* Doi: 10.1155/2012/989474.

[67] German Cancer Research Center. (2013). "Electronic Cigarettes - An Overview" Red Series Tobacco PRevention and Control. Available at: *www.dkfz.de/de/tabakkontrolle/download/Publikationen/RoteReihe/Band_19_e-cigarettes_an_overview.pdf*

[68] Schripp, T., Markewitz, D., Uhde, E., & Salthammer, T. (2013). Does e-cigarette consumption cause passive vaping? Indoor Air. 23(1), 25–31. Doi:10.1111/j.1600-0668.2012.00792.x

[69] Schober W, Szendrei K, Matzen W, et al. (2013). Use of electronic cigarettes (e-cigarettes) impairs indoor air quality and increases FeNO levels of e-cigarette consumers. Int. J. Hyg. Environ. Health.

[70] ChangeLab Solutions. (2014). "Comprehensive Smokefree Places Model Ordinance." Available at: *www.changelabsolutions.org/publications/comp-smokefree-places*

[71] ChangeLab Solutions. (2014). "Model Ordinance to Regulate Electronic Smoking Devices." Available at: *www.changelabsolutions.org/publications/e-cig-ord*

[72] *See* Starbucks Coffee Company. (2013). "Policies." Available at: *www.starbucks.com/responsibility/learn-more/policies. See also* Americans for Nonsmokers' Rights. "Corporate Smokefree Policies." Available at: *www.no-smoke.org/goingsmokefree.php?id=452*

[73] *See, e.g.,* Marriott International, Inc. (2013). "The Marriott Smoke-free Hotel Policy." (2013). Available at: *www.marriott.com/marriott.mi?page=smokefree*

[74] American Lung Association in California, the Center for Tobacco Policy and Organizing. (2014). Reducing Youth Access to Electronic Cigarettes Through Tobacco Retailer Licensing. Available at: *http://center4tobaccopolicy.org/wp-content/uploads/2014/05/E-cigarettes-in-TRL-May-2014.pdf*

[75] *See, e.g.,* Cal. Health and Safety Code § 119405.

[76] For more information about jurisdictions that have regulated the use and/or sale of electronic smoking devices, *See* New Jersey GASP. (2014). "Electronic Smoking Devices." Available at: *www.njgasp.org/E-Cigs_White_Paper.pdf*; *See also* The Center for Tobacco Policy & Organizing. (2013). "Local Policies on the Use of Electronic Cigarettes." Available at: *http://center4tobaccopolicy.org/wp-content/uploads/2013/11/Local-Policies-on-Use-of-E-Cigs-Nov-2013.pdf*

[77] ChangeLab Solutions. (2014). "Model Ordinance to Regulate Electronic smoking devices." Available at: *www.changelabsolutions.org/publications/e-cig-ord*

[78] The Center for Tobacco Policy & Organizing. (2013). "Electronic Cigarettes and Tobacco Retailer Licensing." Available at: *www.center4tobaccopolicy.org/CTPO/_files/_file/E-cigarettes%20in%20TRL%206_13_13.pdf*

[79] Tobacco Control Legal Consortium. (2010). "License to Kill? Tobacco Retailer Licensing as an Effective Enforcement Tool." Available at: *www.changelabsolutions.org/publications/TRL-enforcement-tool. See also* ChangeLab Solutions. (2014). "Model Ordinance: Tobacco Retailer Licensing." Available at: *www.changelabsolutions.org/publications/model-TRL-Ordinance*

[80] *See* Campaign for Tobacco Free Kids. (2012). "Raising Cigarette Taxes Reduces Smoking, Especially Among Kids." Available at: *www.tobaccofreekids.org/research/factsheets/pdf/0146.pdf*

[81] *See* Cal. Health and Safety Code §§ 104350-104480; 104500-104545.

[82] Minn. Laws § 297F.1.

[83] Minn. Dept. of Revenue, Revenue Notice No. 12-10, Tobacco Products Tax—Taxability—E-Cigarettes (October 22, 2012).

[84] *See, e.g.,* Minn. Laws § 305.2.

City Council Staff Report

DATE: August 20, 2014

AGENDA ITEM NO: **New Business Agenda Item 6-C.**

TO: The Honorable Mayor and City Council

FROM: Jim Smith, Chief of Police

SUBJECT: **Introduction of an Ordinance Amending Title 8 of the Monterey Park Municipal Code in its entirety regarding the regulation of animals within the City's jurisdiction and incorporation of Title 10 of the Los Angeles County Code.**

RECOMMENDATION:

It is recommended that the City Council:

1. Introduce and waive first reading of an ordinance amending Title 8 of the Monterey Park Municipal Code.
2. Set the second reading and Public Hearing for September 17, 2014.
3. Take such additional, related, action that may be desirable.

EXECUTIVE SUMMARY:

The City of Monterey Park contracts with the Los Angeles County Department of Animal Care and Control (LACDACC) for supplemental Animal Control services. In order for LACDACC personnel to issue citations and take other regulatory actions, the City needs to amend Title 8 of the Monterey Park Municipal Code and Adopt Title 10 of the Los Angeles County Code regarding the regulation of Animals.

BACKGROUND:

The City of Monterey Park has contracted with the LACDACC since 2012 for supplemental Animal Control services. However, LACDACC personnel who respond to Monterey Park for services requested that the City adopt, by reference, Title 10 of the Los Angeles Code to facilitate enforcement efforts.

Adopting Title 10 of the Los Angeles County Code will not enact certain regulations to that the City previously rejected as undesirable such as mandatory cat licensing and mandatory spaying/neutering of all pets. The attached Ordinance (Attachment 1) lists the sections of Title 10 that the City would not adopt. Attachment "2" the legislative format version of the previous MPMC Chapter 8 and Attachment "3" shows the specific language of each of those Title 10 sections.

FISCAL IMPACT:

It is unknown at this time if there would be any fiscal impact. There may be additional fines levied or because of increased licensing enforcement and canvassing there could be an increase in the collection of licensing fees.

Respectfully submitted by:

Jim Smith
Chief of Police

Prepared by:

Steve Coday
Police Lieutenant

Approved by:

Paul L. Talbot
City Manager

Reviewed by:

Karl H. Berger
Assistant City Attorney

ATTACHMMENTS

1. Proposed Ordinance
2. MPMC Chapter 8 Legislative Format
3. Los Angeles County Code 10 Modifications

ATTACHMENT 1
Proposed Ordinance

ORDINANCE NO. ____

AN ORDINANCE AMENDING TITLE 8 OF THE MONTEREY PARK MUNICIPAL CODE IN ITS ENTIRETY REGARDING THE REGULATION OF ANIMALS WITHIN THE CITY'S JURISDICTION.

The Council of the City of Monterey Park does ordain as follows:

SECTION 1: *Incorporation of Los Angeles County Code*. A new Chapter 8.14 is added to Title 8 of the Monterey Park Municipal Code ("MPMC"), entitled *County Regulations*, to read as follows:

"Chapter 8.14

INCORPORATION OF LOS ANGELES COUNTY ANIMAL REGULATIONS

8.14.010 **INCORPORATION OF TITLE 10, LOS ANGELES COUNTY CODE:** Pursuant to Government Code § 50022.9, the City Council incorporates Title 10 of the Los Angeles County Code entitled *Animals*, subject to the amendments, additions and deletions set forth below, into this Code. The provisions of this Code take precedence over any conflicting provisions in Title 10 of the Los Angeles County Code.

8.14.020 **DELETIONS FROM LOS ANGELES COUNTY CODE**. The following provisions of Title 10 of the Los Angeles County Code are deleted:

A. Chapter 10.04 entitled *General Provisions*;

B. Section 10.08.155 in Chapter 10.08 entitled *Definitions*;

C. Sections 10.20.030; 10.20.038; 10.20.045; 10.20.110; 10.20.185; 10.20.211 to 10.20.215; 10.20.262; 10.20.270; 10.20.350 to 10.20.385 in Chapter 10.20 entitled *Dogs and Cats*; and

D. Section 10.36.340 to 10.36.380 in Chapter 10.36 entitled *Impoundment*.

8.14.030 **AMENDMENTS TO LOS ANGELES COUNTY CODE**. The following provisions of Title 10 of the Los Angeles County Code are amended to read as follows:

A. Section 10.08.100. "Department" means the Monterey Park Police Department, or designee, or designee as determined by the Police Chief.

B. Section 10.08.110. "Director" means the police chief, or designee.

8.14.040 **ADDITIONS TO LOS ANGELES COUNTY CODE**. The following sections

are added to Title 10 of the Los Angeles County Code:

A. Section 10.08.260. "Director of health services" means the police chief, or designee.

B. Section 10.08.270. "Sheriff," "sheriff deputy," and "sheriff officer" means police officer, or designee.

C. Section 10.08.280. "Tax collector" means the finance director, or designee.

8.14.050 **GENERAL PENALTY**: Any person violating any provision of this title is guilty of a misdemeanor unless otherwise provided in this title."

SECTION 2: *MPMC Title 8 Amendments*.

A. Title 8 of the MPMC, entitled *Animals*, is amended in its entirety to read as set forth in Exhibit "A," which is incorporated in its entirety as if fully set forth.

B. MPMC § 6.16.010 is amended and renumbered as MPMC § 8.01.070 in Exhibit A.

SECTION 3: This Ordinance is exempt from review under the California Environmental Quality Act (California Public Resources Code §§ 21000, *et seq.*, "CEQA") and CEQA Guidelines (14 California Code of Regulations §§ 15000, *et seq.*) in that it is not a "project" for purposes of CEQA, as that term is defined by CEQA Guidelines § 15378. Specifically, this Ordinance constitutes creation of government funding mechanisms or other government fiscal activities which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment. In addition, this Ordinance is an organizational or administrative activity that will not result in a direct or indirect physical change in the environment. Further, even if this Ordinance was deemed a "project" and therefore subject to CEQA, the Ordinance would be exempt as it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment. CEQA Guidelines § 15061(b)(3).

SECTION 4: Repeal or amendment of any provision of the MPMC will not affect any penalty, forfeiture, or liability incurred before, or preclude prosecution and imposition of penalties for any violation occurring before this Ordinance's effective date. Any such repealed part will remain in full force and effect for sustaining action or prosecuting violations occurring before the effective date of this Ordinance.

SECTION 5: If any part of this Ordinance or its application is deemed invalid by a court of competent jurisdiction, the City Council intends that such invalidity will not affect the

effectiveness of the remaining provisions or applications and, to this end, the provisions of this Ordinance are severable.

SECTION 6: The City Clerk is directed to certify the passage and adoption of this Ordinance; cause it to be entered into the City of Monterey Park's book of original ordinances; make a note of the passage and adoption in the records of this meeting; and, within fifteen (15) days after the passage and adoption of this Ordinance, cause it to be published or posted in accordance with California law.

SECTION 7: This Ordinance will become effective thirty days following its passage and adoption.

PASSED AND ADOPTED this __ day of _____, 2014.

_____
Anthony Wong, Mayor

Attest:

_____
Vincent D. Chang, City Clerk

Approved as to Form:
Mark D. Hensley, City Attorney

By: _____
Karl H. Berger, Assistant City Attorney

Exhibit A

Title 8

Animals

Chapter 8.01. GENERAL PROHIBITIONS

8.01.010. Purpose. This Title 8 of the Monterey Park Municipal Code is adopted pursuant to the City's police powers, and applicable provisions the California Code, for the purpose of protecting public health and safety; the health and safety of animals kept within the City's jurisdiction; and ensuring that the requirements of this Title 8 are enforced.

8.01.020. Definitions. Unless the contrary is stated or clearly appears from the context, the following definitions, in addition to those set forth in chapter 8.14 of this title, govern the construction of the words and phrases used in this title:

A. "At large" means whenever a dog is elsewhere than on the premises of the owner or other person having the custody or control of such dog and is not restrained by a leash less than ten (10') feet in length, under the control of a person capable of controlling such dog.

B. "Dog" means both male and female dogs over four months old.

C. "Dog kennel" means any place where three or more canine animals are kept or permitted to remain.

D. "Own" includes the terms keep, maintain, control, harbor, or possess.

E. "Owner" means any natural or artificial person who owns an animal for more than fifteen (15) days.

F. "Police Chief" means the police chief, or designee.

G. "Potentially Dangerous Dog" means any of the following:

i. Any dog which, when unprovoked, on two (2) separate occasions within the prior thirty six (36) month period, engages in any behavior that requires a defensive action by any person to prevent bodily injury when the person and the dog are off the property of the owner or keeper of the dog.

ii. Any dog which, when unprovoked, bites a person causing a less severe injury than as defined in Food and Agricultural Code § 31604.

iii. Any dog which, when unprovoked, on two (2) separate occasions within the prior thirty six (36) month period, has killed, seriously bitten, inflicted injury, or otherwise caused injury attacking a domestic animal off the property of the owner or keeper of the dog.

H. "Vicious or dangerous animal" means any animal which has bitten a person or other animal without provocation. This term includes a vicious dog, as defined by this section.

I. "Vicious Dog" means any of the following:

i. Any dog seized under Penal Code § 599aa and upon the sustaining of a conviction of the owner or keeper under Penal Code § 597.5(a).

ii. Any dog which, when unprovoked, in an aggressive manner, inflicts severe injury on or kills a human being.

iii. Any dog previously determined to be and currently listed as a potentially dangerous dog which, after its owner or keeper has been notified of this determination, continues the behavior described in the definition of "potentially dangerous dog" in this section, or is maintained in violation of Food and Agricultural Code §§ 31641, 31642, or 31643.

J. "Wild animal" means any untamed, dangerous or undomesticated animal, including, without limitation, mammals, fowl, fish or reptiles.

8.01.030. Animals Permitted. Persons may own the following animals within the city:

A. Canaries, pigeons, doves or birds of the psittacine family kept as household pets or as a hobby only, not exceeding ten (10) in number, when kept in facilities that are humane and adequate as to noise, sanitation and security;

B. Fish and turtles kept as household pets or as a hobby only;

C. Hamsters, white rats or guinea pigs as household pets or as a hobby only, not exceeding ten (10) in the aggregate and the young thereof not exceeding three (3) months in age;

D. Hen chickens, kept as household pets or as a hobby, not to exceed five (5) in number when kept in facilities that are humane and adequate as to noise, sanitation and security;

E. Rabbits as household pets or as a hobby only, not exceeding four (4) in number and the young thereof not exceeding four (4) months in age;

F. In any residential dwelling, dogs and cats not to exceed three (3) for each residential living unit in any combination thereof and the young thereof not exceeding four (4) months in age; and

G. Except in residential districts, dogs used for guard or sentry purposes.

8.01.040. Animals Prohibited. Unless otherwise provided in this chapter, it is unlawful for any person to own any poisonous or venomous snake or any wild, carnivorous animal.

8.01.050. Animals at Large. It is unlawful for any animal owner to allow that animal to be at large.

8.01.060. Animal Care. Every person, within the city, who owns any animal or who owns, conducts, manages or operates any kennel or animal breeding operation for which a permit is required by this title, will comply with each of the following conditions:

A. Housing facilities for animals will be structurally sound and will be maintained in good repair, to protect the animals from injury, to contain the animals, and to restrict the entrance of other animals.

B. All animals will be supplied with sufficient good and wholesome food and water as often as the feeding habits of the respective animals require.

C. All animals and all animal buildings or enclosures will be maintained in a clean and sanitary condition.

D. All animals will be so maintained as to eliminate excessive and nighttime noise.

E. No animals will be without attention more than twelve (12) consecutive hours. Whenever an animal is left unattended at a kennel, the telephone number of the police department, or the name, address and telephone number of the responsible person, will be posted in a

conspicuous place at the front of the property.

F. Every reasonable precaution will be used to ensure that animals are not teased, abused, mistreated, annoyed, tormented or in any manner made to suffer by any person or means.

G. No condition will be maintained or permitted that is or could be injurious to the animals.

H. Animal buildings and enclosures will be so constructed and maintained as to prevent escape of animals. All reasonable precautions will be taken to protect the public from the animals and the animals from the public.

I. Every animal establishment will isolate sick animals sufficiently so as not to endanger the health of other animals. Sick animals will at all times be isolated from the other animals.

J. Every building or enclosure wherein animals are maintained will be constructed of material easily cleaned and will be kept in a sanitary condition. The building will be properly ventilated to prevent drafts and to remove odors. Heating and cooling will be provided as required, according to the physical needs of the animals, with sufficient light to allow observation of animals and sanitation.

K. Such person will take any animal to a veterinarian for examination or treatment, if the director finds this is necessary in order to maintain the health of the animal and orders the owner or custodian to do so.

L. All animal rooms, cages, kennels and runs will be of sufficient size to provide adequate and proper accommodations for the animals kept therein.

M. Every violation of an applicable regulation will be corrected within a reasonable time to be specified by the police chief.

N. Such person will provide proper shelter and protection from the weather at all times.

O. Such person will not give an animal any alcoholic beverage, unless prescribed by a veterinarian.

P. Such person will not allow animals that are natural enemies, temperamentally unsuited, or otherwise incompatible, to be quartered together, or so near each other as to cause injury, fear or torment. If two (2) or more animals are so trained that they can be placed together and

do not attack each other or perform or attempt any hostile act to the others, such animals will be deemed not to be natural enemies.

Q. Such person will not allow the use of any tack, equipment, device, substance or material that is, or could be, injurious or cause unnecessary cruelty to any animal.

R. Such person will not allow any animal to cause a hazard, or be a menace to the health, peace or safety of the community.

8.01.070. 6.16.010 Slaughterhouse.

It is unlawful for any to keep a slaughterhouse or enclosure for the slaughtering of hogs, poultry, cattle or sheep within the city.

8.01.080. Public Nuisance. Any animal (or animals) which molests passersby or passing vehicles, attacks other animals, trespasses on school grounds, is repeatedly at large, damages or trespasses on private or public property, barks, whines or howls in an excessive, continuous or untimely fashion, is a public nuisance.

8.01.090. Prohibition.

It is unlawful for any person to own any ox, steer, bull, cow, calf, horse, colt, mule, sheep, goat, hog or similar animal.

8.01.100. Vicious animals.

It is unlawful for any person to own any vicious or dangerous animal, except for any period of confinement as required in the city's public health code.

8.01.110. Transporting animals outside motor vehicles.

It is unlawful for any person to transport or carry on the running board of any motor vehicle or outside of a portion of any motor vehicle designed for passengers or on the tonneau or body thereof, on any public highway, road, street, alley, lane or public way, any animal, unless such animal is protected by a framework or other device which will prevent such animal from falling off or being thrown from such motor vehicle, while the same is being operated or driven.

8.01.120. Burial of dead animals.

Any person being the owner or having the possession or control of any dead animal or part thereof, which was not slaughtered for, or is not fit for human food, must cause the same to be buried within six hours after the death of the

same. Every such animal or part thereof must be buried at such a depth that there be at least three feet of earth above the same in the excavation therefor.

8.01.130. Authority to destroy animals.

The Police Chief is authorized and empowered to humanely destroy any animal because it is suffering from a disease dangerous to human health, or a critical injury or is vicious or dangerous.

8.01.140. Immobilization of animals.

The Police Chief is authorized to use immobilization equipment in accordance with applicable law.

Chapter 8.02. DOGS GENERALLY

8.02.010. Dog license required.

Any person who owns a dog, and who resides in the city, must obtain a license for the privilege of keeping the animal within thirty days of acquiring the dog. Any dog that is sold or given away within the city must be licensed by the new owner or custodian within fifteen days of the sale or acquisition.

8.02.020. Dog license application—Procedures. An application for a dog license must include:

A. The name, residence address and telephone number of the dog's owner or custodian;

B. The breed, color, special markings, age, sex and reproductive status of the animal;

C. A spayed or neutered dog is not considered sterile unless the applicant furnishes a veterinarian's certificate showing that the dog has been sterilized. In addition, a dog is considered to be spayed or neutered if the applicant furnishes a veterinarian's certificate showing that the dog is incapable of breeding or that spaying or neutering the dog is dangerous to the health of the animal;

D. The microchip identification or tattoo number with the name, address and telephone number of the microchip or tattoo registry;

E. The license fee required by regulation;

F. A copy of the dog's current rabies vaccination certificate. Note: no dog license or dog tag may be issued unless, at the time of making

application for dog license, the applicant holds a certificate of vaccination signed by a veterinarian, licensed as such in the state of California, certifying that the dog to be licensed has been vaccinated with canine rabies vaccine, approved by, and in a manner prescribed by the state of California, which certificate must indicate that such dog's rabies immunity extends throughout the entire fiscal year for which such dog license or dog tag is to be issued, or that such dog is not vaccinated with rabies vaccine because it would jeopardize the health of the dog due to infirmity or other disability, which infirmity or other disability, and the expected date of termination there are shown on the face of the certificate. A person who obtains a license without submitting a certificate of vaccination because of the infirmity or disability of the dog, must cause the dog to be vaccinated within ten days after termination of such disability or infirmity.

G. A dog license is valid for 12 months from the date of issuance.

H. Applications to renew licenses must be made within 30 days after the expiration of any license each year and must be made in the same manner as an application for a new license.

I. The Police Chief may allow for the application, purchase and issuance of dog licenses by mail.

8.02.030. Authorized vendors of dog licenses.

The Police Chief may authorize other persons as vendors to issue dog licenses. Vendors may use a computer-generated application, approved by the Police Chief.

8.02.040. Dog license tags and receipts.

A. A dog must bear a license tag securely fastened to its collar, chain collar, or harness at all times with the exception for dogs confined on the owner's or custodian's premises or while in competition.

B. A numbered receipt and a tag stamped with a number, authorized by the Police Chief, must be issued for each license purchased.

C. No person may use a dog license tag, microchip, or receipt for an animal other than the one for which it was issued.

D. No person may be issued a dog license if the applicant's keeping of the dog constitutes a health hazard to humans or other animals; or violates any ordinance or regulation under this code.

E. In the event that a dog license tag is lost, stolen, or destroyed, a person may apply for a duplicate dog license tag upon payment of fifty cents and filing a certificate stating the tag was lost, stolen or destroyed.

8.02.050. Penalty assessment.

A 100 percent penalty assessment will be levied for each dog not licensed before 30 days after the expiration of the previous license.

8.02.060. Fees.

The city council, by resolution, may establish and change fees charged for the services provided through the licensing program. The following are exempt from the payment of fees:

A. Dogs used to aid humans with their disabilities when the dog is certified by a recognized aid dog institution may be issued a license at no cost;

B. Dogs used by the city's Police Department may be issued a license at no cost;

C. Dogs owned by senior citizens (age 60 and older) may be issued a license at a low cost approved by city council resolution, one per house address;

D. Dogs which have served in the armed forces of the United States and have received an honorable discharge may be issued a license at no cost.

8.02.070. Recognition of licenses from other jurisdictions.

A. When a dog has been validly licensed in another jurisdiction and has been brought into the city for permanent residence, the license and tag may be replaced with a city license and tag for the balance of the license year upon payment of a transfer fee of fifty cents and the surrender or the former license tag. If the dog has been vaccinated with rabies vaccine in another jurisdiction, the license issued must show the type of vaccine used and the date of vaccination. Otherwise, the dog must be vaccinated as required by this title.

B. No transfer fee will be required for any dog brought into the city for permanent residence which has been validly licensed through the Police Chief in another city.

8.02.080. Counterfeit or imitation tags—Transfer.

It is unlawful for any person to imitate or counterfeit any tag provided for in this chapter, or to employ or use any imitation or counterfeit of the tag for any dog or transfer a tag issued by the city for a dog to a different dog.

8.02.090. Keeping a dog temporarily.

Any person temporarily within the city may keep a dog in the city without a tag for a period of thirty days and may have a one-time temporary permit issued by the business license officer to keep the dog in the city for a period of ninety days upon payment of a fee of one dollar for the permit.

8.02.100. Keeping more than two dogs prohibited.

Except as otherwise provided, it is unlawful for any person to own more than two dogs at any one residence within the city.

8.02.110. Keeping for breeding purposes within three hundred feet of residence.

It is unlawful for any person to keep or maintain, or suffer or permit to be kept or maintained, upon any premises owned or controlled by him, more than one dog, for breeding purposes, within three hundred feet of any dwelling house other than that of the owner or person in control of such dogs.

8.02.120. Kennel prohibited within one thousand feet of residence.

It is unlawful for any person to establish, keep or maintain, or suffer or permit to be established, kept or maintained, upon premises owned or controlled by him, any dog kennel, any portion of which is situated within one thousand feet of any dwelling house other than the dwelling house of the owner or person in control of the animal.

8.02.130. Loud barking.

It is unlawful for any person to own any dog which, by loud barking, disturbs the peace and quiet of one or more persons in the immediate neighborhood. “Loud barking” means barking, howling or baying by day or night at frequent and/or extended periods of time so as to be a nuisance to one or more persons occupying a house or houses in an immediate neighborhood and preventing such person or persons from the comfortable enjoyment of their homes. Loud barking does not mean barking whenever a dog is in the act of protecting against or resisting trespassers upon its premises. The burden of proof of such an act of protection or resistance to trespassers by a dog is upon the person owning, harboring, controlling, maintaining, possessing or having charge of the dog.

8.02.140. Dogs restrained from running at large.

It is unlawful for every person who is the owner or custodian of any dog to keep the dog upon any premises under control of such person unless any such dog is restrained by a fence, cage, chain, leash or other means adequate and sufficient to prevent the dog from leaving the premises upon which it is kept.

8.02.150. Dogs required to be on leash.

It is unlawful for any owner or custodian of any dog to allow or permit any such dog to be off the premises of its owner or custodian unless such dog is securely restrained by a leash not exceeding six feet in length, of sufficient strength to prevent the escape of such dog, and unless such dog is in the charge or control of a person capable of keeping the dog under the effective charge and control of such person.

8.02.160. Nuisance prohibited.

No owner or custodian of any dog can allow or permit that dog to defecate or commit a nuisance on any public property or any improved private property other than that of the owner or custodian of the dog; provided, that the foregoing does not apply to street gutters. It is the duty of every owner or custodian of a dog to curb the dog in order to carry out the intent of this section.

