Final Report

Geotechnical Investigation Report and Summary of Findings

Bay Trail Reach 9B Pedestrian/Bicycle Bridge Investigation

Prepared for

City of San José
California

June 29, 2007

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CH2MHILL

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Geotechnical Investigation Report and Summary of Findings
Bay Trail Reach 9B Pedestrian/Bicycle Bridge

Prepared for
City of San José

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Contents

Acronyms and Abbreviations

ASTM	American Society for Testing and Materials
BCDC	San Francisco Bay Conservation and Development Commission
bgs	below ground surface
Caltrans	State of California Department of Transportation
CDFG	California Department of Fish and Game
CGI	Combustible Gas Indicator
CU	Consolidated Undrained
HSP	health and safety plan
IDW	investigation-derived waste
psf	pounds per square foot
PPE	Personal protective equipment
SPT	standard penetration test
SCVWD	Santa Clara Valley Water District
USCS	Unified Soil Classification System
UPRR	Union Pacific Railroad
UU	Unconsolidated Undrained

1.0 Introduction

This report presents the findings of CH2M HILL's geotechnical investigation of the proposed Bay Trail Reach 9B Pedestrian/Bicycle Bridge project in the Alviso community of San José, California. This investigation was performed under the contract (BAY TRAIL REACH 9B STUDY SERVICE ORDER NO. 1) dated June 20, 2006 between City of San José and CH2M HILL.

The scope of work for this investigation included reviewing existing information and a technical memorandum titled Preliminary Geotechnical and Foundation Recommendations (see Appendix A), performing a site reconnaissance, drilling and sampling of four soil borings, performing geotechnical field and laboratory testing, and preparing this report. The primary purpose of these activities was to collect subsurface information at the site for subsequent preparation of geotechnical recommendations for the design of foundations and abutments and development of plans and specifications for the proposed bridge.

1.1 Location and Setting

The proposed bridge is approximately 500 feet long, and crosses the Guadalupe River/ Alviso Slough just downstream of an existing Union Pacific Railroad (UPRR) bridge (Figure 1). The proposed support for the bridge will be derived from the abutment structures at each end of the bridge and two intermediate piers within the river channel. For this investigation, borings were completed at each proposed abutment and intermediate pier location. The northern abutment of the proposed bridge is located at the crest of the existing river levee, approximately 45 feet west of the railroad. The southern abutment is located at the crest of levee, approximately 150 feet west of the railroad. The two pier foundations are spaced evenly at approximately 180-foot centers between the abutments and outside of the existing main (low flow) channel of the slough. Figure 2 shows the proposed bridge alignment and borehole locations.

1.2 Limitations

This report has been prepared by CH2M HILL for the City of San José to present the observation and findings of the investigation. This report was prepared in accordance with generally accepted geotechnical engineering practice; no warranty, expressed or implied, is made.

The observations and findings presented in this report are based on information collected during the field exploration and laboratory testing program. The results described in this report reflect subsurface conditions only at the specific locations, and to the depths explored. Soil conditions and water levels at other locations may differ from conditions observed at boring locations. If conditions encountered during subsequent work differ from those described in this report, the conclusions of this report should be re-evaluated by CH2M HILL. CH2M HILL is not responsible for any claims, damages or liability associated with

interpretation of subsurface data by others or reuse of the subsurface data or engineering analyses without the express written authorization of CH2M HILL.

2.0 Field Exploration and Laboratory Testing

The field investigation consisted of drilling and sampling four soil borings and performing geotechnical laboratory testing on selected soil samples. Specific field exploration and laboratory testing activities are discussed below.

2.1 Field Exploration

Due to the difficult access and additional permitting requirements for the drilling within the slough channel, CH2M HILL's geotechnical exploration was conducted in two phases. The first phase of CH2M HILL's field exploration program was performed from March 21 to 23, 2007, and consisted of drilling and sampling soil borings PED-B-1 and PED-B-2 on the levees. The borings extended to depths approximately 111 feet below ground surface (ft bgs).

The second phase of CH2M HILL's field exploration program was performed from April 11 to 13, 2007, and consisted of drilling and sampling soil borings PED-B-3 and PED-B-4 at the proposed pier locations. The borings extended to depths approximately 120 ft bgs.

2.1.1 Investigation Preparation

On March 16, 2007, CH2M HILL personnel visited the site to identify and mark the proposed boring locations. Boring locations were selected in the field based on accessibility and the location of the proposed bridge alignment. Approximately 72 hours prior to the investigation, Underground Service Alert was notified for utility clearance.

2.1.1.1 Permits

Prior to the investigation, the following permits for the work (see Appendix B) were obtained: an Abbreviated Region Wide permit from the San Francisco Bay Conservation and Development Commission (BCDC), an encroachment permit and a drilling permit from Santa Clara Valley Water District (SCVWD), a standard permit from the California Department of Fish and Game (CDFG), and an exemption from environmental review requirements from the City of San José, Department of Planning, Building and Code Enforcement. Work performed during the investigation was completed in accordance with permit requirements.

2.1.1.2 Health and Safety

Investigation activities were performed in accordance with a site-specific Health and Safety Plan (HSP) prepared by CH2M HILL for the project. On the first day of the field investigation, CH2M HILL and its subcontractor held a brief meeting which included an inspection of drilling equipment, discussion of drilling and sampling procedures, and a review of safety policies and procedures. Because the drilling locations are situated near the landfills, an air monitoring program, consisting of periodical readings of flammable gas such as Methane by a Combustible Gas Indicator (CGI), was included in the HSP. No explosion hazard was detected during this field exploration.

2.1.2 Drilling

Borings were drilled by Pitcher Drilling of East Palo Alto, California. Borings PED-B-1 and PED-B-2 were drilled using a truck-mounted drill rig. Borings PED-B-3 and PED-B-4 were drilled using an all-terrain track-mounted CME 850 drill rig. Load pads were used for the track-mounted drill rig to access the boring locations in the slough. All borings were advanced using the mud rotary wash methods and a 3-7/8 inch diameter drag bit.

Upon completion, borings were grouted to the ground surface using a neat cement grout. Grout was installed using tremie methods in accordance with the requirements of the SCVWD. The District was notified 24 hours prior to grouting; they elected not to be on site to witness the sealing operation.

CH2M HILL provided continuous observation and logging of the borings. Sample descriptions, results of field testing, and observations of any unusual conditions during drilling were recorded on the field soil boring logs. Copies of final boring logs are included in Appendix C.

2.1.3 Soil Sampling

Soil samples were collected from the borings for identification, classification, and geotechnical engineering characterization. Disturbed and relatively undisturbed (intact) soil samples were generally collected from the borings at approximately 5-foot intervals to a depth of about 60 ft bgs and at approximately 10-foot intervals thereafter. A total of 63 disturbed and 7 intact soil samples were collected during the field investigation.

Disturbed samples were collected using a 2-inch outside diameter, 1.4-inch inside diameter standard split-spoon sampler in general accordance with requirements of the Standard Penetration Test (SPT) as described in American Society of Testing and Materials (ASTM) D-1586. Disturbed samples were also recovered using the 3-inch outside diameter Modified California Sampler. Disturbed soil samples were stored, labeled, and sealed in plastic bags immediately after sampling.

Intact soil samples were collected using 3-inch outside diameter, thin-walled Shelby tube samplers, in general accordance with procedures for thin-walled tube sampling of soil as described in ASTM D-1587. After intact samples were collected, Shelby tubes were labeled and the ends were sealed with tight-fitting plastic caps and electrical tape.

2.1.4 Waste Collection and Storage

All soil cuttings and mud were stored in 55-gallon drums, labeled and left in the secure area designated by the City of San José. A total of 15 drums were generated from the four boreholes. The drums were temporarily staged in a fenced area at the corner of Catherine Street and Gold Street in Alviso. A tailgate truck was used by the driller to transport the drums from the investigation area to the fencing area. On June 28, 2007, all the drums were transported to an appropriate off-site disposal facility by Integrated Wastestream Management, Inc.

2.2 Laboratory Testing

Laboratory tests to determine the index and engineering properties of selected soil samples were performed by RGH Consultants of Santa Rosa, California. Tests performed for soil classification and to evaluate index properties included sieve and hydrometer (grain size) analyses, Atterberg limits, and water content. Strength properties of intact samples were evaluated using Unconsolidated Undrained (UU) and Consolidated Undrained (CU) triaxial compression tests. Consolidation tests were also performed to evaluate the compressibility of soils with time. The Guadalupe River/Alviso Slough is tidally influenced by San Francisco Bay. The surface water and groundwater in the project area is expected to be saline. A total number of 6 corrosion tests were conducted for soil samples obtained at various depths (from 5 ft bgs to 100 ft bgs).

Geotechnical laboratory test results are summarized in Table 1. Geotechnical laboratory data sheets are included in Appendix D.

Soil classifications based on laboratory test results may differ from those made by visual-manual procedures used in the field. Therefore, preliminary soil classifications made in the field were revised as appropriate to incorporate the results of the geotechnical laboratory testing. Descriptions of soil conditions presented in this report and soil classifications identified in the soil boring logs reflect these changes.

3.0 Findings

In borings PED-B-1 and PED-B-2, drilled on the existing levee and embankment on both sides of the river channel, fill material of approximately 5 to 10 feet thick was encountered. The fill material consists of predominantly lean clay and silty sand, and is underlain by approximately 10 feet of Young Bay Mud (soft clay) with a thin layer of fish scales. Beneath the Young Bay Mud, a sandy alluvial soil approximately 70 feet thick was encountered. This sandy deposit is loose in the top 15 to 20 feet, and medium dense to very dense in the bottom 50 to 55 feet. The sandy alluvial is underlain by stiff old bay clay.

In borings PED-B-3 and PED-B-4, drilled within the slough channel at the proposed bridge's pier locations, the subsurface soils generally consist of 35 to 45 feet of Young Bay Mud (very soft to soft clay), underlain by 40 to 55 feet of sandy deposit and stiff old bay clay. The sandy layer includes approximately 10 feet of loose silty sand, overlying approximately 30 to 45 feet of medium dense to very dense sand.

A cross section of the four borings along the bridge alignment is shown in Appendix C.

The results of our field investigation are generally consistent with expected soil conditions as described in Preliminary Geotechnical and Foundation Recommendations (Appendix A). Therefore preliminary geotechnical and foundation recommendations remain applicable.