Chapter 8.03. IMPOUNDING ANIMALS

8.03.010. Contract for city pound.

The city council may, from time to time, by contract, designate an agency which may establish, maintain, conduct and operate a suitable enclosure to keep and safely hold all animals subject to be impounded, which enclosure may be known as the “city pound.”

8.03.020. Police Chief —Duties.

In addition to all other duties conferred by applicable law, it is the duty of the police chief to take up, impound and safely keep any animals found running at large, or staked, tied, or being herded or pastured in violation of this code or any animal being kept or maintained contrary to the provisions of this code or state statute. It is the duty of the police chief to safely keep all animals impounded by him, to provide them with necessary food and water and attention reasonably necessary to their care.

8.03.030. Police chief—Records to be kept.

It is the duty of the police chief to keep a record and description of all animals taken into his custody and impounded, showing the date and manner of their disposal, and if redeemed, reclaimed or purchased, and the amount of all fees received by him for taking up, impounding, redeeming, reclaiming or purchasing the same, as the case may be.

8.03.040. Police chief—Monthly report.

The police chief must file, before the tenth day of each month, a report under oath for the preceding month containing an itemized statement and description of all animals taken up, impounded, reclaimed, redeemed, sold or disposed of, showing the date of receipt and from whom received, and the date and manner of disposal and the name of the person by whom reclaimed, redeemed or purchased and the amount of fees, charges or proceeds of sale received in each case.

8.03.050. Impoundment and other fees.

The city council may establish fees, by resolution, to be collected from owners reclaiming any impounded animals. The police chief is authorized to collect such fees.

8.03.060. Notice and sale of impounded dog or cat.

When a dog or cat is impounded, the police chief must cause notice thereof to be posted at the pound, City Hall and police department and mailed to the animal's owner or custodian, if known. Such notice must contain a general description of the animal and set forth that, unless reclaimed within five days from the posting of the notice, or, if the owner or custodian of the animal is known, five days from the mailing and posting of such notice, the animal will be sold or disposed of, and if the animal is not reclaimed as herein provided before the time of sale or disposal as specified in such notice, the police chief may proceed to sell such animal as specified in such notice or dispose of the animal in a humane way. Notwithstanding the foregoing, whenever the police chief estimates that an impounded dog or cat is no more than three months old, the notice must provide that the animal will be sold if not reclaimed within three days from the posting of the notice, or, if the owner or custodian of the animal is known, three days from the mailing and posting of such notice, and the police chief must proceed to sell such animal if not reclaimed within the specified period.

8.03.070. Notice and sale of other impounded animal.

When any other animal is impounded, the police chief must cause notice thereof, to be posted at the pound, City Hall and police department, and mailed to the animal's owner or custodian, if known. Such notice must contain a

general description of such animal, and set forth that unless reclaimed, the animal will be sold at public auction to the highest bidder at a time and place to be specified in the notice, or disposed of, which time cannot be less than five nor more than ten days from the posting of the notice, or, if the owner or custodian of the animal is known, not less than five nor more than ten days from the mailing and posting of such notice; and if the animal is not reclaimed as herein provided, before the time of sale or disposal as specified in such notice, the police chief must proceed to sell such animal at the time and place and in the manner specified in such notice, or dispose of the animal in a humane way.

8.03.080. Redemption rights.

The owner or custodian of any impounded animal has the right to reclaim the same at any time before the sale or disposal thereof, upon payment to the police chief of the costs and charges provided for impounding and keeping the animal.

8.03.090. Rights of owner when impounded animal sold.

If an impounded dog, cat or other animal has been sold, the owner or custodian is entitled to receive the proceeds of the sale thereof, less such costs and charges as required by this title together with the costs of sale, upon proof of the ownership of such animal, satisfactory to the police department within thirty days after the sale. Any unclaimed balance of proceeds remaining after the payment of accrued fees, charges and demands will be turned into the general fund of the city.

8.03.100. Reporting biting animal.

Any person bitten by any animal, and any official of the city or any other person in the city having knowledge of any person injured through having been bitten by any animal must, as soon as possible, report such occurrence to the city animal control officer, health officer or to the police department. It is the duty of every such person so bitten to immediately report to the health officer or police department the description of the animal and the locality where confined.

8.03.110. Confinement—Release.

The confinement and release of an animal that has bitten a person will be as prescribed in the public health code of the city of Monterey Park (Chapter 6.04 of this code).

8.03.120. Transporting or moving of animals ordered confined.

No animal ordered confined may be transported, taken or removed from the place of such confinement unless written authority to do so must be first

obtained from the health officer, which order must specify the terms and conditions upon which such removal or transportation of such animal may be made.

8.03.130. Attempting to remove animals from pound.

It is unlawful for any person to remove or free, or attempt to remove or free any animal from the possession of the city animal control officer, police chief, assistant or deputy police chief, or police officer while conveying such animal to the pound, or after such animal is confined in the pound.

8.03.140. Diseased animals.

All animals taken into custody of the police chief and which are infected with any dangerous or communicable disease or which are injured beyond recovery may be destroyed by the police chief. No person being the owner or custodian of any animal infected with any infectious or contagious disease such as glanders, farcy, anthrax or tuberculosis, may permit or allow the same to go upon any street, alley or other public place, or to come in contact with any other animal not so infected.

8.03.150. Enforcement.

The police chief is charged with enforcing the provisions of this code and to pursue, capture and impound any animals found or discovered in violation of any of the provisions of this code, and each of them is authorized to enter upon any private property while engaged in the immediate discharge of the duties required of them, or any of them, under this code for the purpose of enforcing its provisions.

Chapter 8.04. WILD OR UNDOMESTICATED ANIMALS

8.04.010. Wild animals prohibited.

Except as otherwise expressly provided in this chapter, it is unlawful for any person to bring into, keep or maintain any wild animal of any age within the city.

8.04.020. Exception—Generally.

The following are excepted from the provisions of this chapter:

A. Tropical fish other than caribe (piranha);

B. Canaries;

C. Bees, subject to the limitations and conditions set forth in this

code;

D. Those rodents and fowl listed in Chapter 8.13 of this code, subject to the limitations and conditions set forth therein;

E. Parakeets;

F. The following wild animals, but in no event more than three per dwelling unit:

i. Chipmunks or squirrels,

ii. Cockateels or parrots,

iii. Gopher or king snakes,

iv. Marmoset, spider or squirrel monkeys,

v. Raccoons,

vi. Turtles;

vii. Other similar wild animals which, in the opinion of the police chief, are neither more obnoxious, dangerous or detrimental to the public safety and welfare than the wild animals enumerated in this section.

8.04.030. Exception—Institutions.

This chapter does not prohibit the keeping or maintaining of wild animals within the city under the following conditions:

A. Any wild animals which are kept in a zoo, museum or a bona fide educational institution and which are confined in a manner deemed by the city manager to protect the public from harm;

B. Any wild animals in a bona fide, licensed veterinary hospital for treatment.

8.04.040. Feeding wildlife prohibited.

No person may feed or provide food for any nondomestic animal, including, without limitation, coyotes, raccoons, opossums, mice, rats, skunks, squirrels, pigeons, or feral cats.

8.04.050. Exceptions.

This chapter does not apply to:

The feeding of any nondomesticated animal by the owner of such animal when the nondomesticated animal is kept under valid certificate or permit issued by the state of California Department of Fish and Game.

8.04.060. Violation penalty.

Violation of this chapter is an infraction.

Chapter 8.05. KEEPING AND MAINTAINING GENERALLY

8.05.010. Keeping bee hives—Number.

It is unlawful for any person to keep or maintain more than three hives, swarms or stands of bees within the city limits.

8.05.020. Keeping bee hives—Distance from residence.

It is unlawful for any person to keep or maintain one or more hives, swarms or stands of bees within a distance of one hundred feet from any residence or dwelling house within the city.

8.05.030. Cats—Number restricted.

It is unlawful for any person to keep or maintain, or suffer or permit to be kept or maintained, upon any premises owned or controlled by him, more than one cat, male or female for breeding purposes, within three hundred feet of any dwelling house other than that of the owner or person in control of such cats, or more than four cats for any purposes unless such cats are kept in a kennel, pursuant to city zoning regulations.

8.05.040. Pigs.

It is unlawful for any person to own more than one Vietnamese pot-bellied pig. No other species of pig or hog may be permitted to be kept or maintained within the city.

8.05.050. Distance of enclosure from residence.

It is unlawful for any person to establish, keep or maintain, or suffer or permit to be established, kept or maintained, upon premises owned or controlled by him, any place, building, structure or enclosure where five or more cats are kept, housed or maintained, any portion of which is situated within one thousand feet

of any dwelling house other than the dwelling of the owner or person in control of such place, building, structure or enclosure.

Chapter 8.06. KEEPING FOWL AND RODENTS

8.06.010. Location for keeping.

It is unlawful for any person to own chickens, geese, ducks, turkeys, pigeons, doves, squabs or similar fowl, or any hares, rabbits, guinea pigs, chinchillas, hamsters, white rats or any other similar gnawing mammal, owned, or controlled by him, to run at large or go upon the premises of any person in the city, or to keep the same within forty feet of any dwelling house or structure used as a dwelling house, unless such house or structure be occupied by him, or to keep the same within fifteen feet of any side and rear property lines, except where the rear of such property abuts on a public alley, in which case the same may be maintained to the rear property line, but in any case a distance of fifteen feet from side property lines must be maintained.

8.06.020. Quantity and age.

It is unlawful for any person to keep, maintain or allow to be kept or maintained within the city, more than fifteen live chickens, or other fowls, over four months old, or more than fifty chicks under four months old, or more than five live rabbits, guinea pigs, chinchillas, hamsters, white rats or any other similar gnawing mammal, over four months old, or ten rabbits, guinea pigs, chinchillas, hamsters, white rats or other similar gnawing mammals, under four months old, other than in a pet store, veterinary hospital or medical science laboratory.

8.06.030. Dyeing prohibited.

It is unlawful for any person to dye, color or otherwise artificially treat any rabbit, baby chick, duckling or other fowl.

8.06.040. Roosters.

It is unlawful for any person to keep any rooster over three months old within the city.

8.06.050. Distance to be kept from street and property lines.

It is unlawful for any person to keep, or allow to be kept, any chickens or other fowl, any rabbits, guinea pigs, chinchillas, hamsters, white rats or any other similar gnawing mammal, upon any part of any lot or parcel of land within the city, except at a distance of fifty feet from the street upon which such a lot or parcel of land fronts or abuts; except in the case of corner lots, chickens or other fowl, or any rabbits, guinea pigs, chinchillas, hamsters, white rats or other

similar gnawing mammals, may be placed, kept and housed on any portion of the lots in the rear of a line fifty feet distant from the front property line thereof, and at a distance not closer than twenty-five feet from the side property line thereof. This section does not apply to a pet store, veterinary hospital or medical science laboratory.

ATTACHMENT 2
MPMC Chapter 8 Legislative Format

Chapter 8.01. ~~Chapter 8.01~~ GENERAL PROHIBITIONS

8.01.010. ~~8.01.010~~ Purpose. This Title 8 of the Monterey Park Municipal Code~~Prohibition.~~

8.01.020. ~~It~~ is ~~a nuisance~~adopted pursuant to the City's police powers, and applicable provisions the California Code, for the purpose of protecting public health and safety; the health and safety of animals kept within the City's jurisdiction; and ensuring that the requirements of this Title 8 are enforced.

8.01.030. Definitions. Unless the contrary is stated or clearly appears from the context, the following definitions, in addition to those set forth in chapter 8.14 of this title, govern the construction of the words and phrases used in this title:

A. "At large" means whenever a dog is elsewhere than on the premises of the owner or other person having the custody or control of such dog and is not restrained by a leash less than ten (10') feet in length, under the control of a person capable of controlling such dog.

B. "Dog" means both male and female dogs over four months old.

~~A.~~C. "Dog kennel" means any place where three or more canine animals are kept or permitted to remain.

D. "Own" includes the terms keep, maintain, control, harbor, or possess.

E. "Owner" means any natural or artificial person who owns an animal for more than fifteen (15) days.

F. "Police Chief" means the police chief, or designee.

G. "Potentially Dangerous Dog" means any of the following:

i. Any dog which, when unprovoked, on two (2) separate occasions within the prior thirty six (36) month period, engages in any behavior that requires a defensive action by any person to prevent bodily injury when the person and the dog are off the property of the owner or keeper of the dog.

ii. Any dog which, when unprovoked, bites a person causing a less severe injury than as defined in Food and Agricultural Code § 31604.

iii. Any dog which, when unprovoked, on two (2) separate occasions within the prior thirty six (36) month period, has killed, seriously bitten, inflicted injury, or otherwise caused injury attacking a domestic animal off the property of the owner or keeper of the dog.

H. "Vicious or dangerous animal" means any animal which has bitten a person or other animal without provocation. This term includes a vicious dog, as defined by this section.

I. "Vicious Dog" means any of the following:

i. Any dog seized under Penal Code § 599aa and upon the sustaining of a conviction of the owner or keeper under Penal Code § 597.5(a).

ii. Any dog which, when unprovoked, in an aggressive manner, inflicts severe injury on or kills a human being.

~~i.~~iii. Any dog previously determined to be and currently listed as a potentially dangerous dog which, after its owner or keeper has been notified of this determination, continues the behavior described in the definition of "potentially dangerous dog" in this section, or is maintained in violation of Food and Agricultural Code §§ 31641, 31642, or 31643.

J. "Wild animal" means any untamed, dangerous or undomesticated animal, including, without limitation, mammals, fowl, fish or reptiles.

8.01.040. Animals Permitted. Persons may own the following animals within the city:

A. Canaries, pigeons, doves or birds of the psittacine family kept as household pets or as a hobby only, not exceeding ten (10) in number, when kept in facilities that are humane and adequate as to noise, sanitation and security;

B. Fish and turtles kept as household pets or as a hobby only;

C. Hamsters, white rats or guinea pigs as household pets or as a hobby only, not exceeding ten (10) in the aggregate and the young thereof not exceeding three (3) months in age;

D. Hen chickens, kept as household pets or as a hobby, not to exceed five (5) in number when kept in facilities that are humane and adequate as to noise, sanitation and security;

E. Rabbits as household pets or as a hobby only, not exceeding four (4) in number and the young thereof not exceeding four (4) months in age;

F. In any residential dwelling, dogs and cats not to exceed three (3) for each residential living unit in any combination thereof and the young thereof not exceeding four (4) months in age; and

G. Except in residential districts, dogs used for guard or sentry purposes.

8.01.050. Animals Prohibited. Unless otherwise provided in this chapter, it is unlawful for any person to ~~keep~~ own any poisonous or ~~maintain.~~venomous snake or ~~suffer~~ any wild, carnivorous animal.

8.01.060. Animals at Large. It is unlawful for any animal owner to allow that animal to be ~~kept or maintained~~ at large.

8.01.070. Animal Care. Every person, within the city, who owns any animal or who owns, conducts, manages or operates any kennel or animal breeding operation for which a permit is required by this title, will comply with each of the following conditions:

A. Housing facilities for animals will be structurally sound and will be maintained in good repair, to protect the animals from injury, to contain the animals, and to restrict the entrance of other animals.

B. All animals will be supplied with sufficient good and wholesome food and water as often as the feeding habits of the respective animals require.

C. All animals and all animal buildings or enclosures will be maintained in a clean and sanitary condition.

D. All animals will be so maintained as to eliminate excessive and nighttime noise.

E. No animals will be without attention more than twelve (12) consecutive hours. Whenever an animal is left unattended at a kennel, the telephone number of the police department, or the name, address and telephone number of the responsible person, will be posted in a conspicuous place at the front of the property.

F. Every reasonable precaution will be used to ensure that animals are not teased, abused, mistreated, annoyed, tormented or in any

manner made to suffer by any person or means.

G. No condition will be maintained or permitted that is or could be injurious to the animals.

H. Animal buildings and enclosures will be so constructed and maintained as to prevent escape of animals. All reasonable precautions will be taken to protect the public from the animals and the animals from the public.

I. Every animal establishment will isolate sick animals sufficiently so as not to endanger the health of other animals. Sick animals will at all times be isolated from the other animals.

J. Every building or enclosure wherein animals are maintained will be constructed of material easily cleaned and will be kept in a sanitary condition. The building will be properly ventilated to prevent drafts and to remove odors. Heating and cooling will be provided as required, according to the physical needs of the animals, with sufficient light to allow observation of animals and sanitation.

K. Such person will take any animal to a veterinarian for examination or treatment, if the director finds this is necessary in order to maintain the health of the animal and orders the owner or custodian to do so.

L. All animal rooms, cages, kennels and runs will be of sufficient size to provide adequate and proper accommodations for the animals kept therein.

M. Every violation of an applicable regulation will be corrected within a reasonable time to be specified by the police chief.

N. Such person will provide proper shelter and protection from the weather at all times.

O. Such person will not give an animal any alcoholic beverage, unless prescribed by a veterinarian.

P. Such person will not allow animals that are natural enemies, temperamentally unsuited, or otherwise incompatible, to be quartered together, or so near each other as to cause injury, fear or torment. If two (2) or more animals are so trained that they can be placed together and do not attack each other or perform or attempt any hostile act to the others, such animals will be deemed not to be natural enemies.

Q. Such person will not allow the use of any tack, equipment, device,

substance or material that is, or could be, injurious or cause unnecessary cruelty to any animal.

R. Such person will not allow any animal to cause a hazard, or be a menace to the health, peace or safety of the community.

8.01.080. ~~6.16.010~~ Slaughterhouse.

It is unlawful for any to keep a slaughterhouse or enclosure for the slaughtering of hogs, poultry, cattle or sheep within the city.

8.01.090. Public Nuisance. Any animal (or animals) which molests passersby or passing vehicles, attacks other animals, trespasses on school grounds, is repeatedly at large, damages or trespasses on private or public property, barks, whines or howls in an excessive, continuous or untimely fashion, is a public nuisance.

~~8.01.020.~~8.01.100. Prohibition.

It is unlawful for any person to own any ox, steer, bull, cow, calf, horse, colt, mule, sheep, goat, hog or similar animal.

~~8.01.020 Running at large.~~

~~8.01.030.~~8.01.110. Vicious animals.

It is unlawful for any person ~~owning or having custody or control of any animal mentioned in Section 8.01.010~~ to ~~cause or permit such animal to run at large in any public or private place in the city.~~

~~8.01.030 Pasturing in public place.~~

~~It is unlawful to cause or permit any animal mentioned in Section 8.01.010 to be pastured, herded or tied in any public street, lane, alley, park or other public place.~~

~~8.01.040 Pasturing on private property.~~
own
~~It is unlawful to tie, stake or pasture, or permit the tying, staking or pasturing of any animal mentioned in Section 8.01.010 upon any private property within the city without the consent of the owner or lawful occupant of such property, or to permit such animal to trespass upon any street or public place, or upon any private property.~~

~~8.01.050 Keeping pens in foul condition declared nuisance.~~

~~It is a nuisance and it is unlawful for any person in the city to keep or suffer or permit to be kept, at or upon any premises owned, controlled or occupied by him, any chicken~~

~~coop, rabbit hutch or other fowl or livestock pen in a foul, offensive, noxious or filthy condition.~~

~~8.01.040.~~8.01.120. ~~8.01.060 Vicious animals.~~

~~It is unlawful for any person to keep, maintain or harbor within the city~~ any vicious or dangerous animal, except for any period of confinement as required in the city's public health code. ~~"Vicious or dangerous animal" means any animal which has bitten a person or other animal without provocation.~~

~~8.01.050.~~8.01.130. ~~8.01.070~~ Transporting animals outside motor vehicles.

It is unlawful for any person to transport or carry on the running board of any motor vehicle or outside of a portion of any motor vehicle designed for passengers or on the tonneau or body thereof, on any public highway, road, street, alley, lane or public way, any animal, unless such animal is protected by a framework or other device which will prevent such animal from falling off or being thrown from such motor vehicle, while the same is being operated or driven.

~~8.01.060.~~8.01.140. ~~8.01.090~~ Burial of dead animals.

Any person being the owner or having the possession or control of any dead animal or part thereof, which was not slaughtered for, or is not fit for human food, ~~shall~~must cause the same to be buried within six hours after the death of the same. Every such animal or part thereof ~~shall~~must be buried at such a depth that there ~~shall~~ be at least three feet of earth above the same in the excavation therefor.

~~8.01.070.~~8.01.150. ~~8.01.100~~ Authority to destroy animals.

~~The poundmaster, animal control officer, health officer or police officer or any such deputy or representative~~The Police Chief is authorized and empowered to humanely destroy any animal because it is suffering from a disease dangerous to human health, or a critical injury or is vicious or dangerous.

~~8.01.080.~~8.01.160. ~~8.01.110~~ Immobilization of animals.

The ~~poundmaster, animal control officer, health officer, and police officers are~~Police Chief is authorized to use immobilization equipment ~~as described in general order 21-76 of the Monterey Park police department and~~ in accordance with ~~the procedures and the purposes stated therein~~applicable law.

Chapter 8.02. ~~Chapter 8.03~~ DOGS GENERALLY

~~8.03.010 Definitions.~~

~~As used in this chapter:~~

~~"Dog" means any male or female dog over the age of four months, unless the context indicates otherwise.~~

A. ~~"Dog kennel" means any place where three or more canine animals are kept or permitted to remain.~~

8.02.020. Dog license required.

Any person who owns ~~or has custody of~~ a dog ~~over the age of four months~~, and who resides in the city, ~~shall~~must obtain a license for the privilege of keeping the animal~~.~~ within thirty days of acquiring the dog. Any dog ~~over the age of four months which~~that is sold or given away within the city ~~shall~~must be licensed by the new owner or custodian within fifteen days of the sale or acquisition. ~~Dogs kept within the city by an owner or custodian for no more than thirty days shall be exempt from this section.~~

8.02.030. Dog license application—Procedures. An application for a dog license ~~shall~~must include:

A. The name, residence address and telephone number of the dog's owner or custodian;

B. The breed, color, special markings, age, sex and reproductive status of the animal;

C. A spayed or neutered dog ~~shall~~is not ~~be~~ considered sterile unless the applicant furnishes a veterinarian's certificate showing that the dog has been sterilized. In addition ~~thereto~~, a dog ~~shall be~~is considered to be spayed or neutered ~~for the purpose of Section 8.03.030~~ if the applicant furnishes a veterinarian's certificate showing that the dog is incapable of breeding or that spaying or neutering the dog is dangerous to the health of the animal;

D. The microchip identification or tattoo number with the name, address and telephone number of the microchip or tattoo registry;

E. The license fee required by regulation;

F. A copy of the dog's current rabies vaccination certificate. Note: no dog license or dog tag ~~shall~~may be issued unless, at the time of making application for dog license, the applicant holds a certificate of vaccination signed by a veterinarian, licensed as such in the state of California,

certifying that the dog to be licensed has been vaccinated with canine rabies vaccine, approved by, and in a manner prescribed by the state of California, which certificate must indicate that such dog's rabies immunity extends throughout the entire fiscal year for which such dog license or dog tag is to be issued, or that such dog ~~shall~~is not ~~be~~ vaccinated with rabies vaccine because it would jeopardize the health of the dog due to infirmity or other disability, which infirmity or other disability, and the expected date of termination there are shown on the face of the certificate. A person who obtains a license without submitting a certificate of vaccination because of the infirmity or disability of the dog, ~~shall~~must cause the dog to be vaccinated within ten days after termination of such disability or infirmity.

G. A dog license ~~shall be good~~is valid for 12 months from the date of issuance ~~until June 30th of the following year. A three-year license expires on June 30th of the third year of the license.~~.

H. Applications to renew licenses ~~shall~~must be made ~~between April 1st and June 30th of~~ within 30 days after the expiration of any license each year and ~~shall~~must be made in the same manner as an application for a new license.

I. The ~~San Gabriel Valley Animal JPA~~Police Chief may ~~permit~~allow for the application, purchase and issuance of dog licenses by mail.

8.02.040. ~~8.03.040~~ Authorized vendors of dog licenses.

The ~~San Gabriel Valley Animal JPA~~Police Chief may authorize other persons as vendors to issue dog licenses. Vendors may use a computer-generated application, approved by the ~~San Gabriel Valley Animal JPA, if the form contains the same information set forth in Section 8.03.030 of this chapter~~Police Chief.

8.02.050. Dog license tags and receipts.

A. A dog ~~shall~~must bear a license tag securely fastened to its collar, chain collar, or harness at all times with the exception for dogs confined on the owner's or custodian's premises or while in competition.

B. A numbered receipt and a tag stamped with a number, authorized by the ~~San Gabriel Valley Animal JPA, shall~~Police Chief, must be issued for each license purchased.

C. No person may use a dog license tag, microchip, or receipt for an animal other than the one for which it was issued.

No person ~~shall~~may be issued a dog license if the applicant's keeping of the dog~~:~~ ~~Constitutes~~ constitutes a health hazard to humans or other animals; or

D. ~~Violates~~ violates any ordinance or regulation under this code.

E. In the event that a dog license tag is lost, stolen, or destroyed, a person may apply for a duplicate dog license tag upon payment of fifty cents and filing a certificate stating the tag was lost, stolen or destroyed.

8.02.060. ~~8.03.060~~ Penalty assessment.

A ~~fifty~~100 percent penalty assessment will be levied for each dog not licensed ~~on or~~ before ~~August 1st of each year in~~30 days after the ~~case of single year licenses; and in~~ expiration of the ~~case of three-year licenses, on or before August 1st of the third year of the~~previous license.

8.02.070. Fees.

The city council, by resolution, ~~shall~~may establish ~~fees~~ and ~~may from time to time,~~ change ~~the rate of~~ fees ~~to be~~ charged for the services provided through the licensing program. The following ~~shall be~~are exempt from the payment of fees:

A. Dogs used to aid humans with their disabilities when the dog is certified by a recognized aid dog institution ~~shall~~may be issued a license at no cost;

B. Dogs used by the city's Police Department ~~shall~~may be issued a license at no cost;

C. Dogs owned by senior citizens ~~on low income, as established by the San Gabriel Valley Animal JPA, shall~~(age 60 and older) may be issued a license at ~~no~~a low cost approved by city council resolution, one per house address;

D. Dogs which have served in the armed forces of the United States and have received an honorable discharge ~~shall~~may be issued a license at no cost.

8.02.080. Recognition of licenses from other jurisdictions.

A. When a dog has been validly licensed in another jurisdiction and has been brought into the city for permanent residence, the license and tag may be replaced with a city license and tag for the balance of the license year upon payment of a transfer fee of fifty cents and the surrender or the former license tag. If the dog has been vaccinated with rabies vaccine in another jurisdiction, the license issued ~~shall~~must show

the type of vaccine used and the date of vaccination. Otherwise, the dog ~~shall~~must be vaccinated as ~~provided for in Section 8.030.030~~required by this title.

B. No transfer fee will be required for any dog brought into the city for permanent residence which has been validly licensed through the ~~San Gabriel Valley Animal JPA~~Police Chief in another city.

8.02.090. ~~8.03.100~~ Counterfeit or imitation tags—Transfer.

It is unlawful for any person to imitate or counterfeit any tag provided for in this chapter, or to employ or use any imitation or counterfeit of the tag for any dog or transfer a tag issued by the city for a dog to a different dog.

8.02.100. ~~8.03.110~~ Keeping a dog temporarily.

Any person temporarily within the city may keep a dog in the city without a tag for a period of thirty days and may have a one-time temporary permit issued by the business license officer to keep the dog in the city for a period of ninety days upon payment of a fee of one dollar for the permit.

8.02.110. ~~8.03.120~~ Keeping more than two dogs prohibited.

Except as otherwise provided~~ herein~~, it is unlawful for any person to ~~keep, harbor, maintain or permit the keeping, harboring or maintaining of~~own more than two dogs at any one residence within the city. ~~Any person keeping or maintaining more than two dogs at any one residence on the date this section becomes effective may continue to keep such additional dog or dogs only until ownership of any such additional dog or dogs ceases.~~

8.02.120. ~~8.03.130~~ Keeping for breeding purposes within three hundred feet of residence.

It is unlawful for any person to keep or maintain, or suffer or permit to be kept or maintained, upon any premises owned or controlled by him, more than one dog, for breeding purposes, within three hundred feet of any dwelling house other than that of the owner or person in control of such dogs.

8.02.130. ~~8.03.140~~ Kennel prohibited within one thousand feet of residence.

It is unlawful for any person to establish, keep or maintain, or suffer or permit to be established, kept or maintained, upon premises owned or controlled by him, any dog kennel, any portion of which is situated within one thousand feet of any dwelling house other than the dwelling house of the owner or person in control of the animal.

8.02.140. ~~8.03.150~~ Loud barking.

It is unlawful for any person to ~~keep, maintain or harbor within the city~~own any dog which ~~shall~~, by loud barking, ~~disturb~~disturbs the peace and quiet of one or more persons in the immediate neighborhood. "Loud barking" means barking, howling or baying by day or night at frequent and/or extended periods of time so as to be a nuisance to one or more persons occupying a house or houses in an immediate neighborhood and preventing such person or persons from the comfortable enjoyment of their homes. Loud barking ~~shall~~does not mean barking whenever a dog is in the act of protecting against or resisting trespassers upon its premises. The burden of proof of such an act of protection or resistance to trespassers by a dog is upon the person owning, harboring, controlling, maintaining, possessing or having charge of the dog.

8.02.150. ~~8.03.160~~ Dogs restrained from running at large.

It is unlawful for every person who is the owner or custodian of any dog to keep the dog upon any premises under control of such person unless any such dog is restrained by a fence, cage, chain, leash or other means adequate and sufficient to prevent the dog from leaving the premises upon which it is kept.

8.02.160. ~~8.03.170~~ Dogs required to be on leash.

It is unlawful for any owner or custodian of any dog to allow or permit any such dog to be off the premises of its owner or custodian unless such dog is securely restrained by a leash not exceeding six feet in length, of sufficient strength to prevent the escape of such dog, and unless such dog is in the charge or control of a person capable of keeping the dog under the effective charge and control of such person.

8.02.170. ~~8.03.180~~ Nuisance prohibited.

No owner or custodian of any dog ~~shall~~can allow or permit that dog to defecate or commit a nuisance on any public property or any improved private property other than that of the owner or custodian of the dog; provided, that the foregoing ~~shall~~does not apply to street gutters. It is the duty of every owner or custodian of a dog to curb the dog in order to carry out the intent of this section.

Chapter 8.03. ~~Chapter 8.07~~ IMPOUNDING ANIMALS

8.03.010. ~~8.07.010~~ Contract for city pound.

The city council may, from time to time, by contract, designate an agency which ~~shall~~may establish, maintain, conduct and operate a suitable enclosure to keep and safely hold all animals subject to be impounded, which enclosure ~~shall~~may be known as the "city pound."

~~8.07.020 Poundmaster—Office created.~~

~~The office of the poundmaster is established. The person designated in the contract as the caretaker of the pound shall be the poundmaster.~~

8.03.020. ~~8.07.030 Poundmaster~~Police Chief —Duties.

~~It~~In addition to all other duties conferred by applicable law, it is the duty of the ~~poundmaster~~police chief to take up, impound and safely keep any ~~dogs or animals enumerated in Section 8.01.010 of this code,~~animals found running at large, or staked, tied, or being herded or pastured in violation of ~~Sections 8.01.020, 8.01.030 and 8.01.040~~this code or any animal being kept or maintained contrary to the provisions of this code or state statute. It is the duty of the ~~poundmaster~~police chief to safely keep all animals impounded by him, to provide them with necessary food and water and attention reasonably necessary to their care.

8.03.030. ~~8.07.040 Poundmaster~~Police chief—Records to be kept.

It ~~shall be~~is the duty of the ~~poundmaster~~police chief to keep a record and description of all animals taken into his custody and impounded, showing the date and manner of their disposal, and if redeemed, reclaimed or purchased, and the amount of all fees received by him for taking up, impounding, redeeming, reclaiming or purchasing the same, as the case may be.

8.03.040. ~~8.07.050 Poundmaster~~Police chief—Monthly report ~~to~~.

The police ~~department.~~

~~The poundmaster shall file with the police department, prior to~~chief must file, before the tenth day of each month, a report under oath for the preceding month containing an itemized statement and description of all animals taken up, impounded, reclaimed, redeemed, sold or disposed of, showing the date of receipt and from whom received, and the date and manner of disposal and the name of the person by whom reclaimed, redeemed or purchased and the amount of fees, charges or proceeds of sale received in each case.

~~8.03.040.~~8.03.050. ~~8.07.060~~ Impoundment and other fees.

The ~~poundmaster shall collect from the owner~~city council may establish fees, by resolution, to be collected from owners reclaiming any impounded ~~animal the following amount:~~

~~(1) Impound fees:~~

~~(A) Dog or cat; first impounding $ 5.00~~

~~(B) Dog or cat; second impounding 10.00~~

~~(C)~~
~~Dog or cat; third impounding~~
~~15.00~~

~~(D) Goat or sheep 10.00~~

~~(E) Cow, horse, bull, ox, mule, steer, hog or similar animal 25.00~~

~~(F) Other~~ animals ~~Reasonable fee based on cost of impounding~~. The police chief is authorized to collect such fees.

~~(2)~~
~~Feeding and care~~
~~2.00 per day.~~

~~When the owner or custodian requests disposal of his animal, he shall pay five dollars for pickup of a dog or cat and reasonable costs as determined by the poundmaster for any other animal.~~

~~8.03.050.~~8.03.060. ~~8.07.070~~ Notice and sale of impounded dog or cat.

When a dog or cat is impounded, the ~~poundmaster shall~~police chief must cause notice thereof to be posted at the pound, City Hall and police department and mailed to the animal's owner or custodian, if known. Such notice ~~shall~~must contain a general description of the animal and ~~shall~~ set forth that, unless reclaimed within five days from the posting of the notice, or, if the owner or custodian of the animal is known, five days from the mailing and posting of such notice, the animal will be sold or disposed of, and if the animal is not reclaimed as herein provided before the time of sale or disposal as specified in such notice, the ~~poundmaster shall~~police chief may proceed to sell such animal as specified in such notice or dispose of the animal in a humane way. Notwithstanding the foregoing, whenever the ~~poundmaster~~police chief estimates that an impounded dog or cat is no more than three months old, the notice ~~shall~~must provide that the animal will be sold if not reclaimed within three days from the posting of the notice, or, if the owner or custodian of the animal is known, three days from the mailing and posting of such notice, and the ~~poundmaster shall~~police chief must proceed to sell such animal if not reclaimed within the specified period.

~~8.03.060.~~8.03.070. ~~8.07.080~~ Notice and sale of other impounded animal.

When any other animal is impounded, the ~~poundmaster shall~~police chief must cause notice thereof, to be posted at the pound, City Hall and police department, and mailed to the animal's owner or custodian, if known. Such notice ~~shall~~must contain a general description of such animal, and ~~shall~~ set forth that unless reclaimed, the animal will be sold at public auction to the highest bidder at a time and place to be specified in the notice, or disposed of, which time ~~shall~~cannot be ~~not~~ less than five nor more than ten days from the posting of the notice, or, if the owner or custodian of the animal is known, not less than five nor more than ten days from the mailing and posting of such notice; and if the animal is not reclaimed as herein provided, before the time of sale or disposal as specified in such notice, the ~~poundmaster shall~~police chief must proceed to sell such animal at the time and place and in the manner specified in such notice, or ~~shall~~ dispose of the animal in a humane way.

~~8.03.070.~~8.03.080. ~~8.07.090~~ Redemption rights.

The owner or custodian of any impounded animal ~~shall have~~has the right to reclaim the same at any time ~~prior to~~before the sale or disposal thereof, upon payment to the ~~poundmaster~~police chief of the costs and charges provided ~~in Section 8.07.060~~ for impounding and keeping the animal.

~~8.03.080.~~8.03.090. ~~8.07.100~~ Rights of owner when impounded animal sold.

If an impounded dog, cat or other animal has been sold, the owner or custodian is entitled to receive the proceeds of the sale thereof, less such costs and charges as ~~provided in Section 8.07.060~~required by this title together with the costs of sale, upon proof of the ownership of such animal, satisfactory to the police department within thirty days after the sale. Any unclaimed balance of proceeds remaining after the payment of accrued fees, charges and demands ~~shall~~will be turned into the general fund of the city.

~~8.03.090.~~8.03.100. ~~8.07.110~~ Reporting biting animal.

Any person bitten by any animal, and any official of the city or any other person in the city having knowledge of any person injured through having been bitten by any animal ~~shall~~must, as soon as possible, report such occurrence to the city animal control officer, health officer or to the police department. It ~~shall be~~is the duty of every such person so bitten to immediately report to the health officer or police department the description of the animal and the locality where confined.

~~8.03.100.~~8.03.110. ~~8.07.120~~ Confinement—Release.

The confinement and release of an animal that has bitten a person ~~shall~~will be as prescribed in the public health code of the city of Monterey Park (Chapter

6.04 of this code).

~~8.03.110.~~8.03.120. ~~8.07.130~~ Transporting or moving of animals ordered confined.

No animal ordered confined ~~shall~~may be transported, taken or removed from the place of such confinement unless written authority to do so ~~shall~~must be first obtained from the health officer, which order ~~shall~~must specify the terms and conditions upon which such removal or transportation of such animal may be made.

~~8.03.120.~~8.03.130. ~~8.07.140~~ Attempting to remove animals from pound.

~~No~~It is unlawful for any person ~~shall~~to remove or free, or attempt to remove or free any animal from the possession of the city animal control officer, ~~poundmaster~~police chief, assistant or deputy ~~poundmaster~~police chief, or police officer while conveying such animal to the pound, or after such animal is confined in the pound.

~~8.03.130.~~8.03.140. ~~8.07.150~~ Diseased animals.

All animals taken into custody of the ~~poundmaster~~police chief and which are infected with any dangerous or communicable disease or which are injured beyond recovery may be destroyed by the ~~poundmaster~~police chief. No person being the owner or custodian of any animal infected with any infectious or contagious disease such as glanders, farcy, anthrax or tuberculosis, ~~shall~~may permit or allow the same to go upon any street, alley or other public place, or to come in contact with any other animal not so infected.

~~8.03.140.~~8.03.150. ~~8.07.160~~ Enforcement.

~~The poundmaster, the city animal control officer, the health officer and all police officers of the city and their respective deputies or representatives are~~The police chief is charged with enforcing the provisions of this code and to pursue, capture and impound any animals found or discovered in violation of any of the provisions of this code, and each of them is authorized to enter upon any private property while engaged in the immediate discharge of the duties required of them, or any of them, under this code for the purpose of enforcing its provisions.

Chapter 8.04. ~~Chapter 8.09~~ WILD OR UNDOMESTICATED ANIMALS

~~ii.~~iv. ~~8.09.010 Wild animal defined.~~

~~"Wild animal" means any untamed, dangerous or undomesticated animal, including, but not limited to, mammals, fowl, fish or reptiles.~~

8.04.010. ~~8.09.020~~ Wild animals prohibited.

Except as otherwise expressly provided in this chapter, it is unlawful for any person to bring into, keep or maintain any wild animal of any age within the city.

8.04.020. Exception—Generally.

The following are excepted from the provisions of this chapter:

A. Tropical fish other than caribe (piranha);

B. Canaries;

C. Bees, subject to the limitations and conditions set forth in ~~Chapter 8.11 of~~ this code;

D. Those rodents and fowl listed in Chapter 8.13 of this code, subject to the limitations and conditions set forth therein;

E. Parakeets;

F. The following wild animals, but in no event more than three per dwelling unit:

i. Chipmunks or squirrels,

ii. Cockateels or parrots,

iii. Gopher or king snakes,

iv. Marmoset, spider or squirrel monkeys,

v. Raccoons,

vi. Turtles;

vii. Other similar wild animals which, in the opinion of the ~~city manager~~police chief, are neither more obnoxious, dangerous or detrimental to the public safety and welfare than the wild animals enumerated in this section.

8.04.030. Exception—Institutions.

~~The provisions of this~~This chapter ~~shall~~does not prohibit the keeping or maintaining of wild animals within the city under the following conditions:

A. Any wild animals which are kept in a zoo, museum or a bona fide educational institution and which are confined in a manner deemed by the city manager to protect the public from harm;

B. Any wild animals in a bona fide, licensed veterinary hospital for treatment.

8.04.040. ~~8.09.050~~ Feeding wildlife prohibited.

No person ~~shall~~may feed or provide food for any nondomestic animal, including, ~~but not limited to~~without limitation, coyotes, raccoons, ~~oppossums~~opossums, mice, rats, skunks, squirrels, pigeons, or feral cats.

8.04.050. Exceptions.

~~Section 8.09.050 of this~~This chapter ~~shall~~does not apply to:

The feeding of any nondomesticated animal by the owner of such animal when the nondomesticated animal is kept under valid certificate or permit issued by the state of California Department of Fish and Game.

8.04.060. ~~8.09.070~~ Violation penalty.

Violation of ~~Section 8.09.050 of~~ this chapter is an infraction.

Chapter 8.05. ~~Chapter 8.11~~ KEEPING AND MAINTAINING GENERALLY

8.05.010. ~~8.11.010~~ Keeping bee hives—Number.

It is unlawful for any person to keep or maintain more than three hives, swarms or stands of bees within the city limits.

8.05.020. ~~8.11.020~~ Keeping bee hives—Distance from residence.

It is unlawful for any person to keep or maintain one or more hives, swarms or stands of bees within a distance of one hundred feet from any residence or dwelling house within the city.

8.05.030. ~~8.11.030~~ Cats—Number restricted.

It is unlawful for any person to keep or maintain, or suffer or permit to be kept or maintained, upon any premises owned or controlled by him, more than one cat, male or female for breeding purposes, within three hundred feet of any dwelling house other than that of the owner or person in control of such cats, or more than four cats for any purposes unless such cats are kept in a kennel, pursuant

to city zoning regulations.

8.05.040. ~~8.11.035~~ Pigs.

It is unlawful for any person to ~~keep or maintain, or allow to be kept or maintained upon any premises owned or controlled by him,~~own more than one Vietnamese pot-bellied pig. No other species of pig or hog may be permitted to be kept or maintained within the city.

8.05.050. ~~8.11.040~~ Distance of enclosure from residence.

It is unlawful for any person to establish, keep or maintain, or suffer or permit to be established, kept or maintained, upon premises owned or controlled by him, any place, building, structure or enclosure where five or more cats are kept, housed or maintained, any portion of which is situated within one thousand feet of any dwelling house other than the dwelling of the owner or person in control of such place, building, structure or enclosure.

Chapter 8.06. ~~Chapter 8.13~~ KEEPING FOWL AND RODENTS

8.06.010. ~~8.13.010~~ Location for keeping.

It is unlawful for any person to ~~suffer or permit any~~own chickens, geese, ducks, turkeys, pigeons, doves, squabs or similar fowl, or any hares, rabbits, guinea pigs, chinchillas, hamsters, white rats or any other similar gnawing mammal, owned, or controlled by him, to run at large or go upon the premises of any person in the city, or to keep the same within forty feet of any dwelling house or structure used as a dwelling house, unless such house or structure be occupied by him, or to keep the same within fifteen feet of any side and rear property lines, except where the rear of such property abuts on a public alley, in which case the same may be maintained to the rear property line, but in any case a distance of fifteen feet from side property lines ~~shall~~must be maintained.

8.06.020. ~~8.13.020~~ Quantity and age.

It is unlawful for any person to keep, maintain or allow to be kept or maintained within the city, more than fifteen live chickens, or other fowls, over four months old, or more than fifty chicks under four months old, or more than five live rabbits, guinea pigs, chinchillas, hamsters, white rats or any other similar gnawing mammal, over four months old, or ten rabbits, guinea pigs, chinchillas, hamsters, white rats or other similar gnawing mammals, under four months old, other than in a pet store, veterinary hospital or medical science laboratory.

8.06.030. ~~8.13.030~~ Dyeing prohibited.

It is unlawful for any person to dye, color or otherwise artificially treat any rabbit,

baby chick, duckling or other fowl.

8.06.040. ~~8.13.040~~ Roosters.

It is unlawful for any person to keep any rooster over three months old within the city.

8.06.050. ~~8.13.050~~ Distance to be kept from street and property lines.

It is unlawful for any person to keep, or allow to be kept, any chickens or other fowl, any rabbits, guinea pigs, chinchillas, hamsters, white rats or any other similar gnawing mammal, upon any part of any lot or parcel of land within the city, except at a distance of fifty feet from the street upon which such a lot or parcel of land fronts or abuts; except in the case of corner lots, chickens or other fowl, or any rabbits, guinea pigs, chinchillas, hamsters, white rats or other similar gnawing mammals, may be placed, kept and housed on any portion of the lots in the rear of a line fifty feet distant from the front property line thereof, and at a distance not closer than twenty-five feet from the side property line thereof. This section ~~shall~~does not apply to a pet store, veterinary hospital or medical science laboratory.

ATTACHMENT 3

Los Angeles County Code Title 10 Modifications

~~10.04.010 Title of Division 1 provisions.~~
~~The ordinance set forth in Division 1 of this Title 10 shall be known as, and may be cited and referred to as, "the animal control ordinance."~~

~~10.04.020 References to amendments and additions.~~
~~Whenever any reference is made to any portion of this Division 1, such reference applies to all amendments and additions thereto now or hereafter made.~~

~~10.04.030 Repealed ordinances not revived.~~
~~No ordinance repealed by Ordinance 4729 as originally adopted is revived by the amendment of Ordinance 4729 by Ordinance 9454.~~

~~10.04.040 Interpretation of language.~~
~~A. The present tense includes the past and future tenses; and the future, the present.~~
~~B. Each gender includes both genders.~~
~~C. The singular number includes the plural and the plural the singular.~~

~~10.04.050 Powers of deputies.~~
~~Whenever a power is granted to or a duty is imposed upon the director or other public officer, the power may be exercised or the duty may be performed by a deputy of the officer or by a person authorized, pursuant to law, by the officer, unless this Division 1 expressly provides otherwise.~~

~~10.04.055 Authorization to issue notices to appear—Qualifications of officers.~~
~~The director may in his discretion authorize any animal control officer who has the qualifications of a humane officer as set forth in Civil Code Section 607g to issue notices to appear in court pursuant to Penal Code Section 853.5, et seq. Such animal control officers shall not be authorized to take any person into custody even though the person to whom the notice is delivered does not give his or her written promise to appear in court.~~

~~10.04.060 Violation—Penalty.~~
~~A. Any person violating any of the provisions of this title is guilty of an infraction, unless another penalty is provided for in this title.~~
~~B. Violation of Sections~~
~~10.12.190~~
~~10.12.200~~
~~10.20.280~~
~~10.20.310~~
~~10.28.060~~
~~10.28.280(C)~~
~~10.32.020~~
~~10.32.070~~
~~10.32.080~~
~~10.37.030~~

~~10.37.050(C)~~
~~10.37.060(F)~~
~~10.40.010~~
~~10.40.040~~
~~10.86.010~~
~~of this title is a misdemeanor, punishable as set forth in Penal Code Section 19.~~

~~10.04.065 Fees for services.~~
~~The fees and costs for animal-related services shall be determined annually by the Auditor-Controller, and posted in each shelter and on the department's website.~~

Chapter 10.08 DEFINITIONS

10.08.010 Application of definitions.
Whenever in Title 10 the following terms are used, they shall have the meaning ascribed to them in this chapter unless it is apparent from the context thereof that some other meaning is intended.

10.08.020 Animal.
"Animal" means any animal, poultry, bird, reptile, fish or any other dumb creature.

10.08.021 Small animal.
"Small animal" means any animal that weighs less than 250 pounds.

10.08.022 Large animal.
"Large animal" means any animal that weighs 250 pounds or more.

10.08.030 Animal exhibition.
"Animal exhibition" means any display containing one or more domestic or wild animals which are exposed to public view for entertainment, instruction or advertisement.

10.08.031 Animal facility.
"Animal facility" means a lot, building, structure, enclosure or premises for any animal related business or organization, including, but not limited to, a non-profit humane organization animal facility (as defined in Section 10.08.175), a grooming shop, a pet shop, a boarding facility, and a breeding facility, which is required to be licensed under Section 10.28.060.

10.08.032 Animal Facility Grade Card.
"Animal Facility Grade Card" means a card issued by the department, showing the letter grade earned by an animal facility, as reflected in the most recent Animal Facility Inspection Report. The Animal Facility Grade Card must be displayed in accordance with the provisions of Section 10.28.280.

10.08.033 Animal Facility Inspection Report.
"Animal Facility Inspection Report" is the report of the department reflecting the conditions existing at the facility at the time of the inspection. The letter grade received by the facility is based on the final score set forth in the Animal Facility Inspection Report.

10.08.040 Animal menagerie.
"Animal menagerie" means a place where wild animals are kept or maintained for any commercial purpose, including places where wild animals are boarded, trained, or kept for hire.

10.08.050 Animal shelter.
"Animal shelter" means a place where animals impounded by the department are placed for their humane care and keeping.

10.08.060 Approved rabies vaccine.
"Approved rabies vaccine" means a rabies vaccine which is approved for use by the state of California Department of Public Health.

10.08.065 Boarding facility.
"Boarding facility" means an animal facility used for the care and temporary boarding (including day care) of dogs and cats and other animals normally kept as pets, in return for consideration, not including an animal hospital which only boards animals receiving medical treatment.

10.08.070 Breeding facility.
"Breeding facility" means an animal facility engaged in the business of breeding dogs and cats or other animals normally kept as pets for sale or exchange in return for consideration.

10.08.075 Business days.
"Business days" are all days other than Sunday and legal holidays.

10.08.080 Cat.
"Cat" means any cat of any age, including female as well as male.

10.08.095 Competition dog.
"Competition dog" includes a dog which is used to show, to compete or to breed, which is of a breed recognized by and registered with the American Kennel Club (AKC), United Kennel Club (UKC), American Dog Breeders Association (ADBA), or other valid registry approved by the department and meets one of the following requirements:
A. The dog has competed in at least one dog show or sporting competition sanctioned by a national registry or approved by the department, within the last 365 days;
B. The dog has earned a conformation, obedience, agility, carting, herding, protection, rally, sporting, working or other title from a purebred dog registry referenced

above or other registry or dog sport association approved by the department; or
C. The owner or custodian of the dog is a member of a purebred dog breed club, approved by the department, which maintains and enforces a code of ethics for dog breeding that includes restrictions from breeding dogs with genetic defects and life threatening health problems that commonly threaten the breed.

10.08.100 Department.
"Department" means the ~~Los Angeles County department of animal care and control~~Monterey Park Police Department, or designee as determined by the Police Chief.

10.08.110 Director.
"Director" means the ~~director of the department of animal care and control~~Police Chief, or designee.

10.08.120 Dog.
"Dog" means any dog of any age, including female as well as male.

10.08.140 Grooming parlor/mobile.
"Grooming parlor/mobile" means any place of business, whether or not such business is regularly conducted by the operator within a building or other structure, permanent or otherwise, or within a van, truck or other movable vehicle, where for consideration animals are groomed, clipped, bathed or otherwise conditioned as pets and/or for show.

10.08.145 Stables.
"Stables" means any property, premises, building or structure maintained for the lodging, feeding, or rental of horses and cattle.

10.08.150 Guard dog.
"Guard dog" means a dog rented by the owner to another person for guard duty.

~~10.08.155 Hobby breeder.~~
~~"Hobby breeder" is any person, except for a person possessing a valid animal facility license, who owns and breeds a dog or cat and sells the offspring for pay or for other compensation. A hobby breeder is required to obtain a license pursuant to Section 10.20.045.~~

10.08.160 Impounded.
If any animal has been received into the custody of the director pursuant to the provisions of this Division 1 or any state statute, such animal will have been "impounded" as that word is used in this Division 1.

10.08.170 Livestock.
"Livestock" includes but is not limited to the following: any pig, pygmy pig, hog, cow, bull steer, horse, mule, jack, jenny, hinny, sheep, goat, llama, alpaca, domestic fowl

(including poultry) or rabbit.