Table 1
Geotechnical Field and Laboratory Test Results Summary Table

Table 1
Geotechnical Field and Laboratory Test Results
Bay Trail Reach 9B Alviso Bike Bridge Investigation

Boring	Sample/ Test ID	Interval (feet bgs)[2]	Soil Class[1]	N[3] (bl/ft)	W_c[4] (%)	γ_d[5] (pcf)[6]	Atterberg Limits[7] LL (%)	PL (%)	PI (%)	Grain Size P200[8] (%)	SA[9]	H[10]	Undrained Shear Strength, S_u (psf)[11] PP[12]	TX-UU[13]	TX-CU[14]	Consol[15]
PED-B-1	S-1A	5.0 - 6.0	CL	40									2500			
	S-1B	6.0 - 6.5	SM													
	S-2	10.0 - 11.5	SM	9	20.7					46.2						
	MC-3	15.0 - 16.5	SM	12												
	S-4	20.0 - 21.5	Fish Scales	8												
	ST-5	25.0 - 27.5	CH		77.2	53.6	87	39	48				250	521 (2000)		X
	ST-6	30.0 - 32.5	CH		24.1	101.9							700		1883 (3000)	
	S-7	35.0 - 36.5	SM	4	25.8					35.0						
	S-8	40.0 - 41.5	SM	3												
	S-9	45.0 - 46.5	ML	5	29.3					55.5						
	S-10	50.0 - 51.5	SM	28						16.3						
	MC-11	55.0 - 56.5	SP-SM	50												
	S-12	60.0 - 61.5	SP-SM	26												
	S-13	70.0 - 71.5	SP-SM	37						7.5	X					
	S-14	80.0 - 81.5	SP-SM	52												
	S-15A	90.0 - 91.0	GP-GM	28						5.3	X					
	S-15B	91.0 - 91.5	ML													
	S-16	100.0 - 101.5	ML	27	31.0		54	25	29				750			
	S-17	110.0 - 111.5	CH	19									2000			
PED-B-2	S-1	5.0 - 6.5	CL	11												
	ST-2A	10.0 - 11.0	CH		56.5	66.5								362 (993)		
	ST-2B	11.0 - 12.5	Fish Scales													
	S-3	15.0 - 16.5	CH	4	32.4											
	MC-4	20.0 - 21.5	CH	15	29.5	94.0										
	S-5	25.0 - 26.5	SM	10						26.7						
	S-6	30.0 - 31.5	SM	9	25.7					44.2						
	S-7	35.0 - 36.5	ML	7									750			
	ST-8	40.0 - 42.5	ML		29.1	94.0				67.7			500			
	S-9	45.0 - 46.5	SM	5												
	MC-10	50.0 - 51.5	SP	27												
	S-11	55.0 - 56.5	SP-SM	35						8.9	X					
	S-12	60.0 - 61.5	SP-SM	36												
	S-13	70.0 - 71.5	ML	23												
	S-14A	80.0 - 80.5	ML	31												
	S-14B	80.5 - 81.5	SP-SM							7.7						
	S-15A	90.0 - 91.0	GP-GM	38												
	S-15B	91.0 - 91.5	SP													
	S-16	100.0 - 101.5	CL	15	24.9		37	16	21				750			
	S-17	110.0 - 111.5	CH	17									700			
PED-B-3	S-1	3.0 - 4.5	CH	0	114.6								0			
	S-2	8.0 - 9.5	CH	2									100			
	ST-3	13.0 - 14.5	CH		58.5	64.5	73	31	42						839 (1400)	X
	S-4	18.0 - 19.5	CH	2	38.0											
	S-5	23.0 - 24.5	CL	1	29.3		34	18	16				200			
	MC-6	28.0 - 29.5	CL	1									175			
	S-7	33.0 - 34.5	SM	8						28.2						
	S-8	38.0 - 39.5	SM	11	21.5					14.7						
	S-9	43.0 - 44.5	SP	23												
	S-10	48.0 - 49.5	SP-SM	18						6.0	X					
	S-11	53.0 - 54.5	SP	23												
	MC-12	58.0 - 59.5	SP	43												
	S-13	68.0 - 69.5	SP	64						2.7	X					
	S-14A	78.0 - 78.5	SP	7												
	S-14B	78.5 - 79.5	ML										700			
	ST-15	88.0 - 90.5	CH		23.8	102.6							1800	2121 (5000)		X
	S-16	98.0 - 99.5	CH	20									2250			
	S-17	108.0 - 109.5	CH	22									2700			
	S-18	118.0 - 119.5	CH	23									1700			
PED-B-4	S-1	8.0 - 9.5	CH	0	85.8								0			
	S-2	18.0 - 19.5	CH	1	87.0								0			
	S-3	28.0 - 29.5	CH	7	39.0								750			
	S-4	38.0 - 39.5	CH	2	44.2								200			
	S-5	48.0 - 49.5	SM	7						36.8						
	S-6A	58.0 - 59.0	GP-GM	16						6.6						
	S-6B	59.0 - 59.5	ML													
	S-7	68.0 - 69.5	SP	32												
	S-8	78.0 - 79.5	SP-SM	28						7.9						
	S-9	88.0 - 89.5	CH	13									750			
	MC-10	98.0 - 99.5	CH	16									500			
	ST-11	108.0 - 110.5	SM		16.5					29.3			2300			
	S-12	118.0 - 119.5	CH	21									2100			

Notes:
1) Unified Soil Classification System (ASTM D-2487, D-2488).
2) bgs = below ground surface
3) Blow count, or N-value (Uncorrected SPT N-value for "S" samples) in blows/foot. N-values shown were recorded in the field and have not been corrected for equipment or field conditions.
4) Natural moisture content, as measured in the laboratory (ASTM D-2216).
5) Dry unit weight, as measured in the laboratory (ASTM D-2937).
6) pcf = pounds per cubic foot
7) Atterberg Limits: LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index (ASTM D-4318).
8) P200 = Percentage of soil particles passing the No. 200 sieve (ASTM D-422, D-1140).
9) "X" indicates full sieve analysis performed, including 3/4-inch, 3/8-inch, #4, #8, #16, #30, #50, #100, and #200 sieves (ASTM D-422). See laboratory data sheets.
10) "X" indicates hydrometer analysis performed using 1-, 2-, 5-, 15-, 30-, 60-, 250-, and 1620-minute intervals (ASTM D-422). See laboratory data sheets.
11) psf = pounds per square foot
12) Estimated undrained shear strength of cohesive samples - based on average pocket penetrometer results (field test).
13) Unconsolidated, undrained triaxial shear strength, as measured in the laboratory (ASTM D-2850). Confining pressure, in psf, shown in parenthesis.
14) Consolidated, undrained triaxial shear strength, as measured in the laboratory (ASTM D-4767). Consolidation/confining pressure, in psf, shown in parenthesis.
15) "X" indicates one-dimensional consolidation test performed (ASTM D2435). See laboratory data sheets.