4729 Art. 2 § 210, 1946.)
10.08.175 Nonprofit humane organization animal facility.
"Nonprofit humane organization animal facility" means an animal facility operated by a bona fide charity in good standing under the provisions of Section 501(c)(3) of the Internal Revenue Code, where animals are kept for adoption or sanctuary.

10.08.190 Person.
"Person" means and includes an individual, a company, firm, partnership, corporation, trust, limited liability company, and any association of persons or other legal entity.

10.08.200 Pet shop.
"Pet shop" means any place of business where dogs under four months of age, or cats, monkeys, birds, reptiles, fish, or any other animals to be used as pets, are kept for sale.

10.08.205 Pygmy pig.
"Pygmy pig" means a pig or hog classified as Sus scrofa jubatus Muller, or Sus scrofa (cristatus) vittatus, and commonly referred to as a Vietnamese pot-bellied pig, pygmy pig or mini-pig, which stands no higher than 20 inches at the shoulder and is no longer than 40 inches from the tip of the head to the end of the buttocks, and weighs no more than 120 pounds.

10.08.210 Section.
"Section" means a section of Title 10 of the County Code, as set forth in this Division 1, unless some other ordinance or statute is mentioned.

10.08.220 Shall and may.
"Shall" is mandatory and "may" is permissive.

10.08.225 Unaltered.
"Unaltered" means an animal which has not been spayed or neutered.

10.08.230 Unlicensed dog or cat.
"Unlicensed dog or cat" means any dog or cat for which the license for the current year has not been paid, or to which the tag for the current year, provided for in this Division 1, is not attached.

10.08.240 Wholesale wild animal dealer.
"Wholesale wild animal dealer" means a person engaged in the business of selling wild animals for the purpose of resale, or who sells wild animals to persons for use other than as pets.

10.08.250 Wild animal.
"Wild animal" is any nondomestic, exotic or dangerous animal, including but not limited

to the following: wild animal/dog hybrids and other mammals, wildfowl, fish and reptiles.

10.08.260. "Director of health services" means the police chief, or designee.

10.08.270. "Sheriff," "sheriff deputy," and "sheriff officer" means police officer, or designee.

10.08.280. "Tax collector" means the finance director, or designee.

Chapter 10.12 DEPARTMENT OF ANIMAL CARE AND CONTROL*

10.12.010 Continuation.
The county department of animal care and control under the administrative management of the director, and the office of the director, are both hereby continued.

10.12.020 Director—License duties generally.
The director shall issue all licenses required by this Division 1, and shall maintain those records required by this Division 1, and handle all fees in such a manner as prescribed by the Los Angeles County auditor-controller.

10.12.030 Director and other employees—Tax collector responsibilities.
For the purpose of issuing all other licenses required by this Division 1 and for no other purpose, the director and each employee designated by the director shall be appointed as a deputy county tax collector, to serve without additional pay as such.

10.12.040 Powers of deputies.
Whenever a power is granted to, or a duty is imposed upon, a public officer, the power may be exercised or the duty may be performed by a deputy of the officer or by a person authorized, pursuant to law, by the officer, unless this Division 1 expressly provides otherwise.

10.12.050 Authority to accept negotiable paper.
The director and the tax collector, in their discretion, may accept negotiable paper as provided in Ordinance 4099, the Administrative Code, and subject to all of the provisions of Sections 25303.1 and 25303.2, 25303.3, 25303.4, 25303.5 and 25203.6 of the Government Code.

10.12.060 Public spay and neuter clinic—Establishment—Services and fees.
A. The director may establish a clinic, at which members of the public may have dogs and cats spayed or neutered in a humane manner upon payment of the applicable fees.
B. A person submitting a dog or cat for the above service shall sign a consent form certifying thereon under penalty of perjury that he is the owner of the animals, or setting forth facts showing that he is otherwise authorized to present the animal for the above operation and such person may be required to furnish proof of such ownership

or authority. Such consent shall contain a waiver of any and all liability of the county, the department of animal care and control and any county employees for any injury or death to an animal arising out of the aforementioned operation or any services provided incidental thereto.

C. The department shall establish a return date by which a person submitting an animal for the above operation shall pick up such animal or be subject to a reasonable board and care fee to commence the day after such return date. Failure to pick up an animal within 15 days of the return date shall be deemed abandonment of such animal, and the director may dispose of it by sale or destruction.

10.12.070 Public education programs.

The director may establish public education programs as deemed necessary to carry out the department's duties and responsibilities for the humane treatment of animals.

10.12.075 Incentive programs.

The director at his or her discretion, may offer incentive programs to encourage compliance with the dog and cat licensing requirements.

10.12.080 Animals held for observation for department of public health.

The director shall pick up or accept and care for any animal to be held for observation by the director of public health.

10.12.090 Capture and custody of animals required when.

The director is authorized to capture and take into custody:

A. All unlicensed dogs;

B. Any other animal, wild or domestic, which is by this Division 1 required to be licensed, but which is unlicensed;

C. Any animal being kept or maintained contrary to the provisions of this Division 1, the Animal Control Ordinance, or any other ordinance or state statute;

D. Dogs and other animals running at large contrary to the provisions of the Food and Agricultural Code or any other state statute or of this Division 1;

E. Sick, injured, stray, unwanted or abandoned animals;

F. Dogs which are unvaccinated in violation of this Division 1;

G. Animals delivered by the owners to the director, all title and interest in which is abandoned by such owners;

H. Animals for which the owner or custodian is unable to care because of imprisonment, illness, bankruptcy, litigation or other contingency, or in cases in which the owner or custodian cannot be found.

10.12.100 Animals kept in animal shelters.

The director shall place animals taken into custody in the county animal shelters or appropriate facilities.

10.12.110 Fees for taking unwanted animals.

The department shall charge the fees prescribed for the taking up or relinquishing of an unwanted animal when requested to do so by the animal's owner or other person

having custody or control over said animal.

10.12.120 Removing animals from custody—Requirements.
A person shall not remove any animal from the custody of the director, nor shall any person remove any animal from a county animal shelter, vehicle or trailer without first paying the necessary fees as set forth in this Division 1 or without receiving permission from the director to do so.

10.12.130 Dead animals and dead livestock—Pickup from public and private property—Fee—Exceptions.
The director shall pick up and dispose of all dead animals and livestock on public highways and on public and private property within the unincorporated areas of Los Angeles County, where the owner is unknown, or at the request of the animal's owner or other person having custody or control over the animal. The fees for such removal services shall be determined annually as provided in Section 10.04.065. The director shall not pick up any dead animals:
A. In Garbage Disposal Districts where contractors are required to perform such service pursuant to contract;
B. In beach areas which are maintained by the department of beaches and harbors.

10.12.140 Dead animals—Pickup from businesses or other facilities.
For each pickup or receiving of dead animals from any animal-related business, such as a pet hospital, nonprofit humane organization animal facility, stable or veterinary establishment, or any commercial, industrial, educational, medical or other facility that deals with animals in connection with its operation, the director shall collect the fees determined annually as provided in Section 10.04.065.

10.12.150 Tranquilizer gun equipment—Use authorized when.
The director may designate supervisory and selected animal control officers who will be authorized to transport and operate tranquilizer gun equipment for use in the capture and seizure of animals.

10.12.160 Inhumane treatment—Enforcement of state law.
It shall be the duty of the director to enforce those sections of the Penal Code of the state of California pertaining to the inhumane treatment of animals, and to take possession of animals so abandoned or neglected and care for or dispose of same as provided for in the Penal Code of the state of California or this Division 1.

10.12.161 Stealing or driving cats away from owners prohibited when.
A person shall not steal, take, carry, lead or drive away the cat of another, with intent to permanently or temporarily deprive the owner or possessor thereof.

10.12.170 Complaint investigation authority.
The director shall receive, investigate and report to other county officers and county departments complaints concerning disturbing or offensive noises or conduct of

animals or fowl kept or maintained in the unincorporated territory of the county of Los Angeles.

10.12.180 Unlicensed or unvaccinated dogs or cats—Right of entry for enforcement.
For the purpose of discharging the duties imposed upon him by this Division 1, the director, in order to enforce the provisions hereof to take up and impound any unlicensed or unvaccinated dog or cat, may enter any real property upon which any dog or cat is kept or harbored or upon which he has reason to believe any dog or cat is kept or harbored and demand the exhibition by the person owning or having charge or control of any such dog or cat, of the dog or cat, the required rabies vaccination certificate, and the license or license tag for such dog or cat for the current year provided for by this Division 1. This section does not permit any person to enter any private dwelling, except where necessary to rescue an animal.

10.12.190 Refusing to show license or certificate unlawful.
Any person upon whom any demand is made under authority of this Division 1 for the exhibition of any dog or cat, rabies vaccination certificate, or any dog or cat license or tag, who fails or refuses to exhibit the same if he has it in his possession, is guilty of a violation of this Division 1, which shall be punishable as herein provided.

10.12.200 Interfering with department officers prohibited.
A person shall not interfere with, oppose or resist the director or an employee of the department, while such person is engaged in the performance of any act authorized by this Division 1.

10.12.210 Right of entry for enforcement—Conditions.
A. The director, any officer or employee thereof, or other duly designated representative of the county, and any police officer shall have the right to make an inspection to enforce the provisions of this Division 1 or other applicable law by entering into any building or upon any property within the unincorporated territory of the county of Los Angeles when said person has reasonable cause to believe that there exists in any building and/or upon any property any violation of the provisions of this Division 1 or other applicable law, provided that:
1. If such building and/or property is occupied, he shall first present proper credentials to the occupant and request entry, explaining his reasons therefor; and if such building and/or property is unoccupied, he shall first make a reasonable effort to locate the owner thereof or other persons having authority over the building and/or property and request entry, explaining his reasons therefor;
2. If entry into said building or upon said property be refused, the director, any officer or employee thereof, or other duly designated representative of the county, and any police officer shall obtain an inspection warrant pursuant to the provisions of the Code of Civil Procedure (Sections 1822.50—1822.57), for the entry and inspection of said building and/or said property;
3. Notwithstanding the foregoing, if the director, any officer or employee thereof, or other duly designated representative of the county, and any police officer has reasonable cause to believe that the keeping or the maintaining of any animal is so

hazardous, unsafe or dangerous as to require immediate inspection to safeguard the animal or the public health or safety, he shall have the right to immediately enter and inspect such building and/or property, and may use any reasonable means required to effect such entry and make such inspection, whether such building and/or property is occupied or unoccupied, and whether or not permission to inspect has been obtained. If the building and/or property is occupied, he shall first present proper credentials to the occupant and request entry, explaining his reasons therefor.

B. This section shall not prohibit the director, any officer or employee thereof, and any police officer from entering upon any public or private property in the unincorporated territory of the county of Los Angeles for the purpose of capturing an animal running at large in violation of this Division 1 or other applicable law. Any person who denies or prevents, obstructs, or attempts to deny, prevent or obstruct said capture is guilty of a misdemeanor.

10.12.220 Animal facility inspection and grading authority.

The director, or his or her duly authorized representative, shall inspect every animal facility annually as provided in Section 10.28.050, and shall report on the findings of said inspection in an animal facility inspection report. The letter grade issued by the department shall be based on the most recent animal facility inspection report of the facility. The director is authorized to recommend appropriate licensing or other legal action as set forth in Section 10.28.290.

Chapter 10.16 DEPARTMENT OF ANIMAL CARE AND CONTROL VOLUNTEER PROGRAM

10.16.010 Created.

There is hereby created the department of animal care and control volunteer program, hereinafter referred to in this chapter as the "volunteer program."

10.16.020 Administration.

The director shall have ultimate responsibility and authority over the volunteer program and shall establish such rules, regulations, staff support and equipment as may be necessary for such volunteers to adequately carry out the duties enumerated in Section 10.16.070.

10.16.030 Personnel—Recruitment and compensation.

A. The director of the department of animal care and control shall have the responsibility for the selection and assignment of personnel under this volunteer program. All personnel within this program may be recruited from citizens and other lawful residents with a general concern for the humane treatment of animals, who support the mission and philosophy of the department.

B. All positions within this volunteer program shall be on a volunteer and unpaid basis, and their status as county employees shall be governed by the salary ordinance set out at Title 6 of this code, under the heading of Volunteer Worker, W/O Comp.

10.16.040 Tenure of personnel.

The personnel within this volunteer program shall serve at the pleasure of the director of the department of animal care and control and may be terminated at any time for any reason.

10.16.050 Expense reimbursement.
Each volunteer shall be reimbursed for his actual and necessary travel expenses if he is required to travel in the performance of his duties, including transportation, meals and lodging, in accordance with the provisions of Ordinance 4099, the Administrative Code.

10.16.060 Duties.
A. All volunteers participating in this volunteer program shall be responsible to and take direction from the director and such of his deputies as he shall authorize.
B. The duties of the volunteers consist of the following:
1. To assist the department in reuniting lost pets with their rightful owners through the use of lost-and-found newspaper ads, stray animal lists of each center, telephone calls regarding lost-and-found animals and information sheets of other shelters and other possible means of locating lost pets;
2. To assist the department in escorting elementary school classes, civic groups, and 4-H Clubs through the animal control centers;
3. To assist the department of animal care and control in promoting the low-cost spay and neuter clinics;
4. To assist in promoting the adoption of animals from the department of animal care and control centers; and
C. In addition to the duties designated in subsection B of this section, each volunteer shall have such additional duties as the director shall prescribe.

Chapter 10.20 DOGS AND CATS*

10.20.010 License tags—Issuance—Fee.

Pursuant to Chapter 3 (commencing with Section 30801) of Divisions 14 and 14.5 of the Food and Agricultural Code, the director shall issue serially numbered permanent dog and cat license tags marked with the name of the county of Los Angeles.

10.20.011 License—Issuance by veterinarians and other qualified persons in unincorporated areas of the county—Conditions.

The director may authorize the issuance of dog and cat licenses, as required by Section 10.20.010, by persons practicing veterinary medicine in the unincorporated territory of Los Angeles County, or other persons approved by the director who meet the qualifications established by the department. Said persons shall transmit records and negotiable papers to the department of animal care and control at intervals as established by the director, and shall collect and transmit to the director the fees required by this chapter for the issuance of such licenses. The director may reimburse

these businesses for such fees.

10.20.020 Person deemed custodian when.

Any person keeping or harboring any dog or cat for 15 consecutive days shall be deemed to be the custodian thereof and subject to licensing provisions within the meaning of this Division 1.

~~10.20.030 License—Required—Fees and other charges.~~

~~Every person owning or having custody or control of any dog or cat over the age of four months in the unincorporated territory of the county of Los Angeles shall obtain an annual license from the director for each dog and cat and shall pay the fee for the licenses including delinquency charges and field enforcement fees as set forth in Sections 10.20.130 and 10.90.010. The owner or custodian of an animal found unlicensed by a department employee in the field will be charged a field enforcement fee.~~

10.20.035 Senior citizen—Defined—Reduced rates.

A reduced fee, as set out in Section 10.90.010, shall be charged to persons presenting proof of and qualifying for senior citizen status. For purposes of this section, persons over 60 years of age qualify for senior citizen status. This reduced fee shall apply only to persons whose dogs have been spayed or neutered by a licensed veterinarian and can present a certificate of such sterilization.

~~10.20.038 Residential dogs and cats—Limitations.~~

~~A.~~
~~Dogs. Up to three dogs may be kept at any residence without an animal facility license, provided the dogs' owner or custodian licenses each individual dog and complies with the Mandatory Spay and Neuter Program for Dogs, 10.20.350 et seq. For purposes of this section, a service dog licensed under Section 10.20.090, is not counted toward the number of dogs kept or maintained, while such dog is serving a person who is disabled within the meaning of Government Code Section 12926(i) or Government Code Section 12926(k).~~
~~B.~~
~~Cats. Up to five cats may be kept at any residence without an animal facility license, provided the cats' owner or custodian licenses each individual cat, has each cat spayed or neutered and keeps all cats primarily indoors.~~

10.20.040 Animal facility for dogs and cats—When individual dog or cat licenses are required.

An individual license shall be obtained for each dog or cat when such dog or cat is kept

as a pet at an animal facility and is not kept exclusively in a kennel run or cage.

~~10.20.045 Hobby breeding—License required—Fees.~~

~~A person who is a hobby breeder as defined in Section 10.08.155, shall obtain a hobby breeding license in the amount set forth in Section 10.90.010. Each license shall authorize the birth of no more than one litter per female dog or cat in any 12-month period and no more than one litter per domestic household in any 12-month period. Breeding in excess of that authorized under this Section requires a breeding facility license (See 10.08.065 and 10.40.200 et seq.) and may result in further penalties.~~

10.20.050 Exceptions from licensing requirement.

A.
The provisions of this Division 1 do not require either a tag or a license for:
1.
Any dog or cat found within the unincorporated territory of the county when the owner thereof resides in any municipality within the county, and such dog or cat is wearing or has attached to it a license tag for the current year issued by such municipality;
2.
Any dog or cat owned by or in the charge of any person who is a nonresident of the county and is traveling through the county or temporarily sojourning therein for a period of not exceeding 30 days;
3.
Any dog or cat brought into the county and kept therein for not to exceed 30 days for the exclusive purpose of entering the same in any bench show, or dog or cat exhibition, or field trials or competition;
4.
Any dog or cat brought or sent into the unincorporated territory of the county from any point outside thereof for the exclusive purpose of receiving veterinary care in any dog or cat hospital, in the event that such dog or cat is kept at all times strictly confined within such hospital;
5.
Any dog or cat wearing or having attached to it a license tag for the current year issued by a municipality within the county when the owner thereof has, within one year last past, moved his principal place of residence from such municipality to the unincorporated territory of the county; provided, that such municipality similarly exempts from tag and license requirements dogs or cat wearing current county license tags and owned by persons who have moved from the unincorporated territory of the county to such municipality.
B.
Except, that each guard dog found within the unincorporated territory of the county, regardless of where the owner may reside, must have a Los Angeles County dog license; and the license tag must be securely affixed to the dog's collar while it is being used as a guard dog within the unincorporated territory of the county of Los Angeles.

10.20.060 Unvaccinated dogs or cat—Licensing permitted when.

The director may accept the payment of the fee for a license tag and a license for a dog or cat who has not been vaccinated as required by Division 1 on condition that the owner of such dog or cat, within five days thereafter, have such dog or cat vaccinated and submit the required veterinarian's certificate to the director. Upon receipt of such certificate, the director shall issue the license tag and license.

10.20.070 Unvaccinated dogs or cat—Time limit for vaccination when dog or cat is disabled.

A person who obtains a license without submitting a certificate of vaccination because of the infirmity or disability of the dog or cat shall, within 10 days after the termination of such infirmity or disability, cause such dog or cat to be vaccinated as required by Part 2 of this chapter.

10.20.080 License and license tag—Period of validity—Dogs discharged from military service.

Each license and each dog license tag provided for in this chapter for a dog which has been honorably discharged from the armed forces of the United States shall be of indefinite duration, so long as the same individual owns or harbors the same dog. The fee shall be that specified in Chapter 10.90.

10.20.090 Service dog defined—License and license tag—Requirements—Period of validity.

A.
"Service Dog" is a guide dog or seeing-eye dog which was trained by a person licensed under Chapter 9.5 (commencing with Section 7200) of Division 3 of the Business and Professions Code, a signal dog or other dog individually trained to do work or perform tasks for the benefit of an individual with a disability, including, but not limited to, guiding individuals with impaired vision, alerting individuals with impaired hearing to intruders or sounds, providing minimal protection or rescue work, pulling a wheelchair or fetching dropped items.
B.
Every person owning or having custody or control of a dog over the age of four months, who submits proof to the director that such dog has been successfully trained as a service dog as defined above in subsection A, shall procure a service dog license and a service dog license tag, which license and tag shall be valid while the dog is acting as a service dog, and is owned and kept by the same person. The tag shall be returned to the Department by the owner or keeper of the dog upon transfer of ownership or possession of the dog, or upon the retirement or death of the dog.

~~10.20.110 License tag—Fee for spayed or neutered animals.~~

~~Pursuant to Section 30804.5 of the Food and Agricultural Code, any dog or cat license tag issued pursuant to Section 10.20.030 of this Part 1 shall be issued for one-half or less of the fee required if a certificate is presented from a licensed veterinarian that the dog or cat has been spayed or neutered.~~

10.20.120 Fees payable annually—Delinquency charge.

A.
The license fees provided for in this chapter shall be paid annually to the director in the amount set forth in Section 10.90.010.
B.
A delinquency charge as provided in Section 10.90.010 shall be assessed when the license fees provided for in this chapter are not paid within ten days after the expiration date or the date the license is required to be obtained by the provisions of this title.

10.20.125 License fee not refundable.

No part of the license fee is refundable in any case.

10.20.130 Recordkeeping and procurement of tags and receipts.

The director shall procure the number of license receipts and dog or cat license tags needed each year, and shall keep a register wherein shall be entered the name and address of each person to whom any dog or cat license tag is issued, the number of such tag, the date of issuance thereof and a description of the dog or cat for which issued.

10.20.140 License—Vaccination requirements and conditions.

The director shall not issue a dog or cat license unless the applicant exhibits a certificate signed by a veterinarian, licensed either by the state of California or by any other state to practice veterinary medicine, that:

A.
The period elapsing from the date of vaccination with approved rabies vaccine to the date of expiration of the license being issued does not exceed the time as established by the state; or
B.
Such dog or cat should not be vaccinated with rabies vaccine because such vaccination would jeopardize the health of such dog or cat due to infirmity or other disability, which infirmity or other disability, and the estimated date of termination thereof, is shown on the face of the certificate to the satisfaction of the director.

10.20.150 License—Information to be shown on receipt.

When the director issues a dog or cat license, he shall show on the receipt the age of the dog or cat, the date of last vaccination and, if the license was issued without proof of vaccination, the reason therefor.

10.20.160 License and license tag—Transfer permitted when—Fee.

If, during a license period, a dog or cat is sold or title to the dog or cat is otherwise transferred to a new owner, such new owner may apply to the director for a transfer of such dog's or cat's tag and license and pay a transfer fee as specified under Chapter 10.90. Upon receipt of such application and fee, the director shall record the name and address of the new owner.

10.20.170 Replacement of lost tags.

In case any license tag for an individual dog or cat is lost or destroyed, a duplicate thereof may be procured from the director upon the submission to the director of such proof as he may require and upon the payment therefor as specified under Chapter 10.90.

10.20.180 Tag to be worn by dog or cat.

A license tag for an individual dog or cat shall be securely affixed to a collar, harness or other device which shall at all times be worn by such dog or cat except while such dog or cat remains indoors or in any enclosed yard or pen. Alternatively, a cat may wear any form of identification approved under Chapter 10.90.

~~10.20.185 Microchipping of dogs required.~~

~~All dogs over the age of four months must be implanted with an identifying microchip. The owner or custodian is required to provide the microchip number to the department, and shall notify the department and the national registry applicable to the implanted chip, of a change of ownership of the dog, or a change of address or telephone number.~~

10.20.190 Keeping unlicensed dogs or cats prohibited.

A person, shall not harbor or keep, or cause or permit to be harbored or kept, any unlicensed dog or cat in the unincorporated territory of the county of Los Angeles, or in any city in Los Angeles County which has adopted this Title 10.

10.20.200 Counterfeit or imitation tags prohibited.

A person shall not attach to or keep upon any dog or cat, or cause or permit to be attached to or kept upon any dog or cat, any tag provided for in Section 10.20.010 of this chapter except a tag issued for such dog or cat under the provisions of this chapter, or attach or keep upon or cause or permit to be attached to or kept upon any

dog or cat, or make or cause or permit to be made or have in possession, any counterfeit or imitation of any tag provided for in this chapter.

10.20.210 Removing tag from collar prohibited.

An unauthorized person shall not remove from any dog or cat any collar or harness or other device to which is attached a license tag, or remove such tag or other identification therefrom.

~~10.20.211 Spaying or neutering—Condition of sale—Deposit required.~~

~~As a condition to the sale or giving away of any cat that has not been spayed or neutered, the purchaser or recipient shall deposit with the department of animal care and control, at the time of the sale or giving away, an amount determined by the director to be sufficient to cover the costs of neutering or spaying the cat, but in no event shall such deposit exceed $30.00. Such deposit is to be paid to a licensed veterinarian upon proof that he has performed the required neutering or spaying operation within the time period as set forth in Section 10.20.214, and may include an amount necessary to recover any additional costs to the department under this chapter.~~

~~10.20.212 Spaying or neutering—Disposition of funds by director.~~

~~Whenever, in connection with the sale of any cat, the director shall receive a deposit to cover the costs of spaying or neutering, the money so received shall be deposited in a trust fund in the county treasury.~~

~~10.20.213 Spaying or neutering—Deposit paid to veterinarian.~~

~~Whenever a cat has been spayed or neutered as provided herein, the depositor shall be entitled to have the deposit paid to the licensed veterinarian performing the above operation, or the director may return the deposit to the person purchasing or receiving the cat upon written statement or receipt from the licensed veterinarian that the cat has been spayed or neutered, and the director shall draw the necessary demand on the auditor therefor.~~

~~10.20.214 Spaying or neutering—Deposit forfeited without proof of operation—Conditions.~~

~~Any cat over six months of age at the time it is sold or given away shall be spayed or neutered within 60 days, or the deposit shall be deemed forfeited. Any cat under six months of age at the time it is sold or given away shall be spayed or neutered within 60 days after reaching the age of six months or the deposit shall be deemed forfeited. The director may extend such time periods in writing upon the showing of good cause therefor. The age of the cat for purposes of this chapter shall be determined by the department. At least 30 days before the end of the said 60-day period, or any written~~

~~extensions thereof, the department shall send the purchaser notice by mail to the address on file with the department, informing the purchaser that failure to furnish satisfactory proof of performance of the operation prior to the end of the 60-day period or its extension shall result in forfeiture of the deposit. If the notice has been sent and the allotted time has elapsed without satisfactory proof of performance of the operation, the deposit shall be forfeited and the director shall transfer such money from the trust fund to the county treasury.~~

~~10.20.215 Spaying or neutering—Deposit refund conditions.~~

~~Whenever any cat which has been purchased from the department of animal care and control, while it was under the age of six months, dies or is destroyed prior to being spayed or neutered as required in this chapter, the purchaser shall be entitled to a refund upon presenting satisfactory proof to the director of such death or destruction, and the director shall draw the necessary demand on the auditor therefor. No refund shall be made, however, where death or destruction occurs following the time within which the aforementioned operation was required to be performed.~~

10.20.220 Requirements generally.

A.
Every person keeping, harboring, or having any dog or cat over four months of age in the unincorporated territory shall cause such dog or cat to be vaccinated with rabies vaccine, by a person licensed by the state of California, or other state, to practice veterinary medicine, on or before the latest of the following dates:
1.
15 days after first acquiring such dog or cat;
2.
15 days after bringing such dog or cat into the unincorporated territory of the county of Los Angeles.
B.
No person shall cause a dog or cat under the age of four months to be vaccinated with an approved rabies vaccine unless a veterinarian licensed by the state of California, or other state, determines that such vaccination is required to preserve the health or prevent the disability of such dog or cat.