Figures

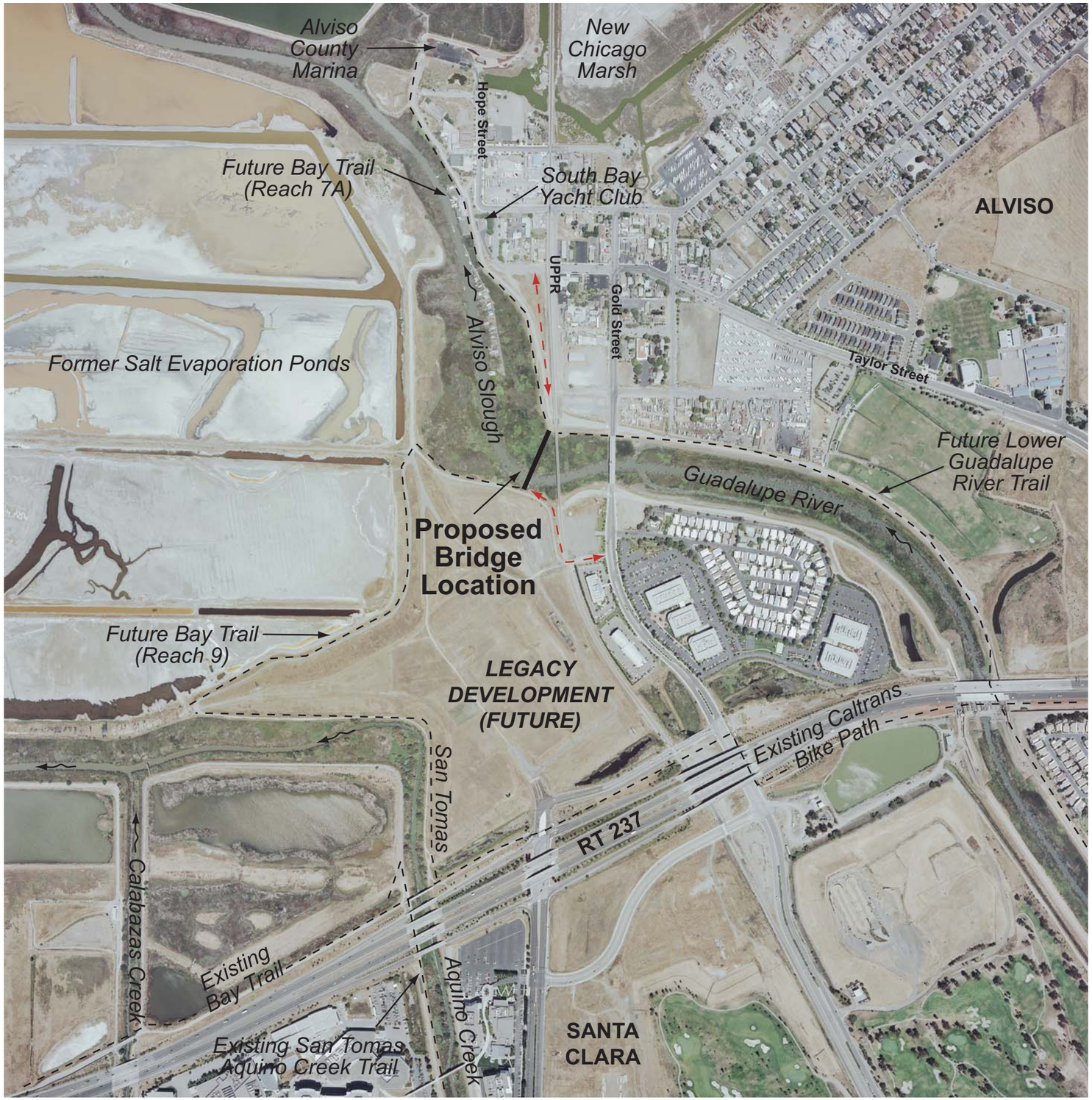

FIGURE 1
SITE MAP
ALVISO SLOUGH PEDESTRIAN BRIDGE INVESTIGATION

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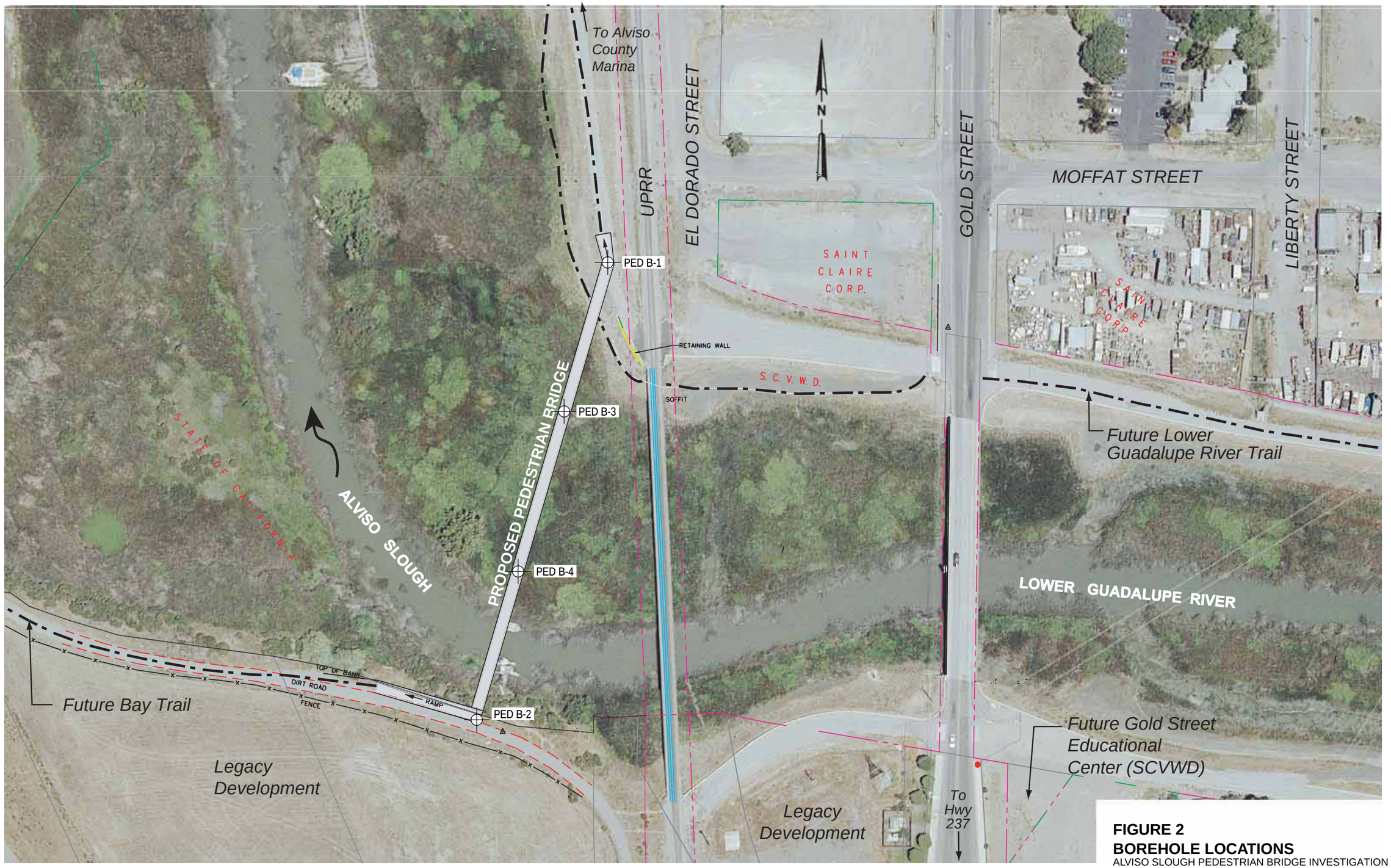
T092005001SFO_332226.T1.10_Site Map_3/9/06_ez_bao



Legend

⊕ Proposed borehole location

Notes:
Phase I – PED B-1 & PED B-2 at proposed abutments
Phase II – PED B-3 & PED B-4 at proposed piers

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)

FIGURE 2
BOREHOLE LOCATIONS
ALVISO SLOUGH PEDESTRIAN BRIDGE INVESTIGATION

ES112006002BAO proposed bore locs fig1.ai 12-07-06 dash

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Appendix A
Technical Memorandum

Alviso Slough Pedestrian Bridge – Task 2.6

Preliminary Geotechnical and Foundation Recommendations

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	Dave Von Rueden/CH2M HILL
DATE:	August 22, 2005
PROJECT NUMBER:	332226.T1.06

Introduction

CH2M HILL has been retained by the City of San Jose to develop preliminary design plans for a proposed pedestrian bridge across the Guadalupe River (Alviso Slough). The proposed bridge, located near the community of Alviso, is approximately 500 feet long and crosses the river just downstream of an existing Union Pacific Railroad (UPRR) bridge. Support for the bridge will be derived from abutment structures at each end of the bridge and up to two intermediate piers within the river channel. Retaining walls, up to approximately 10 feet high will support earthfill approaches to the bridge.

This memorandum discusses subsurface conditions in the project area and provides preliminary seismic and foundation design recommendations for the proposed bridge and retaining walls. Subsurface conditions described in this memorandum are based on information collected during previous geotechnical investigations in the project area. Final design of foundation systems for the proposed bridge and retaining walls should be based on a project-specific geotechnical investigation including subsurface exploration at proposed abutment and intermediate pier locations.

Location and Setting

The proposed bridge is located at the northern end of the Santa Clara Valley, a broad, northwesterly trending basin filled with alluvial, fluvial, and estuarine sediments. Prior to historical development, the Guadalupe River meandered through the project area as it approached the limits of a vast tidal wetland at the southeastern end of San Francisco Bay. The river has since been straightened and confined by levees, and large portions of the

former natural channel have been filled for levee construction and development of land outside the levees.

Existing structures in the vicinity of the proposed bridge include the existing UPRR and Gold Street bridges. Located immediately upstream of the proposed crossing, the UPRR bridge is approximately 500 feet long and was constructed in the late 1960s. The UPRR bridge includes approximately seventeen individual, pier-supported spans. The piers are founded on exposed steel pipe piles. Approximately 350 feet upstream of the railroad crossing, the Gold Street bridge crosses the river channel in five, 60-foot spans for a total length of 300 feet.

The northern abutment of the proposed bridge is located at the crest of the existing river levee, approximately 40 feet west of the railroad. The southern abutment is located at the crest of a fill slope, approximately 150 feet west of the railroad. The bridge will provide access between pedestrian trails that run along the levees on both sides of the river and will be part of the San Francisco Bay Trail system.

Subsurface Conditions

Subsurface exploration in the vicinity of the proposed bridge was performed by URS for the Santa Clara Valley Water District's Lower Guadalupe River Flood Control Project (URS 2002a, 2002b). Exploration for the flood control project included nine soil borings within approximately 1000 feet of the proposed crossing. The borings, designated CB-01, CB-14, CB-15, CB-16, CB-17, CB-18, EB-18, EB-19 and EB-27, were performed between May 1998 and January 2002. The borings were completed to depths between approximately 30 and 85 feet below the existing ground surface.

As a result of earthfill and grading associated with historical modifications to the Guadalupe River channel, levee construction, waste disposal and other earthwork activities, subsurface conditions in the project area may not be consistent with existing topographic features. Based on available information, it appears that the existing river channel at the location of the proposed bridge crossing roughly follows the natural river channel. However, meanders in the natural river channel immediately upstream and downstream of the proposed crossing appear to have been cut off and filled as part of efforts to straighten the river. As a result, buried channel deposits may exist beneath or outside the existing levees. Historical waste disposal and landfill operations, particularly along the southern bank of the existing river channel, may also influence the type and variability of materials that exist beneath the ground surface.

Based on logs of borings performed by URS, subsurface conditions in the project area are highly variable. Soils encountered in the vicinity of the proposed crossing include a variety of earthfill materials, soft estuarine clay (Young Bay Mud), young stream channel deposits and older alluvial deposits. The nature, location and extent of these deposits are discussed in the following sections. Bedrock appears to underlie the site at depths greater than 500 feet below the ground surface (Rogers and Williams, 1974).

Fill Materials

With the exception of the current low-flow river channel, surficial soils in the vicinity of the proposed bridge appear to primarily consist of fill materials. Beneath the existing levees and embankments on either side of the river channel, fill materials were encountered to depths between approximately 12 and 17 feet below the ground surface. Fill materials underlying the high water channel were encountered to depths between approximately 3 and 8 feet below the ground surface. Native soils underlying fill materials were generally encountered at elevations between approximately +3 and -3 feet (NAVD 88).

Levee fill materials encountered on the north and east banks of the river generally consist of stiff to very stiff lean (low plasticity) clay with gravel and sand. Fill materials encountered within the high water channel are more variable and include soft fat clay, soft to stiff lean clay and medium dense clayey sand with gravel. Fill materials encountered on the west bank of the river approximately 700 feet west of the proposed crossing include concrete, wood, asphalt, refuse and other debris.

Based on conditions encountered in similar locations along the historical margins of San Francisco Bay, it is likely that much of the fill beneath the site, particularly the oldest material directly above native soils, was placed in an uncontrolled, unengineered manner. As a result, residual marsh deposits, consisting of decaying plant material and organic soils, are likely present beneath fill materials.

Young Bay Mud

Most borings in the vicinity of the proposed project encountered Young Bay Mud beneath artificial fill materials. Where borings penetrated to the bottom of the layer, Young Bay Mud was encountered as deep as approximately 48 feet below the ground surface. In general, Young Bay Mud was present between approximately elevations +2 and -38 feet (all elevations referenced to NAVD 88). It is likely that deposits of Young Bay Mud in the vicinity of the proposed bridge occupy an ancestral river channel carved into older (pre-Holocene) alluvial deposits. During Holocene time (approximately the past 10,000 years), rising sea levels caused inundation of the area and Young Bay Mud deposits gradually filled the channel.

Young Bay Mud encountered beneath the site generally consists of high plasticity clay and silt with occasional shells, bits of plant material and lenses of fine sand. The Young Bay Mud is typically very soft to firm, with undrained shear strengths measured during the URS investigation ranging from approximately 150 to 650 pounds per square foot (psf). Young Bay Mud is also highly compressible and subject to significant settlement under loading.

Young Stream Channel Deposits

In some borings, young stream channel deposits were encountered above and embedded within Young Bay Mud deposits. Consisting of coarse-grained material ranging from silty and clayey gravel to fine silty sand, young stream channel deposits encountered in the vicinity of the proposed bridge generally range from very loose to medium dense. However the presence of gravel material in the deposits may cause them to appear denser than they actually are. Based on available information, young stream channel deposits underlying the project area appear highly susceptible to liquefaction in the event of a major earthquake.

Young channel deposits encountered near the proposed bridge site appear largely discontinuous, but may be greater than 15 feet thick in some areas. Based on available subsurface information, it appears that young stream channel deposits may extend as deep beneath the ground surface as Young Bay Mud deposits, to an elevation of approximately -38 feet.

Older Alluvial Deposits

Two types of older alluvial material were encountered in borings performed by URS within the project vicinity. In boring EB-18, located along the existing northern levee between the UPRR and Gold Street bridges, approximately 25 feet of firm to stiff lean clay was encountered immediately beneath levee fill materials, to an elevation of -27 feet. In contrast, Young Bay Mud and stream channel deposits were encountered at similar depths in nearby borings. Based on available information, it appears likely that lean clay encountered in boring EB-18 is pre-Holocene alluvium located outside the ancestral Guadalupe River channel.

Across the project area, borings extending deeper than an elevation of approximately -38 feet encountered coarse-grained alluvial deposits composed primarily of medium dense to dense sand with some silt, clay and gravel. During the URS field investigation, standard penetration test (SPT) blow counts within these deep, older alluvial deposits ranged from approximately 16 to 45, with most values between approximately 25 and 35. Coarse-grained, older alluvial deposits were encountered to the greatest depth explored during the URS investigation, approximately 81.5 feet below the ground surface (elevation -71 feet).

Assumed Subsurface Profile

Based on available information, soils underlying the proposed bridge are likely to consist of fill materials underlain by soft, highly compressible deposits of Young Bay Mud and loose, potentially liquefiable young stream channel deposits. The presence and potential thickness of Young Bay Mud and channel deposits is controlled by the location of the ancestral Guadalupe River channel. Based on available information, it appears that most, if not all of the proposed bridge alignment is located within the area of the ancestral channel.

Within the ancestral Guadalupe River channel, Young Bay Mud and channel deposits may extend as deep as elevation -38 feet. This elevation is approximately 55 to 60 feet below the existing ground surface at the proposed bridge abutments and approximately 45 to 50 feet below the existing ground surface at potential pier locations within the river's high-flow channel. Young Bay Mud and channel deposits are likely underlain by coarse-grained older alluvial soils.

Outside of the ancestral channel, Young Bay Mud and channel deposits may be relatively thin or even nonexistent beneath fill materials. In these areas, fine-grained older alluvial soils may be present below an elevation of approximately +1 foot. This elevation is approximately 15 to 20 feet below the ground surface at proposed abutment locations and approximately 5 to 10 feet below the ground surface at potential pier locations. Below an elevation of approximately -27 feet, fine-grained older alluvial soils may be underlain by coarse-grained alluvial material similar to that encountered below nearby Young Bay Mud and channel deposits.

Preliminary Geotechnical Recommendations

Foundations

Due to the presence of loose and variable fill materials, soft and compressible Young Bay Mud and potentially liquefiable stream channel deposits, it appears that deep foundations will be necessary for the proposed bridge and retaining wall structures. Deep foundations should be designed to derive their support from older alluvial materials underlying the site. Deep foundation alternatives include driven piles and drilled shafts.

Based on available subsurface information, it appears that driven piles will be the most suitable and economically favorable foundation alternative for the proposed bridge structure. Driven piles also appear to be the most suitable foundation alternative for retaining walls of sufficient height to require deep foundations. Steel or concrete piling may be used. However, due to variable soil conditions and the presence of potential obstructions in fill materials beneath the site, steel piling appears to be more suitable than concrete piling. Steel pipe piles supporting the nearby UPRR bridge appear to be in good condition after nearly forty years of service. Similar piles should be considered for support of the proposed pedestrian bridge and retaining walls.

Pile driving operations typically generate a significant amount of noise and may result in localized vibration of the ground within and adjacent to the work area. The amount of noise and vibration generated during driven pile installation is a function of subsurface soil conditions; hammer size, type and configuration; and pile material, size and type. Potential noise and vibration impacts during construction should be evaluated as part of future design efforts. Mitigation of these potential noise and vibration impacts may be necessary for compliance with future California Environmental Quality Act (CEQA) requirements associated with the project.

Drilled shafts are not recommended as a potential foundation alternative due to anticipated subsurface conditions and challenges associated with storage, handling and disposal of drilling fluids and spoils. The presence of variable subsurface conditions, high groundwater and loose sandy materials may lead to instability of shaft excavations and disruption of construction operations. It is likely that significant effort will be necessary to mitigate potential environmental impacts associated with the use of drilling fluids within the river channel. The potential presence of debris and refuse in fill materials beneath the site may also present challenges in disposing of drilling spoils. Although drilled shafts may be feasible with implementation of appropriate design and construction measures, it is not anticipated that they will provide an economical alternative to driven piles.

Earthwork and Grading

Deposits of soft, highly compressible Young Bay Mud underlie the project area and may be up to approximately 35 feet thick. Loosely dumped fill materials may also be subject to compaction under loading. As a result, if placement of earthfill material is necessary to raise existing grades for proposed bridge abutments and approaches, potential settlement of underlying soils should be evaluated and mitigated as part of future design efforts.

Seismic Design Considerations

Based on the Caltrans Seismic Hazard Map (Mualchin, 1996a), the acceleration factor (design peak ground acceleration on rock) for the proposed bridge site is approximately 0.5g. The controlling fault for seismic hazards at the site is the Hayward fault, located approximately 5 miles to the northeast. A maximum credible earthquake (MCE) event of magnitude 7.5 is estimated by Caltrans for the Hayward fault (Mualchin, 1996b).

Due to the presence of potentially liquefiable soils in the project area, it appears that Soil Profile Type F, per Caltrans Seismic Design Criteria (SDC, Version 1.3, February 2004), is appropriate for seismic design of the proposed bridge structure. Soil Profile Type F requires development of site-specific spectral acceleration curves. If potentially liquefiable soils did not exist at the site, it appears that Soil Profile Type E would be appropriate for design of the proposed bridge. However, Caltrans standard spectral acceleration curves for Soil Profile Type E are only available for peak bedrock accelerations up to 0.4g. As a result, it is anticipated that a site-specific seismic response analysis will be necessary for design of the proposed pedestrian bridge. Such an analysis is beyond the scope of this technical memorandum.

Corrosion Considerations

The Guadalupe River is tidally influenced at the location of the proposed bridge. As a result, surface water and groundwater within the project area likely contains elevated chloride concentrations. Based on conditions in similar areas along the margins of San Francisco Bay, soil and groundwater within the project area be corrosive to buried metal and concrete structures. The potential for corrosion of foundation structures should be evaluated and mitigated as part of future design efforts.

Geotechnical Investigation

Due to the high variability of subsurface conditions in the project area, borings should be completed at each proposed abutment and intermediate pier location. Soil samples should be collected from the borings and tested for material characteristics and engineering properties. Subsurface information collected during the investigation should be used in design of foundations and development of plans and specifications for the proposed bridge.

Limitations

Geotechnical recommendations provided in this memorandum are based on existing subsurface information collected for previous projects in the vicinity of the proposed pedestrian bridge. The recommendations provided herein are for development of preliminary design alternatives for the proposed bridge. Geotechnical recommendations for final design of the proposed bridge should be developed based on subsurface information collected as part of a site- and project-specific geotechnical investigation and laboratory testing program.

References

Mualchin, L. (1996a). *California Seismic Hazard Map 1996 (Based on Maximum Credible Earthquakes)*. Prepared for the State of California Department of Transportation (Caltrans). July 1996.

Mualchin, L. (1996b). *A Technical Report to Accompany the Caltrans California Seismic Hazard Map 1996 (Based on Maximum Credible Earthquakes)*. Prepared for the State of California Department of Transportation (Caltrans). July 1996.

Rogers, T.H. and J.W. Williams (1974). *Potential Seismic Hazards in Santa Clara County, California*. State of California, Division of Mines and Geology (CDMG) Special Report 107.

URS. (2002a). *Geotechnical Engineering Report, Lower Guadalupe River Flood Control Project Task 2.4.4 – UPRR to Route 237, Santa Clara County, California*. Prepared for CH2M HILL. July 5, 2002.

URS. (2002a). *Geotechnical Engineering Report, Lower Guadalupe River Flood Control Project Task 2.4.6 – Baylands, Santa Clara County, California*. Prepared for CH2M HILL. November 8, 2002.

Appendix B
Permits

BCDC Original

Making San Francisco Bay Better

February 7, 2007

City of San Jose
Public Works Department
200 East Santa Clara Street
San Jose, CA 95113

ATTENTION: David Sykes, Assistant Director

SUBJECT: Abbreviated Regionwide Permit No. ARWP-1
(Notice of Intent to Proceed No. ANOI 07-1)

Dear Mr. Sykes:

Enclosed please find an original of Abbreviated Regionwide Permit No. ARWP-1, stamped "BCDC Original," and a copy, stamped "Permittees' Copy," both executed by the Executive Director. I am issuing this abbreviated regionwide permit to you to conduct geotechnical work necessary for the design of a future public access bridge over Alviso Slough that will be part of Reach 9B of the San Francisco Bay Trail, in the City of San Jose, Santa Clara County. The work consists of drilling four, up to six-inch-in-diameter, 160-foot deep borings and filling the holes with a cement-bentonite mixture if the holes do not fill in on their own. This permit is being issued to you as requested by your Notice of Intent to Proceed under an abbreviated regionwide permit dated January 12, 2007, including its accompanying exhibits, any subsequent additions or changes, and as modified by the conditions of this abbreviated regionwide permit.