10.20.230 Revaccination time—Rabies vaccine.

Every person keeping, harboring, or having a dog or cat in the unincorporated territory of the county which has been vaccinated with an approved rabies vaccine shall cause such dog or cat to be revaccinated within a period of not more than:

A.
12 months after the dog's or cat's initial vaccination if the dog or cat was between four months and one year in age at the time of such vaccination;

B.
36 months after each prior vaccination.

10.20.250 Certificate of vaccination—Information to be shown.

Every person practicing veterinary medicine in the unincorporated territory of the county of Los Angeles who vaccinates a dog or cat with rabies vaccine shall immediately issue to the person to whom he delivers the dog or cat the original, and monthly to the director a duplicate, of a certificate signed by the veterinarian which states:

A.
The name and address of the owner or harborer of the vaccinated dogs or cats;
B.
The kind of vaccine used, the name of the manufacturer and the manufacturer's serial or lot number, and the date of the vaccinations;
C.
The breed, age, color and sex of the vaccinated dogs or cats.

~~10.20.262 County assistance to low-cost vaccination clinics.~~

~~The director may direct department personnel to provide or assist at low-cost vaccination clinics operated by veterinary associations as an adjunct to clinics operated by the department. The director may charge for the services of county personnel at low-cost vaccination clinics operated by veterinary associations. This charge shall not include the time actually spent in the issuance of licenses. Rates shall be those established by the county auditor-controller.~~

~~10.20.270 Licensing of businesses using dogs for protection.~~

~~Every business establishment that uses a dog or dogs to work without supervision to deter and protect the business from unauthorized persons entering said business, is required to obtain a business license under this part, other than sentry dog companies having dogs registered pursuant to Health and Safety Code Section 121910. Businesses registered under Health and Safety Code Section 121910 are also required to obtain an animal facility license under Section 10.28.060.~~

10.20.280 Licensing of dogs used by businesses for protection.

Every business establishment shall license, with the Los Angeles County department of animal care and control, each and every dog subject to this Part 3.

10.20.290 Inspection of business premises required annually—Fee.

Prior to the licensing of a dog, and business subject to this Part 3, the county shall inspect the business establishment premises so as to assure the adequate housing

and care of the dog. The inspection fee set forth in Section 10.90.010.II.C.3 shall be paid annually upon inspection.

10.20.300 Licensing—Information required.

The license issued to a business subject to this Part 3 shall include the following information:

A.
The name, address and telephone number of both the business establishment and the dog's responsible owner or handler;
B.
The name of the dog;
C.
The license identification number of the dog;
D.
The time at which the owner or handler shall inspect the dog's physical condition, its surroundings, and to assure its food and water supply are adequate. Said inspection shall be twice in any 24-hour period, with each inspection no more than 15 hours from the previous inspection.

10.20.310 Sign required on premises—Contents.

Clear and legible signs shall be posted at each of the entrances to the business establishment having dogs licensed pursuant to this Part 3, which shall state that the dog and the business are licensed with the Los Angeles County department of animal care and control and the location and telephone number of the nearest county animal shelter.

~~10.20.350 Mandatory spaying, neutering of dogs.~~

~~A.~~
~~No person may own, keep, or harbor a dog over the age of four months in violation of this section. An owner or custodian of an unaltered dog must have the dog spayed or neutered or obtain an unaltered dog license in accordance with Section 10.20.355.~~
~~B.~~
~~The owner or custodian of a dog which is unable to be spayed or neutered without a high likelihood of suffering serious bodily harm or death due to age or infirmity, must obtain written confirmation of that fact from a licensed veterinarian. The writing must also state the date by which the dog may be safely spayed or neutered. If the dog is unable to be spayed or neutered within 30 days, the owner or custodian must apply for an unaltered dog license.~~

~~10.20.355 Unaltered dog license—Requirements.~~

~~An owner or custodian of an unaltered dog over the age of four months must obtain an~~

~~annual unaltered dog license for the dog. The license shall be issued if the department has determined that all of the following conditions are met:~~

~~A.~~
~~The dog is one of the following: a competition dog as defined in Section 10.08.095; a dog used by a law enforcement agency for law enforcement purposes; a qualified service or assistance dog as defined in Section 10.20.090; or a dog which is unable to be spayed or neutered as set forth in Section 10.20.350 B;~~
~~B.~~
~~The owner or custodian has submitted the required application and has paid the fee set forth in Section 10.90.010(VI)(A); and~~
~~C.~~
~~The unaltered dog will be maintained in accordance with the provisions of Los Angeles County Code Section 10.40.010, and with applicable state animal care and control laws.~~

~~10.20.360 Denial or revocation of unaltered dog license—Grounds and re-application.~~

~~A.~~
~~The department may deny or revoke an unaltered dog license for one or more of the following reasons:~~
~~1.~~
~~The applicant or licensee is not in compliance with all of the requirements of Section 10.20.355;~~
~~2.~~
~~The department has received at least one complaint, verified by the complainant under penalty of perjury, that the applicant or licensee has allowed a dog to run loose or escape, or has otherwise been found to be neglectful of his or her dog or other animals;~~
~~3.~~
~~The applicant or licensee has been previously cited for violating a state law, county code or other municipal provision relating to the care and control of animals;~~
~~4.~~
~~The unaltered dog has been adjudicated by a court or an agency of appropriate jurisdiction to be a potentially dangerous or vicious dog, or to be a nuisance within the meaning of the Los Angeles County Code or under state law;~~
~~5.~~
~~Any unaltered dog license held by the applicant has been revoked;~~
~~6.~~
~~A female unaltered dog has had more than one litter per year, or five or more litters in her lifetime; or~~
~~7.~~
~~The license application is discovered to contain a material misrepresentation of fact.~~
~~B.~~
~~Re-application for unaltered dog license:~~
~~1.~~

~~When an unaltered dog license is denied, the applicant may re-apply for a license upon a showing that the requirements of Section 10.20.355 have been met. The department shall refund one-half of the license fee when an application is denied. The applicant shall pay the full fee upon re-application.~~
~~2.~~
~~When an unaltered dog license is revoked, the owner or custodian of the dog may apply for a new license after a thirty-day waiting period upon a showing that the requirements of Section 10.20.355 have been met. No part of an unaltered dog license fee is refundable when a license is revoked and the applicant shall pay the full fee upon re-application.~~

~~10.20.365 Appeal of denial or revocation of unaltered dog license.~~

~~A.~~
~~Request for hearing.~~
~~1.~~
~~Notice of intent to deny or revoke. The department shall mail to the owner or custodian a written notice of its intent to deny or revoke the license for an unaltered dog which includes the reason(s) for the denial or revocation. The owner or custodian may request a hearing to appeal the denial or revocation. The request must be made in writing within ten days after the notice of intent to deny or revoke is mailed. Failure to submit a timely written hearing request shall be deemed a waiver of the right to appeal the license denial or revocation.~~
~~2.~~
~~Hearing officer. The hearing shall be conducted by the director's designee.~~
~~3.~~
~~Notice and conduct of hearing. The department shall mail a written notice of the date, time, and place for the hearing not less than ten days before the hearing date. The hearing date shall be no more than thirty days after the department's receipt of the request for a hearing. Failure of the owner or custodian or his or her agent to appear at the hearing will result in forfeiture of the right to a hearing. The hearing will be informal and the rules of evidence will not be strictly observed. The department shall mail a written decision to the owner or custodian within ten days after the hearing. The decision of the hearing officer shall be the final administrative decision.~~
~~B.~~
~~Change in location of dog. If the dog is moved after the department has issued a letter of intent to deny or revoke, but has not yet denied or revoked the license, the owner or custodian must provide the department with information as to the dog's whereabouts, including the current owner or custodian's name, address, and telephone number.~~

~~10.20.370 Transfer, sale and breeding of unaltered dog.~~

~~A.~~
~~Offer for sale or transfer of unaltered dog: An owner or custodian who offers any unaltered dog for sale, trade, or adoption must include a valid unaltered dog license number with the offer of sale, trade or adoption, or otherwise state and establish~~

~~compliance with Section 10.20.350. The license and microchip numbers must appear on a document transferring the dog to the new owner.~~

~~B.~~

~~Transfer of unaltered dog: The owner or custodian of an unaltered dog over the age of four months, which is not a competition dog as defined in Section 10.08.095, must demonstrate compliance with Section 10.20.350 and 10.20.185 prior to the transfer, and must notify the department of the name and address of the transferee within ten days after the transfer.~~

~~C.~~

~~Notification of litter and sale or transfer of puppies: Within thirty days after a litter is born to a female dog, the owner or custodian of the female dog shall advise the department in writing of the number of live born puppies. When a puppy under the age of four months is sold or otherwise transferred to another person, the owner or custodian shall advise the department of the name and address of the new owner or custodian, and the microchip number of the puppy, if applicable, within ten days after the transfer.~~

~~10.20.375 Penalties.~~

~~The penalties for violations of any provision of this part are as follows:~~

~~A.~~

~~First violation. A first violation shall be an infraction punishable by a fine not to exceed $250. If the owner or custodian fails to correct the underlying cause of the violation within 30 days after being notified of the violation, it shall be deemed a second violation.~~

~~B.~~

~~Second violation. A violation within a year of a first violation shall be deemed a second violation. A second violation is a misdemeanor punishable by imprisonment in the county jail for a period not to exceed six months or by a fine not to exceed $1,000, or by both such fine and imprisonment. Each subsequent violation within one year shall be considered an additional misdemeanor.~~

~~10.20.380 Impoundment of unaltered dog.~~

~~A.~~

~~When an unaltered dog is impounded, the owner or custodian may reclaim the unaltered dog when one of the following occurs:~~

~~1.~~

~~The dog is spayed or neutered by a department veterinarian at the expense of the owner or custodian. Such expense may include additional fees due to extraordinary care required;~~

~~2.~~

~~The dog is spayed or neutered by another department approved veterinarian. The owner or custodian may arrange for another department approved veterinarian to spay or neuter the dog, and shall pay to the department the cost to deliver the dog to the~~

~~chosen veterinarian. The cost to deliver the dog shall be based on the department's hourly rate established by the Auditor-Controller, billed in minimum one-hour increments. The veterinarian shall complete and return to the department within ten days, a statement confirming that the dog has been spayed or neutered and shall release the dog to the owner or custodian only after the spay or neuter procedure is complete; or,~~

~~3.~~

~~At the discretion of the director, the dog may be released to the owner or custodian if he or she signs a statement under penalty of perjury, representing that the dog will be spayed or neutered and that he or she will submit a statement within ten days, signed by the veterinarian, confirming that the dog has been spayed or neutered.~~

~~4.~~

~~If the owner or custodian demonstrates compliance with Section 10.20.350.~~

~~B.~~

~~Costs of Impoundment.~~

~~1.~~

~~The owner or custodian of the unaltered dog shall be responsible for the costs of impoundment, which shall include daily board costs.~~

~~2.~~

~~The costs of impoundment shall be a lien on the dog, and the unaltered dog shall not be returned to its owner or custodian until the costs are paid. If the owner or custodian of an impounded unaltered dog does not pay the lien against the dog in full within fourteen days, the dog shall be deemed abandoned to the department in accordance with Section 10.36.310.~~

~~10.20.385 Allocation of fees and fines collected.~~

~~All costs and fines collected under this part and the fees collected under Section 10.90.010 shall be paid to the department for the purpose of defraying the cost of the implementation and enforcement of this Part 4.~~

10.28.010 Application of Chapter 10.28 provisions.
This chapter applies to all licenses required by this Division 1 except licenses for individual dogs and cats.

10.28.020 Initial license—Application required.
Every person desiring a license to operate an animal facility or to keep a wild animal under Section 10.28.060, shall file an application with the department upon a form to be provided by the department, and at such time pay the required fee and any applicable penalty as set forth in Section 10.90.010.II. A person who possessed or owned a wild animal or who operated an animal facility without the required license, shall pay the penalty set forth in Section 10.90.010.II.C.4, in addition to the license fee. When a person applies for licenses for different purposes for animals at the same premises at the same time, the cost of the licenses shall be reduced by the amount set forth in Section 10.90.010.II.A.1.k.

10.28.030 License—Form and information required.
Each application for any license covered by this chapter shall be upon a form to be furnished by the department, and shall contain such information as the director may require.

10.28.040 License fee not refundable.
No part of the license fee is refundable in any case.

10.28.050 License requirements—Prerequisites to issuance and renewal.
Upon the filing of any license or renewal application covered by this chapter, the director shall inspect and make such investigation as he deems proper. The director may issue a new license or renew the license if the following requirements are met:
A. The maintenance of the animal or animals at the location set forth in the application will not violate any law or ordinance of the county of Los Angeles, federal law or any law of the state of California, or constitute a menace to the health, peace or safety of the community;
B. The applicant has received approval from the director of the regional planning department that the maintenance of the animal or animals as defined in this chapter, at the location specified in the application for the license therefore, will not violate any provision of any zoning ordinance or other specific plan of land use;
C. The applicant has not had a license, covered by this chapter, denied or revoked within the county of Los Angeles within twelve months prior to the application. However, the director may issue a license within the twelve month waiting period if the applicant is able to make the showing required by Section 10.28.150.

10.28.060 License—Required for certain activities and animals—Certain animals exempt.
Any person, including a new owner of an existing organization or business, shall not conduct or operate any animal facility listed in Section 10.90.010, or keep any wild animal, within the unincorporated area of Los Angeles, without first obtaining a license from the department, except as otherwise provided in this Section 10.28.060. Any person who has not applied for a license within 30 days after the expiration date of a license must obtain a new license, in place of a renewal license. A license is not required for the keeping of the following animals for personal use:
1. Canaries;
2. Chinchillas;
3. Chipmunks;
4. Finches;
5. Gopher snakes;
6. Guinea pigs;
7. Hamsters;
8. Hawks;
9. King snakes;
10. Marmoset monkeys;
11. Mynah birds;
12. Parrots, parakeets, amazons, cockatiels, cockatoos, lories, lorikeets, love birds,

macaws, and similar birds of the psittacine family;
13. Pigeons;
14. Ravens;
15. Squirrel monkeys;
16. Steppe eagles;
17. Toucans;
18. Turtles;
19. White doves;
20. Tropical fish excluding caribe;
21. Domesticated mice and rats.

10.28.061 Keeping and breeding pygmy pigs—License required.
Any person owning or having the custody, care or control of a pygmy pig as defined in this title who keeps or maintains any such pig, whether as a pet or for personal use, or breeds such pig for pay or other compensation, shall first pay a fee and obtain an animal license or animal facility license from the department, except that no such license shall be issued unless:
A. The person keeping or maintaining a pygmy pig in a residential area, as permitted in Los Angeles County Code Section 22.20.030 as a pet or for personal use, has provided proof from a licensed veterinarian that the pig has been neutered or spayed and such proof has been submitted to the department;
B. The person owning or having custody and care of the animal has obtained any and all licenses and zoning permits required pursuant to this county code or any other ordinance or statute and has submitted proof of such to the department.

10.28.062 Pygmy pigs—Breeding prohibited when.
Any person owning or having the custody, care or control of any pygmy pig, and who keeps and maintains a pygmy pig in any residential zone, shall not engage in the breeding of such animals.

10.28.090 License—Expiration date.
All licenses covered by this chapter shall automatically expire twelve (12) months following the date of issue, unless sooner revoked or terminated by any of the following actions: the licensee changes the location of the animal facility or the animal for which the license was issued, or the licensee sells, assigns, transfers or otherwise disposes of the animal facility or animal or his or her interest therein.

10.28.100 Display of license.
Every person having a license issued pursuant to the provisions of this chapter shall keep such license posted and exhibited, while in force, in some conspicuous part of such establishment or, in the case of a wild animal license, affixed to the cage or enclosure wherein the animal is kept, or in the case of a pygmy pig such license shall be affixed to a harness or other device and worn by the animal at all times.

10.28.120 License—Issued subject to conditions when.
If the director finds that the facts are such that any one or more of the provisions of this

Division 1 relating to the denial of the license under consideration would apply if the license is issued without conditions, but that conditions can be imposed which will eliminate any such ground for denial, the director shall direct that the license be issued, subject to such conditions.

10.28.130 Denial or conditional grant—Notice to applicant of right to hearing.
Before the director denies any license, either new or renewal, or grants any license subject to conditions, except the renewal of a license containing only those conditions to which the license renewed was subject, or conditions to which the applicant has agreed, he shall notify the applicant in writing that he intends to deny the license or to grant the license subject to conditions, which conditions shall be specified in the notice, and that the applicant, if dissatisfied with the decision of the director may, in writing, request a hearing before the business license commission within five days after receipt of such notice.

10.28.140 Denial or conditional grant—Hearing procedure.
If any applicant requests a hearing, the director shall prepare and file an accusation in the manner prescribed in Section 7.10.210 of this code, on business licenses. The parties will then be notified and a hearing held by the business license commission in the manner prescribed in Sections 7.04.280 and 7.10.200 through 7.10.390 of this code. At such hearing, all parties may be heard and the business license commission shall determine whether the license should be issued, issued subject to conditions, or denied.

10.28.150 Exception to waiting period following license denial or revocation.
If a license has been denied or revoked, the director shall not accept a new application by the same person for a license for the same activity at the same location less than twelve months after such denial or revocation unless the applicant affirmatively shows, and the director finds, that the grounds upon which the first application was denied or the license was revoked no longer exist.

10.28.160 Renewal procedure.
Within 30 days after the expiration of any license or prior to the expiration of the license, the licensee shall apply for a renewal of the license and, with his application, pay the required fee set forth in Section 10.90.010.II.B. When a person applies for more than one renewal, for animals at the same premises at the same time, the cost of the renewals shall be reduced by the amount set forth in Section 10.90.010.II.B.1.i. An animal facility which has not applied for a renewal within the 30 day grace period must obtain a new license in place of a renewal license, and pay the fees applicable to an initial license. If the applicant has not applied for a renewal within six months after the expiration date, the penalty provided in Section 10.90.010.II.C.4 must also be paid.

10.28.170 Suspension or revocation—As condition of license grant—Procedure.
Every license granted is granted and accepted by all parties with the express understanding that the director may prepare and file an accusation, and cause the parties to be notified, and a hearing held before the business license commission as

prescribed in Section 10.28.140. If, from the evidence introduced at such hearing, the business license commission finds that any ground of revocation exists, it may revoke or suspend such license. Pending such hearing and decision, the director may suspend such license for not more than 60 days.

10.28.175 Reinspection.
When a reinspection of the premises is necessary to determine compliance with all licensing requirements, or when a person requests a reinspection in order to improve a grade, or for any reason, he shall pay the reinspection fee set forth in Section 10.90.010.II.C.1, provided that any applicable initial license fee or renewal fee has been already paid within the preceding twelve months.

10.28.180 Revocation—Grounds.
A license may be revoked on any one or more of the following grounds:
A. Any facts exist because of which a denial of the license would be authorized;
B. The licensee, or any agent or employee of the licensee, has violated or has been convicted of violating any of the provisions of the ordinance codified in this chapter or any other county ordinance, or of any regulation adopted pursuant thereto, or of any law, statute, rule, order or regulation of the state now or hereafter in force regulating the occupation or other activity for which the license was issued;
C. The licensee obtained the license by fraudulent representations;
D. The licensee has conducted the occupation or other activity licensed in an immoral or disorderly manner;
E. The licensee is an unfit person to be entrusted with the privileges granted by the license.

10.28.190 Revocation—Notice to tax collector.
The director shall give notice of such revocation to the tax collector.

10.28.200 Revocation—Forfeiture of fee.
On revocation of the license, no part of the money in the hands of the tax collector shall be returned, but the said license fee shall be forfeited to the county.

10.28.210 Imposition of additional conditions authorized when.
A. If, at any time, it appears to the director that there are grounds for the revocation of a license, but that such grounds could be eliminated by the imposition of conditions, or of additional conditions, or by the amendment of any existing condition to such license, he may notify the licensee in writing that he intends to impose or amend such conditions and that the licensee may, within five days after receipt of such notice, request in writing a hearing before the business license commission.
B. If, from the evidence at a revocation hearing or at a hearing held pursuant to this section, it appears to the business license commission that there are grounds for revocation which can be eliminated by the imposition of, or amendment of, conditions, the business license commission may impose or amend such conditions.

10.28.220 Change of conditions at licensee's request.

If a licensee applies in writing to the director for a change in the conditions to which his license is subject, the director may grant such application in whole or in part, or may deny such application, based upon facts found by him.

10.28.230 License—Preparation, numbering, recordkeeping and other procedures.
Each license issued pursuant to the provisions of this chapter shall be prepared, numbered, signed, delivered and accounted for in the manner provided by law for other licenses.

10.28.240 License—Information to be shown.
In addition to any other matter required by law, each license shall state the name and residence address of the person to whom such license is issued, the amount paid therefor and the character thereof, the date when issued, the date on which such license shall expire, and shall specify the address at which the license permits the maintenance of the animal or animals.

10.28.250 Renewal procedure—Report from regional planning commission required when.
If the tax collector has not received any protest against its renewal, he may issue a renewal of an existing license covered by this chapter at the same location, without any report from the director of the regional planning commission. Otherwise, the tax collector shall not issue any license until he obtains from the director of the regional planning commission a statement signed by such director that the maintenance of the animal or animals, at the location specified in the application for the license therefor, will not violate any provision of any zoning ordinance or official plan of a master plan of land use.

10.28.260 Report of zoning land use regulation violations required when—Contents.
If the director of the regional planning commission finds that the holder of any license covered by ordinance or official plan of land use, or has done, is doing or threatens to do any act, because of the doing of which no license should be issued or renewed, or any other circumstance because of which such license should not be renewed, he shall report such fact in writing to the tax collector. In such report he shall give the number of the license, the name and address of the licensee, the location of the animal or animals, the reasons why such license should not be renewed, and such other facts as the tax collector may require.

10.28.270 Animal facility grading—Bases for grading.
A. The purpose of the Animal Facility Grade Card is to provide notice to the public of the grade earned by an animal facility at the time of the most recent inspection of the facility. The grading standards are set forth in the Animal Facility Inspection Report, which is available upon request from any county shelter.
B. The letter grade reflected in the Animal Facility Inspection Report is based on the facility's level of compliance with applicable state statutes and local ordinances and policies relating to the care of animals. The grade shall be issued on the animal facility's final score as follows:

1. Grade of A: Final score of 90% and above;
2. Grade of B: Final score of 80% to 89%;
3. Grade of C: Final score of 70% to 79%. A final score of 70% is the minimum grade required to maintain a license in good standing. A score of less than 70% will result in recommendations by the department regarding licensing or legal action to be taken as set forth in Section 10.28.290.

10.28.280 Display of grading card—Violation.
A. Upon issuance by the director, the facility shall post the Animal Facility Grade Card at every animal facility, so as to be clearly visible to the general public and to patrons entering the facility. For purposes of this section, "clearly visible to the general public and to patrons" shall mean:
1. Posted in the front window of the facility within five feet of the front door;
2. Posted in a display case mounted on the outside front wall of the facility within five feet of the front door; or
3. Posted in a location as directed and determined in the discretion of the director to ensure proper notice to the general public and to patrons.
B. In the event that an animal facility is operated in the same building or space as a separately licensed or permitted business, or in the event that an animal facility shares a common patron entrance with such a separately owned or permitted business, or in the event of both, the facility shall post the Animal Facility Grade Card(s) in the initial patron contact area, or in a location as determined in the discretion of the director.
C. The Animal Facility Grade Card shall not be defaced, marred, camouflaged, hidden or removed. Except as provided in subsection D of this section, it shall be unlawful to operate an animal facility unless the Animal Facility Grade Card is displayed as required by this Section 10.28.280. A violation of this subsection C is a misdemeanor, and is punishable as a misdemeanor under Penal Code Section 19.
D. The director may waive posting of the Animal Facility Grade Card when the animal facility consists of animals maintained solely as personal pets which are not used to breed, show, sell, adopt or to transfer ownership or custody of the animals by any other method.

10.28.290 Consequences of failure to achieve minimum grade.
The department shall make recommendations as to licensing or legal action to be taken when an animal facility does not earn a final score of at least 70%.
1. Licensing Consequences. Licensing consequences of an animal facility's failure to attain a final score of at least 70% include the imposition of conditions, denial, revocation or non-renewal of the license.
2. Other Consequences. Other consequences include referrals to local prosecuting authorities for criminal prosecution under local ordinances or state statutes.

Chapter 10.32 ANIMALS RUNNING AT LARGE

10.32.010 Dogs—Running at large prohibited—Exceptions.

No person owning or having charge, care, custody or control of any dog shall cause, permit or allow the same to be or to run at large upon any highway, street, lane, alley, court or other public place, or upon any private property or premises other than those of the person owning or having charge, care, custody or control of such dog, in the unincorporated area of the county of Los Angeles, unless such dog be restrained by a substantial chain or leash not exceeding six feet in length and is in the charge, care, custody or control of a competent person.

10.32.020 Attack dogs—Fenced or walled premises required when.
Notwithstanding the provisions of Section 10.32.010, no person owning or having charge, care, custody, or control of any dog which has been trained to attack persons or animals, or an attack dog that behaves in a threatening or menacing manner, shall, within the unincorporated area of the county of Los Angeles, cause, permit or allow the same to be or run at large upon any private property or premises, including those of the person owning or having charge, care or custody of such dog, except within such portion of such property or premises which are enclosed by a structure, fence or wall not less than five feet in height. The fence, wall or structure shall conform to requirements of Chapter 11.50 of this code.