You must (1) **complete** the acknowledgment section of the abbreviated regionwide permit stamped "BCDC Original," which indicates that you have read and that you agree to all of the terms and conditions of the abbreviated regionwide permit, and (2) **return** that entire "BCDC Original" abbreviated regionwide permit to the Commission's offices within fourteen days. You should retain the copy stamped "Permittees' Copy" for your records.

Please understand that **no** work may commence on the project until the abbreviated regionwide permit stamped "BCDC Original" is executed and returned to us. Until the Commission receives the executed regionwide permit, Santa Fe Pacific Pipeline, L.P. does not have the necessary authorization for the work authorized under the permit. The commencement of any work within the Commission's jurisdiction without the necessary authorization from the Commission is a violation of the McAteer-Petris Act and could subject you to substantial fines. Attached is a checklist to assist you in following the correct procedures.

If you have any questions concerning the abbreviated regionwide permit or the procedure outlined above, please contact me.

Very truly yours,

MING YEUNG
Coastal Program Analyst

MY/rca
Enc.
cc: U. S. Army Corps of Engineers, Attn: Regulatory Functions Branch
San Francisco Bay Regional Water Quality Control Board,
Attn: Certification Section
Environmental Protection Agency, Attn: Mike Monroe-WTR-8
Jan Palajac, City of San Jose
Nanci Smith, California State Lands Commission

Making San Francisco Bay Better

ABBREVIATED REGIONWIDE PERMIT NO. ARWP-1
NOTICE OF INTENT TO PROCEED NO. ANOI 07-1

February 7, 2007

City of San Jose
Public Works Department
200 East Santa Clara Street
San Jose, CA 95113

ATTENTION: David Sykes, Assistant Director

SUBJECT: Abbreviated Regionwide Permit No. ARWP-1
(Notice of Intent to Proceed No. ANOI 07-1)

Dear Mr. Sykes:

On April 18, 1996, the San Francisco Bay Conservation and Development Commission, by a vote of 17 affirmative, 0 negative, and 0 abstentions, approved the issuance of this abbreviated regionwide permit upon which your authorization is based:

I. Authorization

A. Subject to the conditions stated below, the permittee is hereby authorized to do the following:

Location: Anywhere in the Bay, in certain waterways, in managed wetlands, and within the 100-foot shoreline band.

Description: (1) Routine repair and maintenance of existing, currently-used timber, steel, or concrete structural, shoreline protective works, such as bulkheads and seawalls, that do not involve any substantial enlargement or any substantial extension into the Bay; (2) routine repair and maintenance of existing currently-used outfall pipes, service lines, utility cables, pipelines, and similar facilities that do not involve any substantial enlargement or any substantial extension into the Bay; (3) routine repair and maintenance of existing, currently-used pilings, boat docks on pilings, boat slips and other pile-supported structures being used for water-oriented purposes, and wildlife habitat improvement structures such as fish screens and ladders and other waterway devices, that do not involve any substantial enlargement, any substantial extension into the water or wetlands, or any substantial change in use; and (4) removal of structures or improvements so long as the removal will not adversely affect present or possible future public access to the Bay, or will not involve a structure or improvement of historical, archeological, or architectural significance.

B. This authority is generally pursuant to and limited by your notice of intent to proceed under an abbreviated regionwide permit dated January 12, 2007, including its accompanying exhibits, any subsequent additions or modifications, and all conditions of this regionwide permit.

C. Work authorized herein must commence within one year of the date of the transmittal of this abbreviated regionwide permit by the Executive Director to you or the authorization of your work will lapse and become null and void. Such work must also be diligently pursued to completion and must be completed within three years of commencement, or within three years of the date of transmittal of this abbreviated regionwide permit to you, whichever is earlier, unless an extension of time is granted by the Executive Director.

II. Special Conditions

The authorization made herein shall be subject to the following special conditions, in addition to the standard conditions in Part IV:

A. **Construction Operations and Debris Removal**. All construction operations shall be performed so as to minimize turbidity and the roiling of waters, and to prevent timbers, floats, or other construction materials from drifting and presenting a navigation or pollution hazard. In the event that any such material is placed or escapes into any area subject to tidal action of the Bay, the permittee, its assigns or successors in interest, or the owner of the improvements shall immediately retrieve and remove such material at its expense. All construction debris shall be removed to a location outside the Commission's jurisdiction.

B. **Marsh Protection**. The work authorized by this abbreviated regionwide permit shall be performed so as to prevent any significant adverse impact on any tidal marsh or other sensitive wetland resources. If any unforeseen adverse impacts occur to any such area as a result of the activities authorized herein, the permittee shall restore the area to or improve the area above its previous condition, including returning the disturbed area to its original elevation and soil composition and, if the area does not revegetate to its former condition within one year, seeding all disturbed areas with appropriate marsh vegetation.

C. **Notice to Contractor**. The permittee shall provide a copy of this abbreviated regionwide permit to any contractor or person working in concert with the permittee to carry out the activities authorized herein and shall point out the special conditions contained herein.

D. **Abandonment**. If, at any time, the Commission determines that the improvements authorized herein have been abandoned for a period of two years or more, or have deteriorated to the point that public health, safety or welfare is adversely affected, the Commission may require that the improvements be removed by the permittee, its assigns or successors in interest, or by the owner of the improvements within 60 days or such other reasonable time as the Commission may direct.

E. **Water Quality**. Prior to undertaking any work authorized herein on any outfall pipe or similar facility, the permittee shall receive all necessary approvals from the California Regional Water Quality Control Board, San Francisco Bay Region, for any discharge or emission from such structure.

F. **Diked Wetlands Protection**. No work authorized herein on culverts, outfalls, tide gates, or similar facilities shall significantly alter water management, circulation or drainage patterns or otherwise adversely affect any salt pond or other sensitive diked wetland resources.

G. **Creosote Treated Wood**. No pilings or other wood structures that have been pressure treated with creosote shall be used in any area subject to tidal action in the Bay or any certain waterway, or in any managed wetland within the Commission's jurisdiction as part of the project authorized herein.

II. Findings and Declarations

The Commission hereby finds, declares, and certifies that:

A. The projects authorized by this abbreviated regionwide permit involve: (1) repairs to protective works in the minimum amount necessary to stabilize existing dikes and banks, as defined in Regulation Sections 10601(a)(2) and 10601(b)(1); (2) repairs to outfall pipes approved by the California Regional Water Quality Control Board, San Francisco Bay Region, utility cables on or under the bottom of the Bay, and similar facilities, as defined in Regulation Sections 10601(a)(5), 10601(a)(6), and 10601(b)(1); (3) routine repair, reconstruction, replacement, and maintenance of pilings, boat docks in pilings, boat slips on pilings, and similar structures, and repairs to facilities needed to provide improved wildlife habitat, as defined in Regulation Sections 10601(a)(6) and 10601(c)(2); and (4) removal of deteriorated structures and facilities, as defined in Regulation Sections 10601(a)(6), 10601(b)(1), and 10601(c)(2), or activities similar to those described above, as defined in Regulation Section 10601(e)(2), and thus are equivalent to a "minor repair and improvement" and qualify for authorization under an abbreviated regionwide permit that may be issued by the Commission and approved by the Executive Director, pursuant to Government Code Section 66632(f) and Regulation Sections 11700 and 11713.

B. The project authorized by this abbreviated regionwide permit is consistent with the McAteer-Petris Act and with the San Francisco Bay Plan in that it will not adversely affect the Bay nor public access to and enjoyment of the Bay.

C. The activities authorized herein are consistent with the Commission's Amended Management Program for San Francisco Bay, as approved by the Department of Commerce under the Federal Coastal Zone Management Act of 1972, as amended.

D. California Public Resources Code Section 21084 provides that the California Environmental Quality Act (CEQA) guidelines shall include a list of classes of projects that have been determined not to have a substantial adverse impact on the environment and are therefore exempt from the requirements of CEQA. This list of "categorical exemptions" is located at 14 Cal. Admin. Code Sections 15300 through 15329. Section 15301 (Class 1) exempts the operation, repair, maintenance or minor alteration of existing public or private structures or facilities that involve negligible or no expansion of previous use. Section 15302 (Class 2) exempts the replacement or reconstruction of existing structures or facilities where the new structure will be located on the same site as the structure being replaced and will have substantially the same purpose and capacity as the replaced structure. The Commission's own regulations provide that the Commission need not prepare an environmental assessment before it issues a permit for a project that falls within the list of categorically exempt activities (14 Cal.

Admin. Code Section 11501). This abbreviated regionwide permit is therefore categorically exempt because it authorizes routine repair and maintenance of existing structures that do not involve any substantial enlargement or any substantial extension into the Bay.

In addition, the California Environmental Quality Act (CEQA) generally requires that before an agency can issue a permit for a project that is neither statutorily exempt nor categorically exempt, it must either certify a "negative declaration" that the project will have no substantial adverse impact on the environment or it must prepare an environmental impact report (EIR). Pursuant to CEQA Section 21080.5, the Secretary for Resources has certified the Commission's permit regulations as functionally equivalent to the CEQA review process. Commission Regulation Section 11511 requires the Executive Director to determine either that a project will have no substantial adverse environmental impact or to prepare an "environmental assessment," which functions as a Commission equivalent to an EIR. This abbreviated regionwide permit also authorizes the removal of structures or improvements from the Commission's jurisdiction. However, this abbreviated regionwide permit requires that the removal will not adversely affect present or future public access to the Bay, will not affect a structure or improvement of historical, archeological, or architectural significance, will be performed to minimize turbidity and the roiling of waters and to prevent the drifting of construction materials, will not adversely affect any tidal marsh, managed wetland, or other sensitive wetland resource, and will not result in any disposal within any wetland. Therefore, the Commission finds that the removal authorized by this abbreviated regionwide permit will have no substantial adverse impact on the environment.

IV. Standard Conditions

A. All required permissions from governmental bodies must be obtained before the commencement of work; these bodies include, but are not limited to, the U. S. Army Corps of Engineers, the State Lands Commission, the Regional Water Quality Control Board, and the city and/or county in which the work is to be performed, whenever any of these may be required. This abbreviated regionwide permit does not relieve the permittee of any obligations imposed by State or Federal law, either statutory or otherwise.

B. Work must be performed in the precise manner and at the precise locations indicated in your notice of intent to proceed under an abbreviated regionwide permit, as such may have been modified by the terms of the abbreviated regionwide permit, and any plans approved in writing by the Executive Director.

C. Work must be performed in a manner so as to minimize muddying of waters, and if diking is involved, dikes shall be waterproof. If any seepage returns to the Bay, the permittee will be subject to the regulations of the Regional Water Quality Control Board in that region.

D. The rights, duties, and obligations contained in this abbreviated regionwide permit are assignable. When the permittee transfers any interest in any property either on which the authorized activity will occur or which is necessary to the full compliance of one or more conditions to this abbreviated regionwide permit, the permittee/transferor and the transferee shall execute and submit to the Commission a permit assignment form acceptable to the Executive Director. An assignment shall not be effective until the assignee executes and the Executive Director receives an acknowledgment that the assignee has read and understands the abbreviated regionwide permit and agrees to be bound by the terms and conditions of the

abbreviated regionwide permit, and the assignee is accepted by the Executive Director as being reasonably capable of complying with the terms and conditions of the abbreviated regionwide permit.

E. Unless otherwise provided in this abbreviated regionwide permit, all the terms and conditions of this regionwide permit shall remain effective for so long as the abbreviated regionwide permit remains in effect or for so long as any use or construction authorized by this abbreviated regionwide permit exists, whichever is longer.

F. Unless otherwise provided in this abbreviated regionwide permit, the terms and conditions of this abbreviated regionwide permit shall bind all future owners and future possessors of any legal interest in the land and shall run with the land.

G. Unless otherwise provided in this abbreviated regionwide permit, any work authorized herein shall be completed within the time limits specified in the abbreviated regionwide permit, or, if no time limits are specified in the abbreviated regionwide permit, within three years of the date of transmittal of the abbreviated regionwide permit by the Executive Director to you. If the work is not completed by the date specified in the abbreviated regionwide permit, the authorization provided to you by this abbreviated regionwide permit becomes null and void. If an authorization under this abbreviated regionwide permit becomes null and void for a failure to comply with these time limitations, any fill placed in reliance on the authorization of this abbreviated regionwide permit shall be removed by the permittee or its assignee upon receiving written notification by or on behalf of the Commission to remove the fill.

H. Except as otherwise noted, violation of any of the terms of this abbreviated regionwide permit shall be grounds for revocation of the authorization provided to you by this abbreviated regionwide permit. The Commission may revoke any authorization of this abbreviated regionwide permit for such violation after a public hearing held on reasonable notice to the permittee or its assignee if the abbreviated regionwide permit has been effectively assigned. If an authorization under this abbreviated regionwide permit is revoked, the Commission may determine, if it deems appropriate, that all or part of any fill or structures placed pursuant to the authorization under this abbreviated regionwide permit shall be removed by the permittee or its assignee if the abbreviated regionwide permit has been assigned.

I. The authorization under this abbreviated regionwide permit shall not take effect unless the permittee executes the original of this abbreviated regionwide permit and returns it to the Commission within fourteen days after the transmittal of the abbreviated regional permit by the Executive Director to you. No work shall be done until the acknowledgment is duly executed and returned to the Commission.

J. Any area subject to the jurisdiction of the San Francisco Bay Conservation and Development Commission under the McAteer-Petris Act at the time the authorization of the abbreviated regionwide permit is granted or thereafter shall remain subject to that jurisdiction notwithstanding the placement of any fill or the implementation of any substantial change in use authorized by this abbreviated regionwide permit.

K. Any area not subject to the jurisdiction of the San Francisco Bay Conservation and Development Commission that becomes, as a result of any work or project authorized in this abbreviated regionwide permit, subject to tidal action shall become subject to the Commission's "bay" or "certain waterway" jurisdictions.

L. Unless the Commission directs otherwise, the authorization provided by this abbreviated regionwide permit shall become null and void if any term, standard condition, or special condition of this abbreviated regionwide permit shall be found illegal or unenforceable through the application of statute, administrative ruling, or court determination. If the authorization provided by this abbreviated regionwide permit becomes null and void, any fill or structures placed in reliance on the authorization provided by this abbreviated regionwide permit shall be subject to removal by the permittee or its assignee if the abbreviated regionwide permit has been assigned to the extent that the Commission determines that such removal is appropriate. Any uses authorized shall be terminated to the extent that the Commission determines that such uses should be terminated.

Executed at San Francisco, California, on behalf of the San Francisco Bay Conservation and Development Commission on the date first above written.

WILL TRAVIS
Executive Director
San Francisco Bay Conservation and
Development Commission

WT/MY/rca

cc: U. S. Army Corps of Engineers, Attn: Regulatory Functions Branch
San Francisco Bay Regional Water Quality Control Board,
Attn: Certification Section
Environmental Protection Agency, Attn: Mike Monroe-WTR-8
Jan Palajac, City of San Jose
Nanci Smith, California State Lands Commission

* *

Receipt acknowledged, contents understood and agreed to:

Executed at CITY OF SAN JOSE

On 2/14/07

DAVID SYKES
Applicant

By: D D Sykes

ASST. DIRECTOR OF PUBLIC WORKS
Title

Santa Clara Valley Water District

5750 ALMADEN EXPRESSWAY, SAN JOSE, CA 95118-3614 (408) 265-2600

PERMIT

WF75109, R1, 08-08-06

Facility: Guadalupe River

Date Issued: February 22, 2007

Permit No.: 07311

Permittee: City of San Jose
City Facilities Architectural Services
Department of Public Works
Attention: Ms. Jan Palajac
200 East Santa Clara Street
San Jose, CA 95113-1905

Telephone: (408) 535-8408

File: 30747
Guadalupe River
Wly Gold Street
Sly Moffat Street

Applicant: CH2M Hill
Attention: Mr. Dave Von Rueden
1737 North First Street, Suite 300
San Jose, CA 95112-4524

Telephone: (408) 436-4909

Re: Soil Borings
Bay Trail Reach 9B -Alviso Slough Pedestrian Bridge

Purpose of Permit:

☒ Encroachment
☒ Construction
☒ Temporary

1. Drilling of two (2) soil borings to a depth of approximately 140 feet deep on the top of the existing levees (one on each bank) of the Guadalupe River and on Santa Clara Valley Water District's (District) right of way.
2. Drilling of two (2) soil borings to a depth of approximately 140 feet deep on either side of the existing low flow channel of the Guadalupe River and District right of way which may require the use of specialty rig or the use of temporary gravel pads.
3. Access to the borings sites through District right of way and the District's maintenance road.

Construction Expiration Date: August 10, 2007 **Encroachment Expiration Date**: August 10, 2007

PERMITTEE MUST NOTIFY AND FURNISH SCHEDULE OF WORK TO:

District's Permit Desk, (408) 265-2607, extension 2779, at least 2 normal working days before starting any work under this permit. **Failure to notify is cause for revocation of permit and removal of work.** Exercise of this permit shall indicate acceptance of and agreement to comply with all provisions included herein. This permit is subject to the General Provisions listed on the reverse side hereof or as expressly modified in the additional Special Provisions listed below. Violation of any provision shall be cause for immediate revocation of permit.

SPECIAL PROVISIONS

1. No access will be allowed when the maintenance road is muddy.
2. Dust control measures shall be implemented by the contractor while operating on District right of way.
3. Permittee shall be responsible to adjacent property owners for disturbances of any kind caused by permittee's operations.
4. Permittee is responsible for accurately locating all utilities and for repairing any damage caused by the proposed work underground.

Continued on Page 3

Approval:

Sue A. Tippets, P.E.
Engineering Unit Manager
Community Projects Review Unit

cc: D. Zozaya, S. Tippets, B. Goldie, D. Honda, P. Velasquez, T. Bramer, J. Chen, C. Haggerty, File (2)

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GENERAL PROVISIONS

A. PERMITTEE MUST MAINTAIN A COPY OF THIS PERMIT AND APPROVED PLANS ON JOBSITE FOR DURATION OF CONSTRUCTION PERIOD.

B. All work shall be constructed in accordance with approved plans and to the satisfaction of the District's Inspector. No change of program, as outlined in application or drawings submitted with application, will be allowed except upon written permission of the District. The work area must be restored to the satisfaction of the District's Inspector.

C. Activities and uses authorized under this permit are subject to any instructions of the assigned District representative. ALL INSTRUCTIONS MUST BE STRICTLY OBSERVED.

D. Permittee is responsible for complying with any applicable water quality standards adopted by the District, Regional Water Quality Control Board, State Water Resources Control Board, or other jurisdictional or properly empowered regulatory agency.

E. The permittee shall not use, store, transport, or place any hazardous substances, hazardous wastes, or materials contaminated with hazardous substances on District right of way or adjacent to District right of way such that it may purposefully or accidentally be spilled or otherwise discharged onto same right of way. If a discharge of a hazardous substance or waste occurs as a result of the permittee's operation, the permittee is responsible to: (1) notify the proper authorities; (2) investigate, remove, and monitor the hazardous substances or wastes to the satisfaction of the District and any regulatory agency; (3) bear any and all costs associated with the remedial activities; and (4) be recognized as the generator and owner of the wastes.

F. The permittee shall submit to the District a fully completed "Import Material Certification Form" for any soils that will be placed or stored on District right of way that do not originate from within the legal boundaries of such right of way.

G. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and hold harmless, District, its Directors, officers, agents, and employees from any and all demands, claims, expenses, costs, or liability of any nature, including death or injury to any person, property damage, or any other loss, caused by or arising out of, or incurred in connection with, or resulting from, the exercise of this permit by permittee, or permittee's officers, agents, subcontractors, assignees, or employees, or any of them, including, but not limited to, negligent acts, errors, or omissions, or willful misconduct, or conduct for which the law imposes strict liability on permittee.

H. Any damage caused to District structures including, but not limited to, fencing, levee surfacing, and asphalt walkway by reason of exercise of this permit shall be repaired at the cost of permittee to the satisfaction of the District. Should permittee neglect to make repairs promptly, District may make repairs or have repairs made, and permittee agrees to reimburse District for all costs of such repairs. District may require a security deposit in advance from permittee to secure the performance of this clause. Unexpended portions of any deposit shall be refunded to permittee within 14 working days of the expiration of this permit. The posting of such a security deposit shall not relieve the permittee from any liability under this permit which exceeds the value of the deposit required.