10.32.030 Dogs—Running at large permitted on private property—Conditions.
The provisions of this chapter do not prohibit permitting or allowing dogs to run at large on the premises of the owner or person having charge, care, custody or control of such dogs when the property is a ranch or similar undeveloped property, or prohibit permitting or allowing dogs, other than unspayed female dogs during the copulative season, to run at large on any ranch or similar undeveloped property with the permission of the owner of such ranch or similar undeveloped property; provided such dog is under reasonable control of a competent person.

10.32.040 Livestock and poultry at large deemed misdemeanor—Exceptions.
A. Every person owning or having charge, care, custody or control of any pig, pygmy pig, hog, cow, bull, steer, horse, mule, jack, jenny, hinny, sheep or other livestock, including poultry, is guilty of a misdemeanor, who wilfully or knowingly permits or, through failure to exercise due care or control, allows:
1. The same to run at large upon any highway, street, lane, alley, court or other public place; or
2. To enter or remain in or upon any land owned by any person, other than the owner of such animal, unless the person in charge of such animal has in his possession the consent in writing of the owner or lessee of such land.
B. This section does not apply to any recreational use upon uncultivated or unimproved land.

10.32.050 Livestock—Owner liability for service charges.
The owner or other person having custody or control over livestock shall be liable to the county for the salary, costs and other expenses incurred by the department's personnel when used for the restraining, capturing or rescuing of said animals. The salary, costs and expenses shall be determined by the director with the concurrence of

the county auditor-controller.

10.32.060 Leading animals along public highways permitted.
This chapter does not prohibit the leading, driving or conducting of animals under adequate supervision along a public highway.

10.32.070 Requirements for animal facility keeping cats.
Every person owning or operating any animal facility used to keep cats, shall keep all cats therein under proper confinement on the premises and shall not cause, permit or allow such cats to be or to run at large.

10.32.080 Wild animal establishment regulations.
Every person owning any wild animal or operating any wild animal establishment shall keep all animals under proper confinement on the premises and shall not cause, permit or allow such animals to be or to run at large, or maintain any such animal upon any private property on or within the premises of such person in such a manner as to endanger the life or limb of any person lawfully entering such premises.

10.32.090 Animals allowed to be at large—Permit required—Conditions.
A. If the director finds that it is necessary to permit an animal, wild or domestic, to run at large in order to accomplish any legitimate purpose by the use of such animal, and that the animal will be so supervised and guarded that it will not leave the premises where used and will not endanger in any way the public health, safety or general welfare of any person, he may permit such animal to run at large under such conditions as the director finds necessary or expedient to protect the safety of the public.
B. Such permit may be for one occasion or for a period of time or until revoked. It may include one or more animals or may permit any animal under the control of the permittee to run at large as provided in subsection B.
C. Such permit may be revoked for the reasons and pursuant to the procedures provided by this Division 1 for the revocation of licenses.

Chapter 10.36 IMPOUNDMENT*

10.36.010 Taking up animals—Permitted when.
Any person finding any stray domestic animal or any such animal which is running at large contrary to the provisions of this Division 1 may take up such animal if he complies with the applicable provisions of this Division 1.

10.36.020 Surrendering animals to authorized representative required when.
Any person taking up any stray domestic animal or any such animal found running at large contrary to the provisions of this Division 1 shall surrender such animal to the director or to his duly authorized representative upon demand.

10.36.040 Taking up animals—Notice to director or sheriff required.
Every person, except the director, taking up any stray animal or any such animal which

is running at large contrary to the provisions of this Division 1 shall, within four hours thereafter, give notice to the director or to the sheriff of:

A. The fact that he has such animal in his possession;

B. The complete description of such animal;

C. The license number of such animal, if any, and by what county or municipal corporation issued. If such animal has no license he shall so state;

D. The place where such animal is confined.

10.36.050 Taking up animals—Sheriff's officers' notice responsibility.

In case the notice provided for in Section 10.36.040 is given to any member of the sheriff's office, such officer shall immediately notify the director and shall furnish him all the information which has been obtained regarding such animal.

10.36.060 Animals delivered to shelter.

The director shall deliver to an animal shelter operated by the department those animals picked up by the department in accordance with this Division 1.

10.36.080 Impounded animals—Recordkeeping requirements.

The director shall keep a record of each animal impounded, the date of impound, the date and name and address of the person who redeemed, reclaimed or purchased the animal, and the amount of all fees received or collected for or because of the impounding, reclaiming or purchasing of the animal. When a dog or cat is redeemed by an owner or is adopted, the director shall keep a record of the dog or cat license number or the animal facility license number under which the dog or cat was released.

10.36.090 Impounded dogs and cats—Notice to owner required when.

When any dog or cat wearing a current, valid license tag issued by the county of Los Angeles, or any municipality within the county of Los Angeles is impounded pursuant to this Division 1, the director shall, within 48 hours, excluding week-ends and holidays, after receiving such dog or cat, notify either by telephone or letter, with postage fully prepaid thereon, the person to whom the current license for such dog or cat was issued, of the whereabouts of such dog or cat.

10.36.100 Impounded dogs or cats—Failure to give notice—Charging fee prohibited when.

If the director does not comply with Section 10.36.090, he shall charge no fee of any kind for any board or care of such dog or cat, until such time as the required notice is given.

10.36.110 Impounded animals—Newspaper notices authorized.

The director may, upon impounding of any animal, cause to be published, in any newspaper circulated within the community wherein any such animal was taken up, a notice of description of such animal, the date of such taking up and impounding, and the address of the animal shelter wherein such animal is being held.

10.36.120 Impounded dogs and cats wearing current, valid license tag—Destruction or

other disposition conditions.

Dogs and cats wearing current, valid license tag, issued by the county of Los Angeles or any municipality within the county of Los Angeles, impounded pursuant to this Division 1, shall not be destroyed or otherwise disposed of unless:

A. The person to whom the current license for such dog or cat was issued so directs; or

B. Six business days have elapsed since such person was notified of the whereabouts of his dog or cat by telephone; or

C. Six business days have elapsed since a letter, postage fully prepaid, addressed to such person at his last known address and informing such person of the whereabouts of his dog or cat, has been deposited in the United States mail.

Notwithstanding the foregoing, a dog or cat which is irremediably suffering from a serious illness or severe injury shall not be held for owner redemption or for adoption. Any stray animal that is impounded pursuant to this Division 1, shall, prior to the killing of the animal for any reason other than irremediable suffering, be released to a nonprofit humane organization, as defined in Section 501(c)(3) of the Internal Revenue Code, animal rescue or adoption organization if requested by the organization prior to the scheduled killing of the animal. In addition to the required spay or neuter deposit, the Department may assess the standard adoption fee for animals released.

10.36.130 Redemption of impounded animals—Conditions generally.

The owner or person entitled to the custody of any animal taken up and impounded under the provisions of this Division 1 may, at any time before the sale or disposal thereof as herein provided, redeem such animal by paying to the director the fees and charges prescribed by this Division 1 accruing up to the time of such redemption.

10.36.160 Impounding fees—Described.

The impounding fee does not include any cost of feeding or caring for any dog or cat except during the day on which it is impounded, but the fee for such care and feeding may be collected for each day, except the day on which it is impounded, during which such dog or cat is in the custody of the director.

10.36.170 Impounding fees—Cost of giving notice included.

For giving notice of the impounding of any animal, the actual cost of the publication of any notice published for such animal shall be collected.

10.36.180 Impounding fees—For rabbits, poultry and other animals.

The estimated cost of impounding, feeding and caring for rabbits, birds, poultry, fowls, livestock or other animals not otherwise provided for in Division 1 shall be collected.

10.36.190 Impounding fees—Veterinary care.

A. The director may employ a private veterinarian if necessary to properly care for and maintain any animal.

B. When a veterinarian's fee has been paid or incurred for the care or treatment of an animal, such animal shall not be redeemed without payment by the owner of all fees and costs.

10.36.200 Impoundment fees—Not charged when animal taken up unlawfully.
A charge shall not be collected for any animal which has been unlawfully taken up and impounded. Such animal shall be immediately delivered upon demand to the owner or person entitled to the custody thereof.

10.36.210 Dogs—Release conditions.
The director shall not release any dog which has been redeemed by the owner unless such dog does not have rabies, and:
A. The owner exhibits a certificate signed by a veterinarian licensed either by the state of California or by any other state to practice veterinary medicine that:
1. Such dog has been vaccinated with approved rabies vaccine within a period of not more than 12 months after the dog's initial vaccination if the dog was between four months and one year in age at the time of such initial vaccination; or
2. Such dog has been vaccinated with approved vaccine within the past 36 months; or
3. Such dog should not be vaccinated with rabies vaccine because such vaccination would jeopardize the health of such dog due to infirmity or other disability, which infirmity or disability and the estimated date of termination is shown on the face of the certificate; or
4. A department veterinarian has so vaccinated such dog within the times specified in subsection A of this section.

10.36.220 Dogs—Nonpayment of impound fees and charges—Abandonment.
The refusal or failure of the owner of any impounded dog to pay the fee and charges after due notification shall be held to be an abandonment of the dog by the owner.

10.36.230 Release of animals—Proof of proper care required.
The director shall not release to its owner, or sell, any animal that has been impounded in accordance with the provisions of this Division 1, unless the person to whom the animal is released or sold provides satisfactory proof that the animal will be maintained in accordance with the provisions of the ordinance codified in this Division 1 or any other ordinance or statute.

10.36.240 Purchase of animals without current, valid tag—Waiver of liability for unhealthy animals.
Notwithstanding any other section of this Division 1, any diseased, ill, unwell or unhealthy animal may be purchased not less than four business days after impoundment, at the discretion of the director, provided the purchaser signs a waiver of liability as to any existing disease, illness or injury.

10.36.245 Animal not suitable for placement.
The director may declare an individual animal not suitable for placement which demonstrates aggressive behavior, prior history of such behavior, or is irremediably suffering from a serious illness or severe injury.

10.36.250 Purchase of animals—Exchange following sale permitted when.
Any purchaser of a dog or cat, other than at auction, within seven days after such purchase (excluding the day of purchase) may exchange such dog or cat for another dog or cat. If the amount which the director would charge for the substituted dog or cat is greater than the amount paid for the original dog or cat, the purchaser shall pay the difference. In no event will any part of the purchase price of the original dog or cat be refunded, even though the price of the substituted dog or cat is less than the price paid for the original dog or cat.

10.36.260 Dogs and cats—Vaccination authorized when.
If the director finds that any dog or cat impounded in a county animal shelter probably can be sold, or that in order to protect the public health such dog or cat should be vaccinated, he may order the vaccination of such dog or cat with an approved rabies vaccine.

10.36.270 Examination for rabies authorized when.
If the director suspects that any animal impounded has rabies, he shall hold such animal for inspection by, and shall notify, the director of public health. The director of public health shall examine such animal, and if he believes such animal should be held for further observation, he shall so inform the director, who shall hold such animal as directed.

10.36.280 Release when no rabies found.
If the director of public health finds that such animal examined under Section 10.36.270 does not have rabies, the director shall release it or dispose of it as provided in this Division 1.

10.36.290 Confinement when rabies found.
If the director of public health finds that such animal examined under Section 10.36.270 is afflicted with rabies, the director shall confine it as directed by the director of public health.

10.36.300 Examination of animals suspected of rabies—Limitation on acts authorized.
Nothing in Sections 10.36.270, 10.36.280 or 10.36.290, or any other portion of this Division 1, shall be construed to either authorize or require any person, other than a person having a California State Veterinary License, to practice veterinary medicine, or to do any act in violation of the Business and Professions Code.

10.36.310 Destruction or other disposition—Animals running at large or maintained illegally.
Not less than four business days after taking up and impounding any animal found running at large without a current, valid identification issued by the department or other municipality in the county of Los Angeles, or which is otherwise being maintained contrary to the provisions of this Division 1, unless it sooner be redeemed by its owner, or is not suitable for adoption pursuant to Section 10.36.240 of this code, the director may destroy, or sell or give such animal to any entity, unless the disposition of such

animal is covered by some other section of this Division 1.

~~10.36.340 Spaying or neutering—Condition of sale—Deposit required.~~
~~As a condition to the sale or giving away of any dog that has not been spayed or neutered, the purchaser or recipient shall deposit with the department of animal care and control, at the time of the sale or giving away, an amount determined by the director to be sufficient to cover the costs of neutering or spaying the dog but in no event shall such deposit exceed $40.00. Such deposit is to be paid to a licensed veterinarian upon proof that he has performed the required neutering or spaying operation within the time period as set forth in Section 10.36.370, and may include an amount necessary to recover any additional costs to the department under this chapter.~~

~~10.36.350 Spaying or neutering—Condition of sale—Deposit of moneys.~~
~~Whenever, in connection with the sale of any dog, the director shall receive a deposit to cover the cost of spaying or neutering, the money so received shall be deposited in a trust fund in the county treasury.~~

~~10.36.360 Spaying of neutering—Deposit paid to veterinarian.~~
~~Whenever a dog has been spayed or neutered as provided herein, the depositor shall be entitled to have the deposit paid to the licensed veterinarian performing the above operation, or the director may return the deposit to the person purchasing or receiving the dog upon written statement or receipt from the licensed veterinarian that the dog has been spayed or neutered, and the director shall draw the necessary demand on the auditor therefor.~~

~~10.36.370 Spaying or neutering—Deposit forfeited without proof of operation—Conditions.~~
~~Any dog over six months of age at the time it is sold or given away shall be spayed or neutered within 60 days or the deposit shall be deemed forfeited. Any dog under six months of age at the time it is sold or given away shall be spayed or neutered within 60 days after reaching the age of six months or the deposit shall be deemed forfeited. The director may extend such time periods in writing upon the showing of good cause therefor. The age of the dog for purposes of this chapter shall be determined by the department. At least 30 days before the end of the said 60-day period, or any written extension thereof, the department shall send the purchaser notice by mail to the address on file with the department, informing the purchaser that failure to furnish satisfactory proof of performance of the operation prior to the end of the 60-day period or its extension shall result in forfeiture of the deposit. If said notice has been sent and the allotted time has elapsed without satisfactory proof of performance of the operation, the deposit shall be forfeited and the director shall transfer such money from the trust fund to the county treasury.~~

~~10.36.380 Spaying or neutering—Deposit refund conditions.~~
~~Whenever any dog which has been purchased from the department of animal care and control, while it was under the age of six months, dies or is destroyed prior to being~~

~~spayed or neutered as required in this chapter, the purchaser shall be entitled to a refund upon presenting satisfactory proof to the director of such death or destruction, and the director shall draw the necessary demand on the auditor therefor. No refund shall be made, however, where death or destruction occurs following the time within which the aforementioned operation was required to be performed.~~

Chapter 10.37 POTENTIALLY DANGEROUS AND VICIOUS DOGS

10.37.010 Purpose of this chapter.

Within the county of Los Angeles there are potentially dangerous and vicious dogs that have become a serious and widespread threat to the safety and welfare of the citizens of the county which should be abated. The provisions of this chapter set forth the procedures by which a dog is found to be a potentially dangerous dog or a vicious dog, thereby becoming subject to appropriate controls and other actions. This chapter is intended to supplement rather than supplant any other remedy available under state statute or county ordinance.

10.37.020 Potentially dangerous dog—Definition.

Potentially dangerous dog means any of the following:

A. Any dog which, when unprovoked, on two separate occasions within the prior 36-month period, engages in any behavior that requires a defensive action by any person to prevent bodily injury to any person, domestic animal or livestock, off the property of the owner or custodian of the dog;

B. Any dog which, when unprovoked, bites a person or otherwise engages in aggressive behavior, causing a less severe injury than as defined in Section 10.37.040;

C. Any dog which, when unprovoked, has killed, seriously bitten, inflicted injury, or otherwise caused injury to a domestic animal or livestock off the property of the owner or custodian of the dog.

10.37.030 Vicious dog—Definition.

"Vicious dog" means any of the following:

A. Any dog that engages in or has been found to have been trained to engage in exhibitions of fighting;

B. Any dog which, when unprovoked, in an aggressive manner, inflicts severe injury on or kills a person;

C. Any dog previously determined to be and currently listed as a potentially dangerous dog in Los Angeles County, or to be a dangerous or vicious dog in another jurisdiction, which, after its owner or custodian has been notified of this determination, continues the behavior described in Section 10.37.020 or is maintained in violation of Section 10.37.130, an administrative decision, a court order or restrictions placed upon it by another jurisdiction.

10.37.040 Severe injury—Definition.

"Severe" injury means any physical harm to a human being that results in a serious illness or injury, including but not limited to a major fracture, muscle tears or disfiguring

lacerations requiring multiple sutures or corrective or cosmetic surgery.

10.37.050 Enclosure—Definition.
"Enclosure" means a fence or structure suitable to prevent the entry of young children, and which is suitable to confine a potentially dangerous or a vicious dog in conjunction with other measures which may be taken by the owner or custodian of the dog. The enclosure shall be designed to prevent the animal from escaping. The animal shall be housed pursuant to section 597t of the Penal Code.

10.37.060 Department—Definition.
"Department" means the department of animal care and control.

10.37.070 Impounded—Definition.
"Impounded" means taken into the custody of the department.

10.37.080 Exemptions.
This chapter does not apply to humane society shelters, animal control facilities, or veterinarians or to dogs while utilized by any police department or any law enforcement officer in the performance of police work.

10.37.090 Right of entry and inspection.
A duly authorized employee or agent of the department or any law enforcement officer may enter and inspect private property in the manner as set forth in Section 10.12.210. Upon inspection, the department may act to enforce the provisions of this chapter.

10.37.100 Authority to seize and impound animal posing an immediate threat to public safety.
A. If upon investigation it is determined by the animal control officer or law enforcement officer that probable cause exists that the dog in question poses an immediate threat to public safety, then the animal control officer or law enforcement officer may seize and impound the dog pending the hearing to be held pursuant to this chapter. The owner or custodian of the dog shall be liable for the costs and expenses of keeping the dog impounded if the dog is later adjudicated potentially dangerous or vicious. Such costs and expenses shall be paid prior to the release of the dog.
B. When a dog has been impounded pursuant to subsection A and it is not contrary to public safety, the director of the department of animal care and control shall permit the animal to be confined at the owner's expense in a department-approved animal or veterinary facility.

10.37.110 Potentially dangerous or vicious dog hearing.
A. Hearing. If an animal control officer or a law enforcement officer has investigated and determined that there is probable cause that a dog is potentially dangerous or vicious, the director of the department of animal care and control shall petition the Superior Court, within the judicial district wherein the dog is owned or kept, for a hearing, or shall serve a petition for an administrative hearing, to determine whether or not the dog in question should be declared potentially dangerous or vicious.

B. Notice of Hearing and Petition. Whenever possible, a complaint received from a member of the public which serves as the evidentiary basis for the animal control officer or law enforcement officer to find probable cause shall be sworn to and verified by the complainant and shall be attached to the petition. The director of the department of animal care and control shall notify the owner or custodian of the dog that a hearing will be held by the Superior Court or that an administrative hearing will be held, at which time he or she may present evidence as to why the dog should not be declared potentially dangerous or vicious. The owner or custodian of the dog shall be served with notice of the hearing and a copy of the petition, either personally or by first class mail. The hearing shall be held promptly within no less than five (5) working days nor more than ten (10) working days after the service of the notice upon the owner or custodian of the dog. For purposes of this chapter, service is complete upon deposit of the document(s) in the mail or when documents are personally served.

C. Conduct of Hearing. The hearing shall be conducted as an administrative hearing, or a limited civil case pursuant to Code of Civil Procedure Section 85, et seq., open to the public. The judicial officer or administrative hearing officer may admit into evidence all relevant evidence, including incident reports and the affidavits of witnesses, limit the scope of discovery, and may shorten the time to produce records or witnesses. A jury shall not be available. The judicial officer or administrative hearing officer may find, upon a preponderance of the evidence, that the dog is potentially dangerous or vicious and shall make other orders or findings required or authorized by this chapter. The judicial officer or administrative hearing officer may decide all issues for or against the owner or custodian of the dog even if the owner or custodian fails to appear at the hearing.

D. Administrative Hearing Officer. If the dog owner or custodian is notified that an administrative hearing will be held, the hearing shall be conducted by a neutral hearing officer. The department may authorize its own officer or employee to conduct the hearing if the hearing officer is not the same person who signed the petition or directed the seizure or impoundment of the dog, and is not junior in rank to that person(s). In the alternative, the department may utilize the services of a hearing officer from outside the department.

10.37.120 Notice of determination and appeal from court hearing.

A. Following a court hearing conducted pursuant to Section 10.37.110, the owner or custodian of the dog shall be notified in writing of the determination and order issued, either personally or by first class mail, postage prepaid by the court. If the petitioner or the owner or custodian of the dog contests the determination, he or she may, within fourteen (14) calendar days after the mailing of the notice of determination, appeal the decision, which appeal shall be made to the Superior Court before a judge other than the judge who originally heard the petition. The fee for filing an appeal shall be the fee provided for by Section 31622(a) of the Food and Agricultural Code and shall be payable to the county clerk. The petitioner or the owner or custodian of the dog shall serve notice of the appeal upon the other party personally or by first class mail, postage prepaid.

B. The court hearing the appeal shall conduct a hearing de novo, without a jury, and make its own determination as to potential danger and viciousness, and make any

orders authorized by this chapter, based upon the evidence presented. The hearing shall be conducted in the same manner and within the time periods set forth in Section 10.37.110. The court may admit all relevant evidence, including incident reports and the affidavits of witnesses, limit the scope of discovery, and may shorten the time to produce records or witnesses. The issue shall be decided upon the preponderance of the evidence.

C. The court hearing the appeal may decide all issues for or against the owner or custodian of the dog even if the owner or custodian fails to appear at the hearing.

D. The determination of the court hearing the appeal shall be final and conclusive upon all parties.

10.37.121 Notice of decision and judicial review of administrative decision.
Following an administrative hearing conducted pursuant to Section 10.37.110, a written notice of the decision shall be served on the department and the owner or custodian of the dog either personally or by first class mail. If the department or the owner or custodian of the dog desires to contest the decision, the department or the owner/custodian shall notify the other party, in writing, within fourteen (14) calendar days after the decision is served, of the intention to seek judicial review of the decision. The party seeking judicial review by the Superior Court shall comply with all requirements of Code of Civil Procedure Section 1094.5 et seq.

10.37.130 Consequences of potentially dangerous dog determination.
The following conditions apply to a dog determined to be potentially dangerous:

A. The dog shall be properly licensed, microchipped, and vaccinated at the owner or custodian's expense, prior to release to the dog's owner or custodian. If the dog was not impounded, the dog owner or custodian shall provide proof that the dog is licensed, microchipped and vaccinated within fourteen (14) calendar days after the decision or court order declaring the dog to be potentially dangerous is served on the dog owner or custodian. The department may include the designation in the registration records of the dog, after the court has determined that the designation applies to the dog.

B. The dog, while on the owner or custodian's property, shall, at all times, be kept indoors, or in a securely fenced yard or enclosure from which the dog cannot escape, and into which children cannot trespass. The yard or enclosure shall be inspected and approved in writing by the department prior to release of the dog to its owner or custodian. If the dog was not impounded, the yard shall be inspected and approved in writing by the department within fourteen (14) calendar days after the decision or court order declaring the dog to be potentially dangerous is served on the dog owner or custodian.

C. The dog may be off the owner or custodian's premises only if it is muzzled and restrained by a substantial leash, not exceeding six (6) feet in length, and if it is under the control of an adult capable of restraining and controlling the dog. At no time may the dog be left unattended while off the owner or custodian's premises.

D. The owner or custodian of the dog shall notify the department immediately if the dog is at large, or has committed an attack on any person, domestic animal or livestock. If the dog no longer resides with the owner or custodian of record, or, the dog is transferred to another person(s), the owner or custodian shall advise the

department of the dog's new location, in writing under penalty or perjury, and provide a copy of the administrative decision or court order declaring the dog to be potentially dangerous, to the new owner and custodian. Each subsequent owner or custodian shall provide each new owner and custodian with a copy of the administrative decision or court order during the effective period of the decision or court order. Likewise, if the dog is moved to another jurisdiction, the owner or custodian is required to provide the animal control authorities in the new jurisdiction with a copy of the administrative decision or court order during the effective period of the decision or court order.

E. The dog shall complete an obedience course for a minimum of ten (10) hours of training with the owner or custodian at his or her expense within sixty (60) calendar days after release of the dog to its owner or custodian. The course shall be a course approved by the department prior to the release of the dog to the owner or custodian. If the dog was not impounded, the dog owner or custodian shall obtain approval by the department within fourteen (14) calendar days after the decision or court order declaring the dog to be potentially dangerous is served on the dog owner or custodian.

F. The dog shall be spayed or neutered at the expense of the owner or custodian prior to the release of the dog to its owner or custodian. If the dog was not impounded, the dog owner or custodian shall provide proof that the dog has been spayed or neutered within thirty (30) calendar days after the decision or court order declaring the dog to be potentially dangerous is served on the dog owner or custodian.

G. The dog may be required to wear a bright reflective collar visible at 50 feet in normal daylight, which will be provided by the department at the owner or custodian's expense.

H. The owner or custodian of the dog may be required to maintain general liability insurance covering property damage and bodily injury caused by a potentially dangerous or vicious dog, with a combined single limit of $300,000.00 per occurrence. If required to maintain such insurance, the owner or custodian is required to show proof of insurance within fourteen (14) calendar days after the decision or court order declaring the dog to be potentially dangerous is served on the dog owner or custodian.

I. All charges for services performed by the department pursuant to this Section 10.37.130 and all fines shall be paid prior to the release of the dog to its owner or custodian or within fourteen (14) calendar days after the services are performed or the charges and fines are ordered to be paid. If the charges and fines are not paid within fourteen (14) calendar days after the services are performed or the fines are ordered to be paid, the dog shall be deemed to be abandoned and may be disposed of by the department.