I. This permit is valid only to the extent of District jurisdiction. Permits required by other interested agencies and consent of underlying fee owners of District easement lands are the responsibility of the permittee. NOTHING CONTAINED IN THIS PERMIT SHALL BE CONSTRUED AS A RELINQUISHMENT OF ANY RIGHTS NOW HELD BY THE DISTRICT.

J. This permit is subject to all prior unexpired permits, agreements, easements, privileges, or other rights, whether recorded or unrecorded, in the area specified in this permit. Permittee shall make arrangements with holders of such prior rights.

K. Unless otherwise specified herein, this permit may be revoked or canceled at any time by the District when required for flood control, conservation, or water utility purposes.

L. Upon written notice of cancellation or revocation of this permit for any cause whatsoever, permittee shall restore District right of way and structure to the condition prior to the issuance of the permit and then shall vacate District property. Should permittee neglect to restore the premises or structures to a satisfactory condition, the District may perform such work or have work performed, and permittee agrees to reimburse the District for all costs of the work so performed upon receipt of a statement therefore.

M. Trench safety has not been checked and is not implied with this permit. Compliance with Section 6705 of the Labor Code concerning trench excavation and the obtaining of a "Permit to Excavate" issued by the Division of Occupational Safety and Health as required by Labor Code Section 6500 shall be the responsibility of the permittee.

N. Permittee shall be responsible for compliance with California Labor Code Section 6300 (and following).

SPECIAL PROVISIONS—Continued

5. Permittee is responsible for the full cost of repairing any damage to District facilities caused by the drilling of the bore samples.
6. Permittee is responsible for any groundwater contamination that may be caused as a result of drilling of the soil borings.
7. Boring sites are to be left in the same or better condition to the satisfaction of the District's inspector.
8. No construction materials and wastes, including drilling spoils, are to be left on site following drilling of the borings.
9. Permittee shall remove and dispose of all excavated material off District right of way.
10. Work, including backfilling of the bore hole, shall be performed in accordance with District Ordinance 90-1 and District Well Standards to the satisfaction of the District's inspector.
11. **Permittee must also obtain a soil boring permit from the District's Well Services Unit at 408-265-2607, extension 2660.**
12. The project site may be enclosed by a locked District chain link fence. A key to the gate may be obtained from and returned to the Community Projects Review Unit before or at the expiration of this permit. Permittee will be held liable for all unauthorized access through the gates by passerby's caused by the operations allowed hereunder.
13. Permittee must prevent construction materials and waste, including sediment and nonstorm water from entering the Guadalupe River.
14. No work is to occur within the low flow channel or block flows through the site.
15. **All work is to be done in accordance with all Bay Conservation and Development Commission (BCDC), Regional Water Quality Control Board, and Department of Fish and Game permit conditions for the project.**
16. Permittee, its contractors and agents shall provide for their own safety while performing the work under this permit including but not limited to traffic control and all other safety requirements in accordance with CAL/OSHA regulations. Permittee shall notify Underground Service Alert at 1-800-227-2600, prior to any digging.
17. All work associated with this permit is to be in accordance with the plans that were submitted to and accepted by the District.

Santa Clara Valley Water District
5750 Almaden Expressway, San Jose, CA 95118-3614

APPLICATION TO DRILL EXPLORATORY BORINGS

FC 285 (04-29-02)

Date Issued:	Expiration Date:	District Permit No.:
3-19-07	9-19-07	07E00053

Client (if different from property owner): City of San Jose	Property Owner: S.C.V.W.D and Co. of Santa Clara	Name of Business/Residence at Site: Future pedestrian/bicycle bridge
Client's Address: 200 E. Santa Clara Street, 6th floor	Property Owner's Address:	Address of Site: Alviso Slough / Guadalupe River
City, State, Zip: San Jose, CA 95113	City, State, Zip:	City, State, Zip: Alviso, CA
Telephone No.:	Telephone No.:	Assessor's Parcel Number of Site: Book: 015 015 Page: 41 15 Parcel: 003 013

Consulting Company Name: CH2M HILL	Drilling Company Name: PITCHER DRILLING Co.
Address: 155 Grand AVE Suite 1000	Address: 218 DEMETER STREET
City, State, Zip: Oakland, CA 94612	City, State, Zip: EAST PALO ALTO, CA 94303 C-57/C-61 License No: 263085
Telephone No.: (510)251-2888	Telephone: (650)328-8910
☐ Check if address or phone number has changed.	☐ Check if address or phone number has changed.

In space at right sketch location of proposed boring(s) in sufficient detail to identify location. In addition to distances to nearest street and intersection, show distances to any existing structures, landmarks or topographic features.

How many borings will be installed on parcel? TWO (2)

☐ Proposed borings on SCVWD property Easement*

☒ Proposed boring within 50 feet of the top of a creek/river bank*

* See Page 2, Condition F.

Proposed depth of boring(s):

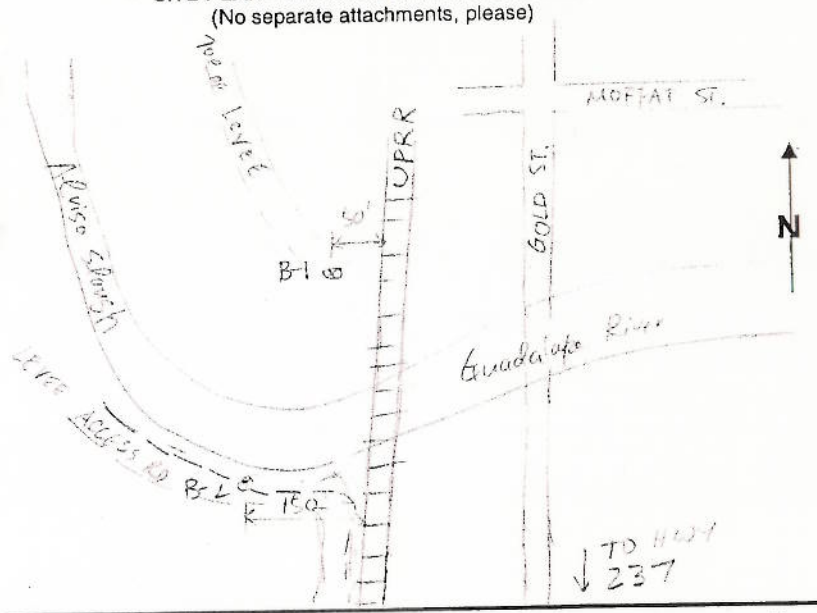
☒ 45 to 150 feet
☐ 151 to 300 feet
☐ Over 300 feet

NOTE: NO PERMIT IS REQUIRED FOR BORINGS UNDER 45 FEET DEEP

Type of boring(s):

☐ Hollow stem
☒ Rotary
☐ CPT/Hydropunch
☐ Other: _____

SITE PLAN – PLEASE DRAW ACCURATELY
(No separate attachments, please)



I understand that all work is to be done in accordance with S.C.V.W.D. Ordinance 90-1, "The District Well Standards," and the conditions of this permit (see page 2). I also certify that the information given above is correct. **NOTE:** All applicable signatues must be present before permit will be processed.

Signature of Property Owner/Agent: Diane Sarmiento P.E. CH2M Hill	Print/Type Name: DIANE SARMIENTO	Date: 3/6/2007
Signature of Client/Agent: Diane Sarmiento P.E. CH2M Hill for CVWD	Print/Type Name: DIANE SARMIENTO	Date: 3/6/2007
Signature of Driller/Agent: Diane Sarmiento P.E. CH2M Hill for Pitcher Drill	Print/Type Name: DIANE Sarmiento	Date: 3/6/2007
Signature of Consultant: Diane Sarmiento P.E. CH2M Hill	Print/Type Name: Diane Sarmiento	Date: 3/6/2007

IMPORTANT: A minimum 24-hour notice must be given to SCVWD Well Inspection Dept. prior to installing the annular seal. Call (408) 265-2607, Ext. 2660. For weekends, holidays, and after hours call (408) 265-2607, extension 2120.

RECEIVED
MAR 08 2007

GENERAL CONDITIONS

A. SCVWD (Telephone 408-265-2607, Ext. 2660) MUST BE NOTIFIED A MINIMUM OF ONE WORKING DAY BEFORE THE EXPLORATORY BORING IS BACKFILLED. An authorized District representative must be on site to witness the sealing operation. This requirement may be waived by an authorized District representative. If the District waives the inspection requirement, the District may request the Permittee(s) to furnish certification under penalty of perjury that the seal was constructed in accordance with the District Well Standards.

B. This Permit is valid only for the purpose specified herein. Boring destruction methods authorized under this Permit may not be changed except by written approval of an authorized District representative, and only if the District believes that such a change will result in equal or superior compliance with the District and State Well Standards (e.g. if the District representative finds that site conditions warrant such a change).

C. This Permit is only valid for the Assessor's Parcel Number indicated on it.

D. This Permit may be voided if it contains incorrect information.

E. Borings shall be sealed within 24 hours following completion of testing or sampling activities. Borings shall not be left in such a condition as to allow for the introduction of surface waters or foreign materials into them. Borings shall be secured such that they do not endanger public health.

F. If any work associated with this Permit will take place within 50 feet of the top of the banks of a stream or watercourse, or on SCVWD property, an encroachment or construction permit must be granted by the District's Community Projects Review Unit (telephone (408) 265-2607, Ext. 2350, 2217, or 2253). COMPLETED —

G. The Permittee(s) shall assume entire responsibility for all activities and uses under this Permit and shall indemnify, defend, and hold the District, its officers, agents, and employees free and harmless from any and all expense, cost, and liability in connection with or resulting from the granting or exercise of this Permit including, but not limited to, property damage, personal injury, and wrongful death.

H. Permittees are required to be in full compliance with Cal/OSHA California Labor Code Section 6300.

I. A current C-57 or C-61 Contractors License is required for work associated with this Permit.

J. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all materials or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statues regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on- or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where the work is being completed.

K. The driller and consultant (if applicable) shall have an active copy of their Worker's Compensation Insurance on file with the District.

L. This Permit shall expire if not exercised within 180 calendar days of its approval, unless an extension of the Permit expiration date is granted by an authorized District representative.

M. This Permit shall be kept on-site during the completion of all activities associated with it and shall immediately be presented to an authorized District representative upon request.