J. If the determination that a dog is potentially dangerous under Section 10.37.020, is made pursuant to a court hearing, the judicial officer shall impose a fine on the owner or custodian not to exceed $500.00 for each separate basis upon which the determination was made. The fine shall be paid to the department for the purpose of defraying the costs of the implementation of this chapter.

K. A judicial officer or administrative hearing officer may impose such other reasonable conditions as are deemed necessary to protect the public safety and welfare.

10.37.140 Consequences of vicious dog determination.

A. A dog determined to be a vicious dog may be destroyed by the department when it is found, after proceedings conducted under Section 10.37.110, that the release of the dog would create a significant threat to the public health, safety and welfare.
B. If it is determined that a dog found to be vicious shall not be destroyed, the judicial officer or administrative hearing officer shall impose the conditions on an owner and custodian of potentially dangerous dogs required by Section 10.37.130, the conditions required by this section, and any other conditions necessary to protect the public health, safety, and welfare.
C. The enclosure that is required pursuant to subsection B of Section 10.37.130 shall be an enclosure which is enclosed on all sides, and which is locked by a padlock. It may be required to have a top and a cement floor. The enclosure shall be approved in writing by the department, prior to the release of the dog to the owner or custodian. If the dog was not impounded, the dog owner or custodian shall obtain approval by the department within fourteen (14) calendar days after the decision or court order declaring the dog to be vicious is served on the dog owner or custodian.
D. The owner or custodian of a vicious dog shall give written notice of the vicious dog determination to United States Post Office (local branch) and all utility companies which provide services to the premises where the dog is kept. The owner or custodian shall provide a copy of the notices to the department prior to the release of the dog from impound. If the dog was not impounded, the dog owner or custodian shall provide a copy of the notices to the department within fourteen (14) calendar days after the administrative hearing or court determination declaring that the dog is vicious.
E. The owner or custodian of the dog shall post one or more signs on the premises at a location(s) approved by the department stating that a dog which has been determined to be vicious resides on the premises. The signs shall be posted within fourteen (14) calendar days after the decision or court order declaring the dog to be vicious is served on the owner or custodian.
F. If the determination that a dog is vicious under Section 10.37.030, is made pursuant to a court hearing, the judicial officer shall impose a fine on the owner and/or custodian not to exceed $1,000.00 for each separate basis upon which the determination was made. The fine shall be paid to the department for the purpose of defraying the cost of the implementation of this chapter.
G. The owner or custodian of a dog determined to be a vicious dog may be prohibited from owning, keeping, possessing, controlling, or having custody of any dog for a period of up to three years, if it is found at the hearing conducted pursuant to the petition to declare the dog vicious, that ownership or possession of a dog by that person would create a significant threat to the public health, safety, and welfare.

10.37.150 Compliance with conditions and consequences of violation of conditions.
A. The hearing officer or judicial officer who heard the petition to determine if a dog is potentially dangerous or vicious may schedule follow-up hearing dates to ensure compliance with all conditions imposed.
B. Consequences that may result from the failure of an owner or custodian of a dog released after a hearing pursuant to Section 10.37.110 or Section 10.37.120 to comply with any of the conditions imposed under Section 10.37.130 or Section

10.37.140 include, but are not limited to the following:
1. The failure to comply with any condition is a misdemeanor punishable by a fine not exceeding $1,000.00 or by imprisonment in the County Jail for a period not exceeding six months, or by both such fine and imprisonment;
2. A violation of any part of an administrative decision or court order may be the subject of a civil action for injunctive relief to enjoin the person who violated the decision or order. The filing and prosecution of an action for injunctive relief shall not limit the authority or ability of the County to take any other action permitted by law;
3. A violation of an administrative decision or court order following a determination that a dog is potentially dangerous, may result in the filing of an action to determine if the dog is vicious under Section 10.37.030 C.

10.37.160 Removal of designation.
If there are no additional instances of the behavior described in Section 10.37.020 within a 36-month period from the date of designation as a potentially dangerous dog, the dog shall be removed from the list of potentially dangerous dogs. The dog may, but is not required to be, removed from the list of potentially dangerous dogs prior to the expiration of the 36-month period if the owner or custodian of the dog demonstrates to the department that changes in circumstances or measures taken by the owner or custodian, such as the training of the dog, have mitigated the risk to the public safety.

10.37.170 Exceptions.
A. No dog may be declared potentially dangerous or vicious if any injury or damage is sustained by a person who, at the time the injury or damage was sustained, was committing a willful trespass or other tort upon premises occupied by the owner or custodian of the dog, or was teasing, tormenting, abusing, or assaulting the dog, or was committing or attempting to commit a crime. No dog may be declared potentially dangerous or vicious if the dog was protecting or defending a person within the immediate vicinity of the dog from an unjustified attack or assault. No dog may be declared potentially dangerous or vicious if an injury or damage was sustained by a domestic animal or livestock which at the time of the injury or damage was sustained was teasing, tormenting, abusing or assaulting the dog.
B. No dog may be declared potentially dangerous or vicious if the injury or damage to a domestic animal or livestock was sustained while the dog was working as a hunting dog, herding dog, or predator control dog on the property of, or under the control of, its owner or custodian, and the damage or injury was to a species or type of domestic animal or livestock appropriate to the work of the dog.

10.37.180 Infraction/misdemeanor penalty for dog bites.
In addition to the conditions and restrictions imposed on the ownership of potentially dangerous and vicious dogs set forth in this chapter, an owner or custodian of a dog who permits, allows or causes a dog to run, stray or be uncontrolled or at large upon a public street, sidewalk, park or other public property, or in or upon the private property of another person, is guilty of a public offense punishable as an infraction or misdemeanor if such dog bites, attacks or causes injury to any person or to a domestic animal or livestock.

Chapter 10.39 RODEOS

10.39.010 Rodeos—Purpose of section—Permit required.

A. The purpose of this section is to provide the department with a method to supervise and enforce minimum safety standards in the care and conduct of animals used in rodeos. The department shall establish standard rules and safety regulations for the general conduct of rodeos in order to accomplish such purpose.

B. Notwithstanding the provisions of Section 7.90.590 of this code, any applicant for a rodeo permit shall furnish the department with the following:

1. A list of all proposed events and acts including the dates, times and locations of all events and acts;
2. A detailed diagram of the arena indicating the location of chutes, catch chutes and pens for all events and acts; and
3. A copy of the applicant's rules and regulations which will govern the conduct of the contestants and events, except that such rules shall be consistent with the standard rules and regulations for rodeos established by the department.

C. No person shall intentionally trip or fell any equine animal by the legs or by any means whatsoever for the purpose of entertainment or sport.

Chapter 10.40 GENERAL REQUIREMENTS

10.40.010 Animal care—Requirements for animal owners and animal facilities.

Every person, within the county of Los Angeles, who owns any animal or who owns, conducts, manages or operates any animal facility for which a license is required by this Division 1, shall comply with each of the following conditions:

A. Housing facilities for animals shall be structurally sound and shall be maintained in good repair, to protect the animals from injury, to contain the animals, and to restrict the entrance of other animals.

B. All animals shall be supplied with sufficient good and wholesome food and potable water that is free from debris and is readily accessible and available as often as the feeding habits of the respective animals require.

C. Animals shall be groomed and kept in a manner which is not injurious to their health. All animal buildings or enclosures shall be maintained in a clean and sanitary condition to control odors and to prevent the spread of disease.

D. All animals shall be so maintained as to eliminate excessive and nighttime noise.

E. No animals shall be without attention more than 12 consecutive hours; whenever an animal is left unattended at a commercial animal facility, the telephone number of the department of animal care and control, or the name, address and telephone number of the responsible person, shall be posted in a conspicuous place at the front of the property. Animal facilities that breed dogs shall comply with the applicable minimum staffing requirements set forth in Section 10.40.200.

F. Animals shall not be neglected, teased, abused, mistreated, annoyed, tormented or in any manner made to suffer by any person or means.

G. No condition shall be maintained or permitted that is or could be injurious to the animals. Tethering of animals is prohibited except as permitted under California Health and Safety Code Section 122335.

H. Animal buildings and enclosures shall be so constructed and maintained as to prevent escape of animals. All reasonable precautions shall be taken to protect the public from the animals and the animals from the public.

I. Every animal facility shall isolate sick animals so as not to endanger the health of other animals.

J. Every building or enclosure where animals are maintained shall be constructed of material easily cleaned and shall be kept in a sanitary condition and in good repair. The building shall be properly ventilated to prevent drafts and to remove odors. Heating and cooling shall be provided as required, according to the physical need of the animals, with sufficient light to allow observation of animals and sanitation. An animal facility housing animals must be equipped with working smoke alarms and have means of fire suppression, such as a sprinkler system in each room where animals are kept, or functioning fire extinguishers.

K. An animal shall be taken to a veterinarian for examination or treatment, if the director finds it necessary to maintain the health of the animal, and orders the owner or custodian to do so.

L. All animal enclosures, including, but not limited to rooms, cages, and kennel runs, shall be of sufficient size to provide adequate and proper accommodations for the animals kept therein. An enclosure with a wire bottom may only be used temporarily, and be in compliance with Health and Safety Code Sections 122065 and 122065.5.

If enclosures, such as crates and other mobile enclosures are stacked upon one another, or on a surface other than the floor, the crates/enclosures must be securely fastened and designed and arranged so that: there is no danger of an enclosure falling; the animals do not have direct access to one another; and waste from one (1) enclosure cannot be transmitted to another enclosure. Food and water containers must be secured to prevent spillage. Crates may be stacked no more than two (2) crates high.

M. Every violation of an applicable regulation shall be corrected within a reasonable time to be specified by the director.

N. Proper shelter and protection from the weather shall be provided at all times.

O. An animal shall not be given any alcoholic beverage, unless prescribed by a veterinarian.

P. Animals which are natural enemies, temperamentally unsuited, or otherwise incompatible, shall not be quartered together, or so near each other as to cause injury, fear or torment. If two or more animals are so trained that they can be placed together and do not attack each other or perform or attempt any hostile act to the others, such animals shall be deemed not to be natural enemies.

Q. Any tack, equipment, device, substance or material that is, or could be, injurious or cause unnecessary cruelty to any animal shall not be used.

R. Working animals shall be given adequate rest periods. Confined or restrained animals shall be given exercise appropriate for the individual animal under particular conditions.

S. An animal which is overheated, weakened, exhausted, sick, injured, diseased, lame or otherwise unfit shall not be worked, used or rented.
T. Any animal which the department has suspended from use may not be worked or used until released by the department.
U. Animals bearing evidence of malnutrition, ill health, unhealed injury or having been kept in an unsanitary condition shall not be displayed.
V. Any animal whose appearance is or may be offensive or contrary to public decency shall not be displayed.
W. No animal shall be allowed to constitute or cause a hazard, or be a menace to the health, peace or safety of the community.
X. A person shall not violate any condition imposed by the director on any license issued by the department.

10.40.015 Sale of live animals—Prohibited at swap meet.
Any person who maintains, operates, leases, rents or lends space at a swap meet shall not permit, cause, display for, or promote the sale of live animals at such swap meet. "Live animal" as defined by this section shall include, but is not limited to dogs, cats, birds, fish, poultry, rabbits and livestock.

10.40.016 Sale of animals on shelter property.
No person shall sell, barter, give away or accept animals on shelter property unless authorized by the director.

10.40.020 Young rabbits or fowl—Certain acts prohibited.
A. A person shall not:
1. Sell, offer for sale, barter, or give away, as pets, toys, premiums or novelties any baby chickens, ducklings or other fowl under three months of age, or rabbits under two months of age; or
2. Color, dye, stain or otherwise change the natural color of the above-described fowl or rabbits; or
3. Bring or transport the above-described fowl or rabbits into the county of Los Angeles.
B. This section does not prohibit any act prohibited by, or permitted by, Section 599 of the Penal Code or any other statute.

10.40.030 Young rabbits or fowl—Display, maintenance or sale permitted when.
This chapter does not prohibit the sale or display of any of the fowls or rabbits described herein, in proper facilities by breeders or stores engaged in the business of selling for commercial breeding or raising, or for food, or their exhibition at any fair, show or exhibit where such fowls or animals are displayed for commercial purposes and in the interest of improving agriculture or industry.

10.40.040 Animal facilities—Records required for each animal.
A. The holder of an animal facility license shall maintain the following current records, which shall be available for inspection on the premises:
1. The name, current address and telephone number of the owner of each animal

kept at the animal facility;
2. The date the animal entered and left the animal facility, including the records of animals that die while at the facility;
3. The reason for the animal being at the animal facility, such as for boarding, sale, breeding or grooming;
4. The description of the animal, including its age, breed, sex, color and other available identifying information, such as an animal license number, tattoo or microchip registration number.
B. A current, valid rabies certificate shall be maintained for every dog over four months of age while the dog is kept at the animal facility.
C. Any animal facility selling dogs and cats to the public shall post a conspicuous notice containing the following information on each dog or cat's cage: the breeder's name, address and license number. If the breeder's name is not known, then the name and address of the person from whom the dog or cat was obtained shall be displayed.

10.40.050 Dog kennels—Surfacing and sanitation of dog runs.
Dog kennel runs shall be of concrete, provided with adequate draining for proper sanitation, or, if sand or pea gravel is used, droppings must be picked up and disposed of and the runs treated periodically with an effective disinfectant.

10.40.060 Animal nuisances prohibited where.
A. A person having custody of any dog or animal shall not permit, either wilfully or through failure to exercise due care or control, any such dog or animal to commit any nuisance upon the sidewalk of any public highway; or upon the floor of any common hall in any apartment house, tenement house, hotel or other multiple dwelling; or upon any entranceway, stairway or wall immediately abutting on a public sidewalk; or upon the floor of any theater, shop, store, office building or other building used in common by the public; or upon the floor or stairway of any depot or station or public waiting room; or upon the floor, stairway, entranceway, office, lobby or patio used in common by the public; or, without the consent of the owner or person in lawful occupation thereof, any lawn, yard, or any other private property whatever, which is either improved or occupied.
B. It is unlawful for the owner or person having custody of any dog or other animal to permit, either wilfully or through failure to exercise due care or control, any such dog or animal to commit any nuisance and to allow such nuisance to thereafter remain upon any public or private property not owned or possessed by the owner or person in control of said animal, provided that the person who owns, harbors, keeps or has charge or control of a dog (other than a sightless person who has charge or control of a guide dog) shall immediately and securely enclose all feces deposited by such dog in a bag, wrapper or other container and dispose of the same in a sanitary manner. Any person (other than a sightless person with a guide dog) who has charge or control of a dog in a location other than on the property of such person or the property of the owner of the dog, shall have in his or her possession a suitable wrapper, bag or container (other than articles of personal clothing) for the purpose of complying with the requirements of this section. Failure of such person to carry such wrapper, bag or container when in charge or control of a dog in a location other than on property of

such person or the property of the owner of the dog or animal shall constitute a violation of this section.
C. For the purpose of this section a "nuisance" committed by a dog or animal shall mean defecation by said animal.

10.40.065 Public nuisance.
A. Any animal (or animals) which molests passersby or passing vehicles, attacks other animals, trespasses on school grounds, is repeatedly at large, damages and or trespasses on private or public property, barks, whines or howls in a continuous or untimely fashion, shall be considered a public nuisance.
B. Every person who maintains, permits or allows a public nuisance to exist upon his or her property or premises, and every person occupying or leasing the property or premises of another and who maintains, permits or allows a public nuisance as described above to exist thereon, after reasonable notice in writing from the department of animal care and control has been served upon such person to cease such nuisance, is guilty of a misdemeanor. The existence of such nuisance for each and every day after the service of such notice shall be deemed a separate and distinct offense.

10.40.070 Wild animals—Enclosure requirements.
All wild animals shall be maintained in buildings, enclosed yards, paddocks or cages, as specified by the director, and such shall be kept at distances from adjacent buildings as specified in Los Angeles County Zoning Ordinance 1494, codified at Title 22, and Los Angeles County Public Health Code Ordinance 7583, codified at Title 11.

10.40.080 Wild animals—Exemptions to applicability of Division 1 regulations.
The provisions of this Division 1 shall not apply to any person keeping or maintaining in his possession or control any wild animal when such person is only transporting such animal through the county and has taken adequate safeguards to protect the public, and has notified the Los Angeles County sheriff's department and the director of the proposed route of transportation and time thereof.

10.40.090 Liability of licensees for acts of employees.
Any act or omission of any employee in caring for the animals is assumed to be an act or omission of the licensee.

10.40.100 Animal facility license holders to provide lists of animals sold—Advertisement and vaccination requirements.
A. Each holder of an animal facility license within the authority of Los Angeles County shall provide the department of animal care and control with a regular listing of all animals sold, including the name and address of the owner, according to the procedure and form as provided by the director.
B. An advertisement for the sale or adoption of an animal shall include the animal facility license number or breeding license number of the seller.
C. Every animal facility shall obtain a rabies vaccination for each dog within its custody or control in accordance with the provisions of Section 10.20.220. Upon the

sale of any dog for which an animal facility has obtained a vaccination pursuant to this section, the owner of the animal facility shall provide the purchaser of the dog with the certificate of vaccination.

10.40.200 Breeding license, restrictions and requirements.
A. General Requirements.
1. Dog Breeding License. A dog breeding license is an animal facility license issued to a person who breeds dogs commercially. A person, as defined in Section 10.08.190, applying for a dog breeding license shall comply with all licensing requirements set forth in Section 10.28.050, all other applicable ordinances, and all federal and State laws, including, but not limited to Health and Safety Code Section 122045 et seq. Approval from the Veterinary Public Health division, Environmental Health division, or any other division of the Department of Public Health, may be required if necessary, due to health concerns. The size category of the dog to be bred (Adult size: 1-20 lbs.; 21-50 lbs.; 51-100 lbs.; and 101+ lbs.) and the number of dogs to be housed at the facility shall be noted on the license. A change in the size category of dogs bred requires reinspection and a new license application.
2. Breeding Facilities Housing Fifty (50) or Fewer Sexually Intact Dogs Over the Age of One (1) Year. An animal facility may not have more than a total of fifty (50) sexually intact dogs over the age of one (1) year, unless it meets the requirements of Subsection A.3. below. An animal facility having fifty (50) or fewer dogs shall have adequate staffing on the premises of the animal facility to attend to the dogs at least eight (8) hours in every twenty-four (24) hour period, so long as the dogs are not left unattended for longer than twelve (12) continuous hours. Whenever the dogs are left unattended, the telephone number of the department of animal care and control, or the name, address and telephone number of the responsible person, shall be posted in a conspicuous place at the front of the property.
3. Breeding Facilities Housing Fifty-One (51) or More Sexually Intact Dogs Over the Age of One (1) Year. The director may approve an application for fifty-one (51) or more dogs if the applicant complies with the following additional requirements:
a. Facilities with fifty-one (51) or more sexually intact dogs over the age of one (1) year will be reinspected more frequently. The number of reinspections per year is determined by the number of dogs housed in the facility:
51-75 dogs: one (1) annual reinspection;
76-100 dogs: two (2) annual reinspections;
101-125 dogs: three (3) annual reinspections;
126-150 dogs: four (4) annual reinspections;
151 + dogs: five (5) annual reinspections.
b. The animal facility demonstrates that it is able to house and care for the number of dogs in compliance with the requirements of this section and all applicable requirements of Title 10;
c. The animal facility provides a written medical program, approved by a California licensed veterinarian, to prevent and control illness and parasitism. The program must include a regular de-worming schedule and a regular vaccination schedule against commonly transmitted canine diseases, and must be updated annually;
d. The animal facility maintains records on site, demonstrating that an annual

veterinary examination has been performed on each intact male or female dog over one (1) year of age. The record of each exam must reflect that a physical exam consisting of auscultation and palpation, and a visual evaluation of the dog including eyes, ears, mouth and general body condition was performed. The record of each exam must also include the weight, temperature, heart rate, respiration, any significant medical findings relating to the dog's condition, and any recommendations for treatment;

e. The animal facility obtains approval from the director of an emergency response plan, which is updated annually; and

f. The animal facility maintains adequate staffing at the facility eighteen (18) hours a day to attend to the animals. Whenever an animal is left unattended, the telephone number of the department of animal care and control, or the name, address and telephone number of the responsible person, shall be posted in a conspicuous place at the front of the property.

B. Health of Breeding Dogs.

1. A female unaltered dog shall be at least twelve (12) months old before being bred. Records of litters birthed are required to be maintained pursuant to Subsection D below;

2. Offspring shall not be removed from the premises earlier than eight (8) weeks of age except for medical reasons ordered by a California licensed veterinarian. The order shall be in writing, state the medical reason for early separation, and be provided to the department, if requested, up to two (2) years after its issuance.

C. Housing Requirements.

1. The animals shall be housed in accordance with Section 10.40.010;

2. Each pregnant dog shall be housed separately at least three (3) days before giving birth and be monitored at reasonable intervals;

3. A dog who has just given birth shall be provided with a contained nesting area and housed with her litter in their own run or enclosure until the newborns are weaned.

D. Dog Identification and Recordkeeping.

1. The following current records shall be maintained and produced upon request to determine licensing compliance or for any other purpose relating to the public health, safety or welfare. These records shall be provided to a purchaser of any dog sold or transferred to another person by the facility:

a. All dogs shall be microchipped or tattooed upon reaching the age of four (4) months or prior to sale or transfer, whichever is earlier. Microchip and tattoo records shall be kept for all dogs.

b. In addition to the records required by California Health and Safety Code Sections 122050 and 122055 relating to dogs, breeding facilities shall keep the following records for all dogs: the date and from whom the dog was acquired; the date of each litter birthed by each female animal; veterinary records; and the cause of death and the method of disposal.

2. Knowingly providing false information or records relating to any animal is a misdemeanor.

E. Reasonable Restrictions on the Breeding of Animals Other Than Dogs. Breeders of animals other than dogs, which are normally kept as pets for sale or exchange in return for consideration, shall comply with all applicable requirements of

Section 10.40.010. In addition, the director may impose reasonable conditions on a breeding license, including a limitation on the number of animals permitted at a facility and may impose recordkeeping requirements, in the interest of the health and safety of the public and of the animals.

F. Noncompliance—Penalties. The penalties for violations of any provision of this Section 10.40.200 are as follows:

1. First Violation. A first violation shall be an infraction punishable by a fine not to exceed two hundred fifty dollars ($250). If the owner or custodian fails to correct the underlying cause of the violation within thirty (30) days after being notified of the violation, it shall be deemed a second violation.

2. Second Violation. A violation within a year of a first violation shall be deemed a second violation. A second violation is a misdemeanor punishable by imprisonment in the county jail for a period not to exceed six (6) months or by a fine not to exceed one thousand dollars ($1,000), or both. Each subsequent violation within one (1) year shall be considered an additional misdemeanor.

G. Noncompliance—Injunctive Relief. Any act or failure to act which is a violation of this Section 10.40.200 may be the subject of a civil action to enjoin the person so acting or failing to act to conform his or her conduct to the provisions of this Section 10.40.200. The filing and prosecution of such an action shall, in no way limit the authority or ability of the County to enforce the requirements of Section 10.40.200 or impose penalties or take any other action permitted by law.

Division 2 ANIMAL HEALTH

10.48.010 Title of Division 2 provisions.

The ordinance codified in Division 2 of this title shall be known, as the "animal health ordinance" and may be cited as such.

10.48.020 Provisions to supplement state law.

This Division 2 shall in all respects be construed to supplement and harmonize with the provisions of the laws of the state of California pertaining to animal industry.

10.48.030 Definitions.

As used in this Division 2:

A. "Accredited veterinarian" means one who has been so designated by the Director of the Animal Disease Eradication Division, Agricultural Research Service, United States Department of Agriculture.

B. "Animals" means any horses, mules, asses, cattle, sheep, goats, hogs, poultry, birds, rabbits, dogs, cats, or any animal or animals ordinarily considered as wild animals, which are kept in captivity or under control or ownership of any person for any purpose.

C. "Approved veterinarian" means one so designated by the California Department of Agriculture to buy, possess or use tuberculin.

D. "Garbage" means all discarded food, animal offal, or fruit and vegetable waste resulting from the preparation of food, or any manufactured product thereof, from, but not limited to, private dwellings, flats, canneries, kitchens, boarding houses, apartment

houses, hotels, restaurants, or other place or institution, public or private, where garbage is produced, or the waste or cleanings from chickens or other fowl, rabbits or other animals, or fish or other sea food, that have been prepared for, or intended to be used as food. "Garbage" does not include market refuse, or the hides, fat or bones of four-footed animals, or grease, meat scraps or other similar material being transported to a rendering plant for processing.

E. "Immediate slaughter" means and applies to animals shipped to a public stockyards and released therefrom for slaughter, and to animals shipped to the plant or premises of a firm regularly engaged in the slaughter of animals under approved inspection.

F. "Infectious disease" means and includes any infectious, contagious or communicable disease considered by the director of health services to be dangerous to the welfare of the county of Los Angeles and to the health of the animals therein, sufficient to warrant putting into effect the provisions of this Division 2 and his rules and regulations.

G. "Institution" means any school, hospital, rest home, sanitarium, church, club, or any other establishment.

H. "Market refuse" means waste vegetables or fruit, or the cuttings, trimmings, residue or scraps therefrom, that have resulted from the preparation of vegetables or fruit in markets or packing houses for public sale in markets, and shall not include meat scraps, bones or other garbage.

I. "Modified accredited area" is an area so declared by the Director of the Animal Disease Eradication Division, Agricultural Research Service, United States Department of Agriculture, as the result of official tuberculin tests of all cattle in said area, to have less than one-half of one percent of infection.

J. "Packing house" means any place where meat, fruit, vegetables or fish are packed, prepared or stored.

K. "Person" means any person, firm, company, association or corporation, their agents or employees.

L. "Stockyards" means and applies to any stockyard, corral or premises wherein public trading in animals is carried on, or where yarding, feeding and watering facilities are provided, and where federal, state or county inspection is maintained for the inspection of animals for infectious diseases.

M. "Tuberculin test" means any test approved by the Animal Disease Eradication Division, Agricultural Research Service, United States Department of Agriculture, for the detection of tuberculosis in animals.

10.48.040 Director of public health—Powers and duties generally.

A. It shall be the duty of the director of public health, acting in cooperation with the Chief of the Division of Animal Industry, California Department of Agriculture, to enforce all laws of the state of California and all orders and ordinances of the board of supervisors of the county of Los Angeles pertaining to the health and sanitary surroundings of the animals in said county, and for that purpose he is empowered and authorized by and with the approval of the board of supervisors to establish, maintain and enforce such quarantine, sanitary, testing and immunizing measures or to promulgate such rules and regulations as he may deem proper and necessary.

B. He shall regulate the movement of animals from stockyards, corrals and feed yards; supervise examination and testing of animals or premises for the presence of contagious, infectious or communicable diseases; provide for the ante-mortem and post-mortem inspections of animals slaughtered and meat products prepared; provide for the sanitation of plants and premises upon which animals are kept or upon which such slaughtering and preparation are conducted, enforce any and all regulations concerning the feeding of garbage, and construction and sanitation of hog ranches; provide for the identification and disposition of diseased animals, meats and meat products.
C. He shall attend such meetings and conferences as may be called from time to time by the local representative of the Agricultural Research Service, United States Department of Agriculture or the Director of Agriculture.
D. He shall investigate within the state of California any reported outbreak of contagious, infectious or communicable disease, the presence of which in the state may constitute a menace to the health of animals in the county of Los Angeles.

10.48.050 Powers of deputies.
Whenever by the provisions of this Division 2 a power is granted to the director of public health, or a duty imposed upon the director of public health, the power may be exercised or the duty performed by a deputy of the director of public health or by a person authorized pursuant to law by the director of public health, unless it is expressly otherwise provided.

10.48.060 Violation of Division 2 provisions—Penalty.
Any person, firm, association or corporation violating any of the provisions of the ordinance codified in Division 2 of Title 10 of this code shall be deemed guilty of a misdemeanor.

10.48.070 Severability.
If any provision of the ordinance codified in this Division 2 or application thereof to any person or circumstances is held invalid, the remainder of said ordinance, and the application of such provisions to other persons or circumstances, shall not be affected thereby.

Chapter 10.52 STOCKYARDS AND HOG RANCHES

10.52.010 Stockyards or packing houses—Removing animals without permit prohibited when.
It shall be unlawful for any person to remove or to allow to be removed, except for immediate slaughter, any animals from any stockyard owned, controlled or operated by or in connection with or incidental to the operation of any slaughterhouse or packinghouse, except on permits issued by the director of public health.

10.52.020 Stockyards or corrals—Removing animals without permit prohibited when.
It shall be unlawful for any person to remove or allow to be removed any animals from any stockyard, corral or premises maintained for the feeding or conditioning of animals,

for any purpose other than immediate slaughter, without having secured a permit from the director of public health.

10.52.030 Permit to remove animals from stockyards—Conditions.
The director of public health shall issue permits for the removal of animals from stockyards upon finding, by inspection, that such animals are free from any infectious disease. Findings as to the presence or absence of such infectious disease shall be final; provided, however, that such permit may be granted conditional on such treatment, immunizing, dipping or other curative or preventative measures as may be necessary for the public welfare.

10.52.040 Hog ranch regulations—Feeding garbage to animals.
The director of public health shall, from time to time, by and with the approval of the board of supervisors, promulgate rules and regulations to control the feeding of garbage to animals and the location, construction and maintenance in a sanitary manner of hog ranches.

Chapter 10.56 IMPORTING OF ANIMALS

10.56.010 Importing or transporting diseased animals unlawful—Exceptions.
It is unlawful for any person to bring into or receive in, or to transport from place to place within, the county of Los Angeles, except for the purpose of immediate slaughter, any animals affected with any contagious, infectious, or communicable disease, without a permit from the director of public health, except such diseased animals as are specifically permitted to enter the state of California and the county of Los Angeles under federal or California State regulations, and only under the conditions and for the purpose prescribed in the federal and state regulations governing movement of animals.

10.56.020 Importation permit—Required when—Stockyard and animal-care standards.
A. It is unlawful for any person to bring into or receive in the county of Los Angeles any cattle, sheep, swine, horses or goats, for any purpose other than immediate slaughter, without a permit from the director of public health; provided, however, that when such cattle, sheep, swine, horses or goats, other than cattle imported for dairy or breeding purposes, are unloaded from a vehicle into public stockyards where federal, state or county inspection is maintained for the inspection of animals for infectious diseases, such permit shall not be required until they are to be removed from such stockyards.
B. Such stockyards shall be approved by the director of public health and shall be so constructed as to permit humane handling, proper control without inhumane crowding or delay, and thorough inspection, including provisions for restraining individual animals. They shall be so constructed with regard to height and strength of fences and gates as to prevent the escape of animals. They shall permit animals to be fed, rested and watered with sufficient potable water. Proper drainage, and facilities for disinfection (when required by the director of public health), and provisions for the removal of accumulations of manure and the prevention of the formation of mud and

wallow, shall be supplied. Such approval may be withdrawn in the event such stockyards at any time fail to comply with the requirements of this section.

10.56.030 Animals for slaughter—Procedure for moving and unloading.
All animals entering the county of Los Angeles for the purpose of immediate slaughter by any method of transportation or by driving on hoof must be moved directly to a public stockyards or to the premises upon which they are to be slaughtered, except that such animals in railroad shipments may be unloaded enroute in order to comply with the provisions of what is known as the "28-hour law" of the United States Department of Agriculture.

10.56.040 Dairy and breeding cattle—Identification and report requirements.
Immediately upon arrival of dairy or breeding cattle into the county of Los Angeles, the fact of such arrival shall be reported to the director of public health. The director of public health shall mark the cattle for identification with tags or otherwise, and make a record showing the date of arrival, description of the cattle, the name of the owner and of the person in charge of the cattle, and the place in which they are to be kept. No person shall remove or tamper with any identification mark placed on an animal by the director of public health for the purpose of identification.

10.56.050 Dairy and breeding cattle—Holding period required—Exception.
No person shall sell or move any dairy or breeding cattle from place to place within a period of 120 days from the date of their arrival, unless such cattle have been released by the director of public health.

10.56.060 Animals imported illegally—Quarantine, examination and disposal restrictions.
All animals brought into the county of Los Angeles in violation of any of the provisions of the ordinance codified in this Division 2 shall be subject to quarantine, examination and test, at the expense of the owner, by the director of public health, who may dispose of such animals to comport with the welfare of the county of Los Angeles and the protection of the health of the animals therein.

Chapter 10.60 TUBERCULOSIS CONTROL

10.60.010 Holding period before tuberculin injection—Exception.
No person shall inject or cause to be injected tuberculin into any cattle brought into the county of Los Angeles for a period of 120 days after their arrival, except by permission of the director of public health.

10.60.020 Tuberculin injection—Conditions.
No person shall inject, or cause to be injected, tuberculin into any cattle, except when used in connection with a tuberculin test as defined in subsection M of Section 10.48.030.

10.60.030 Tuberculin tests—Records required.

The following records of all cattle tuberculin tested in Los Angeles County must be filed with the director of public health within five days after completion of the test: Owner, address or location of herd, number of cattle in the herd; number of cattle tested, number of cattle reacting, such description as would identify each animal tested, identification number of each animal tested.

10.60.040 Interference with tuberculin tests prohibited.
No person shall move from any premises any cattle upon which a tuberculin test has been started until the same shall have been completed without the permission of the veterinarian conducting such test, nor in any way interfere with the proper conduction of such test after it shall have been started.

10.60.050 Testing cattle for tuberculosis authorized when.
Whenever the director of public health has cause to believe that there is danger that any cattle brought into the county of Los Angeles are afflicted with tuberculosis, he shall cause such cattle to be examined and tested for tuberculosis. Such test or tests may be made at any time within 120 days after the arrival of such cattle into the county of Los Angeles.

10.60.060 Dairy and breeding cattle—Test required before sale—Exceptions.
It shall be unlawful for any person to sell or offer for sale any cattle for dairy or breeding purposes in the county of Los Angeles, unless such cattle have been examined and tested for tuberculosis within 30 days preceding such sale by a federal or state veterinarian, or the director of public health, or by a veterinarian duly authorized by such officials to apply such test; provided, that this section shall not apply to cattle which have been regularly tested by representatives of the federal or State Department of Agriculture under the laws, rules and regulations applicable to dairies operating under the Federal Accredited Herd Plan, or the Food and Agricultural Code of the state of California; and further provided that the 30-day period may be waived by the director of public health at his discretion.

10.60.070 Costs of tuberculin testing.
Whenever an owner requests of the director of public health that his cattle be tested for tuberculosis, the expense of such test shall be borne by the owner, unless said request is made under the provisions of the Food and Agricultural Code of the state of California, and said owner agrees, in writing, to conform in all respects to said state law and the rules and regulations of the director of public health applying to tuberculin tests and disposal of reacting animals; provided, that whenever five or less cattle are sold for dairy and breeding purposes and test for tuberculosis is required under the provisions of this chapter, the director of public health shall, at the request of the owner thereof, conduct one such test without charge within a period of six months.

10.60.080 Branding of tubercular cattle required.
A. All cattle which are shown by examination of tuberculin test to be afflicted with tuberculosis shall be immediately marked for identification by branding the letter "T" on the left jaw.

B. The letter "T" used for the branding of reacting animals shall be three inches in height from top to bottom and three inches wide at the top, and the branding edge shall not be less than one-quarter of an inch in width.
C. No animals so branded shall be slaughtered or disposed of in any manner whatsoever, or removed from the premises where located when branded, unless permission is first obtained from the director of public health or from the Director of the State Department of Agriculture.

Chapter 10.64 QUARANTINES

10.64.010 Infectious diseases—Report and quarantine procedures.
A. When the director of public health has determined that an infectious disease exists among animals in any other county or area of the state of California and the importation of animals from such county or area might spread such disease among the animals within the county of Los Angeles, the director of public health shall notify the board of supervisors thereof, designating and describing the county or area wherein such disease has been found and shall, with their approval, establish quarantine restrictions against such county or area as the circumstances warrant.
B. The director of public health may refuse to permit shipments of animals originating in such areas to enter the county of Los Angeles unless accompanied by a certificate signed by a state or federal veterinarian which shall satisfactorily prove that there is no possibility that the animals for which such certificate is issued are infected with or exposed to any infectious disease. Any animals entering the county of Los Angeles from any county or area so described and designated without such certificate may be quarantined by the director of public health and confiscated or disposed of in such manner as to eliminate any danger of the animals within the county of Los Angeles being exposed to infection from such disease.

10.64.020 Duty to report infectious diseases and assist enforcement.
It is hereby made the duty of any person suspecting or having knowledge of the presence of any infectious diseases in animals to report same to the director of public health. It shall be the duty of any person owning or having control of animals to assist the director of public health to enforce the provisions of this Division 2, to obey all orders of the director of public health made for the control and eradication of infectious diseases, the sanitation of premises, destruction of animals, and disposal of carcasses, manure, offal, refuse, condemned meat and meat products.

10.64.030 Right of entry for inspection—Quarantine and other protective measures authorized when.
A. Upon information received by the director of public health of any infectious disease affecting animals within the county of Los Angeles, he shall proceed to thoroughly investigate the same.
B. The director of public health is hereby empowered to enter any premises where animals are kept, or on which he has reason to believe that animals are kept, in order to carry into effect the provisions of Division 2 of Title 10, and it shall be unlawful for any person to interfere with the official action of the director of public health.

C. The director of public health may quarantine, for a reasonable period of observation and until such tests as may be required to ascertain the presence or absence of any infectious disease are completed, any animals which are suspected of being infected with or exposed to an infectious disease, or the premises upon which such animals are kept, or both.

D. Upon discovering of any infectious disease affecting animals in the county of Los Angeles, the director of public health shall have the power and it shall be his duty to establish such quarantine, sanitary, testing, immunizing and police regulations as may be necessary to control or eradicate such disease and prevent the spread thereof to other animals.

E. The director of public health may quarantine any animals which may have been exposed to infection from such diseased animals or which may have been located upon the land or premises where such diseased animals have been kept, and thereafter it shall be unlawful for any person to break such quarantine or to move or allow to be moved any such animals from within the premises thus quarantined, or across the quarantine line so established, without first obtaining from the director of public health a permit to do so. If the director of public health deems it proper to issue such a permit after inspection, he may cause such animals, premises and vehicles of transportation, and any infected material, equipment or effects, to be properly cleaned and disinfected.

F. The owner of any quarantined animal shall be responsible for bearing all costs incurred by the county as a result of said quarantine.

10.64.040 Interference with notices prohibited.

It shall be unlawful for any person during the existence of a quarantine established under Section 10.48.030 to remove, tear, deface, mutilate, obscure or otherwise destroy, or in any other manner whatsoever interfere with any placard, notice or proclamation declaring such quarantine, placed on or about the premises on which any of said animals so quarantined are located.

10.64.050 Watercourses—Protection from quarantined animals and infectious materials.

It shall be unlawful for any person to permit any animals quarantined under Section 10.64.030 to have access to any irrigation ditch, stream or other channel in which water is running or may run at any time through such quarantined premises, or to allow such animals to come in contact with other animals which may have access to any irrigation ditch, stream or other channel so mentioned, or to permit the depositing in such irrigation ditch, stream or channel of any manure, offal, excrement or material which might carry infection, or to allow the drainage from any premises so quarantined to come in contact with such irrigation ditch, stream or other channel aforementioned.

10.64.060 Glanders disease—Destruction requirements.

It shall be the duty of the director of public health, whenever the fact shall have been determined by him that any animals are affected with the disease known as glanders, to kill such diseased animals, and have the premises thoroughly cleaned and disinfected, and to order the owner of such animals to cremate, bury or deliver such

animals to a rendering works approved by the director of public health. If the owner of such animals fails, neglects or refuses to bury, cremate or deliver same to an approved rendering works within a period of 24 hours from the issuance of such order, the director of public health shall cause the same to be buried, cremated or delivered to an approved rendering works, at the expense of the county, and the expense of such burial, cremation or delivery to an approved rendering works shall be charged against such owner, to be recovered by action in the name of the county of Los Angeles.

10.64.070 Foot-and-mouth disease—Right of entry for examination—Holding period authorized.
When the director of public health has reason to believe that there is a possibility that foot-and-mouth disease exists on any premises in the county of Los Angeles, he shall have the power to enter said premises and to place and keep thereon such animals as may be necessary to determine the presence of foot-and-mouth disease in accordance with the rules and regulations of the United States Department of Agriculture, and to keep them there under his supervision and control for a period not to exceed 50 days.

Chapter 10.68 SANITATION AND OTHER REQUIREMENTS

10.68.010 Restraint of animals for testing—Owner responsibility—County costs authorized when.
A. The owner or person in charge of animals shall properly confine in stanchions or chutes any animals which the director of public health may designate for the purpose of examination, injection, observation, administration of tuberculin or mallein, or other specific tests or procedures.
B. If the owner or person in charge refuses to properly confine such animals for examination or test within 24 hours after he is requested to do so by the director of public health, the director of public health may employ help and incur such expense as is necessary to properly control such animals for the purposes mentioned.
C. The expense so incurred shall be a lien upon said animals and shall be recovered by action in the name of the county of Los Angeles, unless paid within 10 days after written notice of the amount has been given by the director of public health to the owner or person in possession of said animals.

10.68.020 Sanitation requirements generally.
Every premises where animals are kept, fed, stabled or otherwise cared for, or any premises on which a hog ranch or slaughterhouse is maintained, or where meat products are prepared for food, shall be kept in a clean and sanitary condition.

10.68.030 Harboring rats or other rodents prohibited.
It is unlawful for any person to maintain a rat or other rodent menace where animals are kept.

Division 3 MISCELLANEOUS REGULATIONS

10.72.010 Duty to report designated diseases—Form of report.

A. All veterinarians, all persons in charge of kennels and all persons making a business of having charge, custody or control of animals, who have knowledge of or have reason to suspect that an animal is infected with tuberculosis, glanders, anthrax, rabies, actinomycosis, cysticercosis, trichinosis, tuleraemia and coccidiosis, or any other infectious disease which might become epidemic and transmissible to mankind, shall, within 24 hours, report to the director of public health the following facts:

1. The name and address of the owner of the animal;
2. The number of animals infected;
3. The probable source of infection;
4. The steps taken for control; and
5. The name and address of the person making the report.

B. The director of public health shall supply appropriate forms on which such reports can be made.

C. In the case of tuberculosis the person making the report shall, in addition to the form prescribed in subsection B, send to the director of public health a copy of the tuberculin test as prescribed by the State Department of Agriculture.

10.72.020 Tissue samples required when.

The director of public health may require veterinarians who have been in charge of or who have been called upon to treat any animal with any of the following diseases, to submit to him or to a laboratory designated by him, a specimen of tissue for verification of diagnosis: glanders, anthrax, actinomycosis, cysticercosis, trichinosis, tuleraemia and coccidiosis. In the case of rabies, the director of public health may require the submission of the head of the animal detached from the body.

10.72.030 Director of public health investigation, enforcement and quarantine authority.

It shall be the duty of the director of public health to make an investigation in the case of all animal diseases transmissible to mankind, and to take such steps as may be necessary for the protection of the public health to prevent the spread of such diseases to mankind, and in the performance of such duty he shall have the authority to enforce such quarantine measures as it may be necessary.

10.72.040 Violation—Penalty.

Any person, firm or corporation who violates any of the provisions of this chapter shall be guilty of a misdemeanor.

Chapter 10.76 APIARIES

10.76.010 Person defined.

As used in this chapter, "person" includes every person, firm and corporation.

10.76.020 Signs identifying premises and owner required.

Every person maintaining an apiary on premises other than that of his residence shall identify such apiary by affixing a sign thereto showing the name of the owner or person in possession of the apiary, his address, his telephone number, if any, and if there is

no telephone, a statement of that fact.

10.76.030 Signs on hives—Location and description.
Persons designated in Section 10.76.020 shall affix the required sign on the longer side of the hive or longer side of the super, prominently located on the entrance side of the apiary, and shall at all times maintain such sign thereon. Such signs shall be in black letters at least one inch in height on white or other contrasting color.

10.76.040 Signs on hives—Lettering.
The lettering of signs required by Section 10.76.020 shall be printed or stenciled, or equivalent there to, in black paint or black ink.

10.76.050 Violation deemed misdemeanor.
Every person violating any provision of this chapter is guilty of a misdemeanor.

Chapter 10.80 DOGS IN OPEN VEHICLES

10.80.010 Transporting dogs in open vehicles prohibited when.
A. No person shall transport any dog in or on the back or bed of any open truck or other open vehicle while traveling on any county road, street, highway, lane or alley.
B. This section shall not apply to any person who transports a dog in any open truck or other open vehicle which is partially enclosed by stakes, racks or other similar devices which rise at least two feet, nine inches above the tops of the sides and back of the vehicle, and which are designed to prevent the dog from falling or escaping from the vehicle.

10.80.020 Violation—Penalty.
Violation of any provision of this chapter is a misdemeanor.

Chapter 10.84 FEEDING OF CERTAIN PREDATOR ANIMALS

10.84.010 Providing food for certain rodents or predator animals prohibited.
A. Except as otherwise provided for herein, no person shall feed or in any manner provide food to a nondomesticated rodent or a nondomesticated mammalian predator.
B. For purposes of this chapter:
1. "Rodent" includes ground squirrels;
2. "Mammalian predators" includes coyote, raccoon, fox and opossum.

10.84.020 Feeding animals permitted when.
A person may feed or provide food to a nondomesticated rodent or a nondomesticated mammalian predator under the following instances:
A. When the person is the owner of such a rodent or mammalian predator, and such rodent or predator is kept under a valid certificate or permit issued by the State of California Department of Fish and Game;
B. When the person feeds or provides food to a trapped, injured or unweaned

nondomesticated rodent or predator between the time the agency in charge of animal control or its designated agent is notified and picked up by said agency.

10.84.030 Violation—Penalty.
A violation of any provision of this chapter shall be an infraction.

Chapter 10.86 INTERFERENCE WITH POLICE DOGS

10.86.010 Interference with police dogs.
It is unlawful for any person to wilfully tease, torment, agitate, provoke, beat, kick, strike, injure, maim, disable, kill, or in any way interfere with any dog being used in a police function by law enforcement officers.

10.86.020 Violation—Penalty.
Any person violating any of the provisions of this chapter shall be deemed guilty of a misdemeanor,

Chapter 10.90 FEES FOR SERVICES AND ACTIVITIES
Sections:

10.90.010 Licensing fees schedule.
The license fees required to be paid are as follows, except that the director may waive any fees in cases of undue hardship:
I. Individual Animal Licenses.
Fees
Every person owning a dog or cat over the age of four months shall obtain an annual license and tag for each such dog or cat; except, there shall be a one-time-only fee for registration of discharged military dogs, for guide dogs or Seeing Eye dogs, for signal dogs trained to assist the hearing impaired, and for service dogs trained to perform tasks to assist the physically handicapped, upon payment of the following fees:

A. Dog license and tag fees:

Dogs over four months:

1. Unaltered (Unspayed/unneutered)
($5 of each fee received is designated for low cost spay/neuter program)
$60.00
2. Altered (Spayed/neutered)
($5 of each fee received is designated for low cost spay/neuter program)
20.00
3. Senior citizen—Spayed/neutered dog
7.50
4. Delinquency charge for annual license renewal equivalent to the cost of the license, will be added to the license fee if the renewal application is submitted more than 10 calendar days past the expiration date of a license, or if a license application was not

otherwise timely submitted.

5. Replacement of tag or official license receipt
$5.00
6. Transfer of ownership
$5.00
7. Discharged military dogs (one-time registration fee)
$5.00
8. Guide dogs or Seeing Eye dogs, signal dogs, and service dogs (one-time registration fee)
$5.00
9. Field enforcement fee: The owner or custodian of a dog found unlicensed by a department employee in the field will be charged a field enforcement fee.
$40.00
B. Cat license fees:

1. Unspayed/unneutered
$10.00
2. Spayed/neutered
$5.00
3. Replacement cat tag
$5.00
4. Transfer of ownership
$5.00
5. Delinquency charge for annual license renewal equivalent to the cost of the license, will be added to the license fee if the renewal is submitted more than 10 calendar days past the expiration date of a license, or if a license application was not otherwise timely submitted.

6. Field enforcement fee: The owner or custodian of a cat found unlicensed by a department employee in the field will be charged a field enforcement fee.
$40.00
C. Other animals—Licenses required:

1. Pygmy pigs
$50.00
2. Wild animals
$100.00
3. Delinquency charge for annual license renewal equivalent to the cost of the license, will be added to the license fee if the renewal is submitted more than 10 calendar days past the expiration date of a license, or if a license application was not otherwise timely submitted.

4. Field enforcement fee: The owner or custodian of an animal found unlicensed by a department employee in the field will be charged a field enforcement fee.
$40.00

D. Voluntary identification and registration:

Any dog or cat may be registered in the department's Voluntary Identification Program. Such animal shall be assigned an identification number by tattoo, microchip or other available means of identification, at the owner's request, upon the payment of the following fees:

1. Initial identification and registration
$20.00
2. Annual renewal
$10.00
3. Transfer of ownership
$5.00

II. Animal Facility Licenses.
Fees
Licenses for the animal facilities listed below are required to be obtained annually.

A. Initial animal facility license fees (including inspection):

1. License fees:

a. Pet shop
$250.00
b. Grooming parlor/mobile
$250.00
c. Animal menagerie
$250.00
d. Wholesale wild animal dealer
$250.00
e. ~~Hobby breeder (See Section 10.20.045)~~
~~$250.00~~
~~f.~~[Intentionally Blank] f. Rodeo

(i) First day or one day event
$250.00
(ii) Each additional day
$25.00
g. Animal exhibition

(i) First day or one day event
$250.00
(ii) Each additional day
$25.00
h. Pygmy pig breeder

$250.00
i. Non-profit humane organization facility
$250.00
j. Dog and cat breeding and/or boarding facility:

For purposes of license fee computation, fee is based on 75 percent of the total capacity of the facility or the actual animal population housed at the time of the inspection, whichever is greater.

(i) 4-20 dogs or cats
$300.00
(ii) 21-50 dogs or cats
$350.00
(iii) 51-75 dogs or cats
$400.00
(iv) 76-100 dogs or cats
$450.00
(v) Over 100 dogs or cats
$525.00
2. Penalty for operation of an animal facility without license. A penalty equivalent to the cost of the license will be added to the license fee if a facility operates without a license.

3. Fee reduction for each additional animal facility application made at the same location at the same time.
$125.00
B. Renewal animal facility license fees (including inspection):

1. All animal facilities:

a. Pet shop
$175.00
b. Grooming parlor/mobile
$175.00
c. Animal menagerie
$175.00
d. Wholesale wild animal dealer
$175.00
e. ~~Hobby breeder (defined~~ in Section 10.20.045)
175.00
~~f.~~ Intentionally Blank f. Pygmy pig breeder
$175.00
g. Non-profit humane organization
$175.00
h. Dog and cat breeding and/or boarding facility:

For purposes of license fee computation, fee is based on 75 percent of the total capacity of the animal facility or the actual animal population housed at the time of the inspection, whichever is greater.

(i) 4-20 dogs or cats
$225.00
(ii) 21-50 dogs or cats
$275.00
(iii) 51-75 dogs or cats
$325.00
(iv) 76-100 dogs or cats
$375.00
(v) over 100 dogs or cats
$450.00
2. Delinquency charge for annual license renewal equivalent to the cost of the license, will be added to the license fee if the renewal is submitted more than 10 calendar days past the expiration date of a license, or if a license application was not otherwise timely submitted.

3. Fee reduction for each additional animal facility renewal application made at the same location at the same time.
$50.00
C. Miscellaneous fee provisions:

1. Reinspection
$40.00
2. Inspection fee for animal permits under Los Angeles County Code Sections 22.52.330 and 22.56.420—22.56.530
$50.00
3. Businesses using dogs for protection (Sections 10.20.280 and 10.20.290)
$50.00
4. Penalty for ownership of wild animal without license
$100.00