Permit Approved By:	Date: 3-19-07

PLEASE ALLOW TEN (10) WORKING DAYS TO PROCESS THIS APPLICATION

K. Jensen

STATE OF CALIFORNIA - THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF FISH AND GAME
BAY DELTA REGION
(707)944-5520
Mailing Address
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
Street Address
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558

April 6, 2007

David Sykes
City of San Jose
Department of Public Works
Assistant Director
200 East Santa Clara Street, 5th Floor Tower
San Jose, CA 95113

Dear Mr. Sykes:

Notification of Lake or Streambed Alteration
Notification No. 1600-2007-0019-3
Alviso Slough, Santa Clara County

As the Department explained in its letter to you dated January 29, 2007, the Department had until March 27, 2007, to submit a draft Lake or Streambed Alteration Agreement to you or inform you that an agreement is not required. Due to staffing constraints, the Department was unable to meet that date. As a result, by law, you may now complete the project described in your notification without an agreement. In doing so, however, the project must be the same one and conducted in the same manner as described in the notification. That includes completing the project within the proposed term and seasonal work period and implementing all mitigation and avoidance measures to protect fish and wildlife resources specified in the notification. (Fish and Game Code section 1602(a)(4)(D).) The work periods that you submitted in your notification are January 31, 2007 until May 31, 2007. This work period cannot be modified or extended by the Department.

If your project differs from the one described in the notification, you may be in violation of Fish and Game Code section 1602. Also, even though you are entitled to complete the project without an agreement, you are still responsible for complying with all other applicable local, state, and federal laws, including, for example, the state and federal Endangered Species Acts and Fish and Game Code sections 5650 (water pollution) and 5901 (fish passage).

Finally, you must have a copy of this letter ***and*** your notification with all attachments available at all times at the work site. If you have any questions regarding this matter, please contact Dave Johnston, Environmental Scientist, at (831) 466-0234.

Sincerely,

Charles Armor
Acting Regional Manager
Bay Delta Region

cc: Lieutenant Nores

DEPARTMENT OF FISH AND GAME
\Y DELTA REGION
(707)944-5520
Mailing Address
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
Street Address
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558

January 29, 2007

City of San Jose
Department of Public Works
Assistant Director
David Sykes
200 East Santa Clara Street, 5th Floor Tower
San Jose, CA 95113

Dear Mr. Sykes:

Notification of Lake or Streambed Alteration
Notification No. 1600-2007-0019-3
Alviso Slough

On January 17, 2007, the Department of Fish and Game (Department) received your Notification of Lake or Streambed Alteration. On January 26, 2007, the Department determined that your notification is complete. By law, the Department is required to submit a draft Lake or Streambed Alteration Agreement (Agreement) to you within 60 calendar days from the date the notification is complete, if the Department determines that an Agreement is required for the project. Hence, the Department has until March 27, 2007, to issue you a draft Agreement or inform you that an Agreement is not required.

As explained in the notification package you received, the Department must comply with the California Environmental Quality Act ("CEQA") (Public Resources Code section 21000 *et seq.*) before it may issue a final Agreement. The Department may issue a final Agreement after it receives from you the signed draft agreement and completes the required environmental review. If the project described in your notification is not exempt from CEQA, the lead agency must prepare a CEQA document for the project. If you represent a public agency, that agency is the lead agency for the project.

If the Department does not issue you a draft agreement or inform you that an agreement is not required by March 27, 2007, you may complete the project without an agreement. If that occurs, however, the project must be the same one and conducted in the same manner as described in the notification, which would include implementing all measures to protect fish and wildlife resources identified in the notification. [Fish and Game Code section 1602(a)(4)(D)]. If your project differs from the one described in the notification, you may be in violation of Fish and Game Code section 1602. Also, even though you would be entitled to complete the project without an agreement, you would still be responsible for complying with all other applicable local, state, and federal laws, including, for example, the state and federal Endangered Species Acts and Fish and Game Code sections 5650 (water pollution) and 5901 (fish passage). **If you need to make ANY CHANGES to your project, including but not limited to work period or work days, months or years; volume, size or type of materials; location or dimensions of your work area; or amount of temporary or permanent impacts, you must submit any changes in writing PRIOR TO THE DATE identified above in this paragraph. If you make any changes to your project after that date, you must submit a NEW NOTIFICATION AND FEES to the Department for review as a new notification with new review timelines. The Department cannot accept or review any project changes after the date above unless we have written authorization to do so prior to that date. Please note that submission of revised materials prior to the above date may reset the Department's review timelines. In that circumstance you will receive a revised complete letter from the Department with a revised date the notification was deemed complete and a revised date to issue a draft Agreement.**

Notification No. 1600-2007-0019-3

Please note that if a Department representative subsequently determines your notification includes multiple projects resulting in increased notification fees, the Department will notify you of the required fees and will not issue a final Agreement until the appropriate fees are paid.

If you have any questions regarding this matter, please contact Dave Johnston, Environmental Scientist, at (831)466-0234.

Sincerely,

Scott Wilson
Acting Environmental Program Manager
Bay Delta Region

cc: Lieutenant Nores

FOR DEPARTMENT USE ONLY				
Date Received	Amount Received	Amount Due	Date Complete	Notification No.
1/17/07	$ 750.00	$		1600-2007-0019-3

2321533

CITY OF SAN JOSE

JOHNSTON

LT. NORES

STATE OF CALIFORNIA

DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

Fish & Game

JAN 17 2007

Yountville

1. APPLICANT PROPOSING PROJECT

Name	David Sykes, Assistant Director, Department of Public Works		
Business/Agency	City of San Jose		
Street Address	200 East Santa Clara Street, 5th Floor Tower		
City, State, Zip	San Jose, CA 95113		
Telephone	(408) 535-8300	Fax	
Email	Dave.Sykes@sanjoseca.gov		

2. CONTACT PERSON (*Complete only if different from applicant*)

Name	Jan Palajac, Project Manager		
Street Address	200 East Santa Clara Street, 6th Floor Tower		
City, State, Zip	San Jose, CA 95113		
Telephone	(408) 535-8350	Fax	
Email	Jan.Palajac@sanjoseca.gov		

3. PROPERTY OWNER (*Complete only if different from applicant*)

Name	Santa Clara Valley Water District (contact Ms. Colleen Haggerty, Community Projects Review Unit)		
Street Address	5750 Almaden Expressway		
City, State, Zip	San Jose, CA 95118		
Telephone	(408) 265-2600	Fax	
Email	chaggerty@valleywater.org		

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name	Bay Trail Reach 9B Pedestrian Bridge Geotechnical Investigation			
B. Agreement Term Requested	☑ Regular (*5 years or less*) ☐ Long-term (*greater than 5 years*)			
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (*year*)	Ending (*year*)	Start Date (*month/day*)	End Date (*month/day*)	
2007	2007	01/31	05/31	12.00

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.		
A.	☑ Standard *(Most construction projects, excluding the categories listed below)*	
B.	☐ Gravel/Sand/Rock Extraction (*Attachment A*)	*Mine I.D. Number:* _____
C.	☐ Timber Harvesting (*Attachment B*)	THP *Number:* _____
D.	☐ Water Diversion/Extraction/Impoundment (*Attachment C*)	*SWRCB Number:* _____
E.	☐ Routine Maintenance (*Attachment D*)	
F.	☐ DFG Fisheries Restoration Grant Program (FRGP)	*FRGP Contract Number:* _____
G.	☐ Master	
H.	☐ Master Timber Harvesting	

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: The Department may not process this notification until the correct fee has been received.***

	A. Project	B. Project Cost	C. Project Fee
1	Geotechnical Borings	$25,000.00	$750.00
2			
3			
4			
5			
		D. Base Fee *(if applicable)*	
		E. TOTAL FEE ENCLOSED	$750.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

☐ Yes (*Provide the information below*) ☑ No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

☑ No ☐ Yes (*Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.*)

☐ *Continued on additional page(s)*

8. PROJECT LOCATION

A. Address or description of project location.

(Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway)

The project is located at the southwest corner of the community of Alviso, immediately downstream from the existing Union Pacific Railroad Bridge crossing of Alviso Slough, adjacent to El Dorado Street (Figure 1, attached).

Driving directions: From I-880 Southbound.
- Take the exit onto CA-237 W toward Mountain View
- Take the Great America Pkwy exit to Lafayette St
- Turn right towards Lafayette/Gold St.
- Turn left at Gold St., drive north until you reach Alviso Slough, the project site is accessible from the SCVWD levee road.

☐ *Continued on additional page(s)*

B. River, stream, or lake affected by the project.	Alviso Slough (downstream portion of Lower Guadalupe River)
C. What water body is the river, stream, or lake tributary to?	San Francisco Bay
D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?	☐ Yes ☑ No ☐ Unknown
E. County	Santa Clara

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Mountain View				

☐ *Continued on additional page(s)*

K. Meridian (*check one*) ☐ Humboldt ☑ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s)

15-41-003 and 015-15-013

☐ *Continued on additional page(s)*

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)*

Latitude/Longitude	*Latitude:* 37 30' 10"		*Longitude:* 122 06' 04"	
	☑ Degrees/Minutes/Seconds	☐ Decimal Degrees	☐ Decimal Minutes	
UTM	*Easting:* 588106	*Northing:* 4144345	☑ Zone 10	☐ Zone 11
Datum used for Latitude/Longitude or UTM	☑ NAD 27	☐ NAD 83 or WGS 84		

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☐	☐	☐
Bank stabilization – rip-rap/retaining wall/gabion	☐	☐	☐
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☐	☐	☐
Channel clearing/vegetation management	☐	☐	☐
Culvert	☐	☐	☐
Debris basin	☐	☐	☐
Dam	☐	☐	☐
Diversion structure – weir or pump intake	☐	☐	☐
Filling of wetland, river, stream, or lake	☐	☐	☐
Geotechnical survey	☑	☐	☐
Habitat enhancement – revegetation/mitigation	☐	☐	☐
Levee	☐	☐	☐
Low water crossing	☐	☐	☐
Road/trail	☐	☐	☐
Sediment removal – pond, stream, or marina	☐	☐	☐
Storm drain outfall structure	☐	☐	☐
Temporary stream crossing	☐	☐	☐
Utility crossing : Horizontal Directional Drilling	☐	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other *(specify)*:	☐	☐	☐

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

This project involves conducting geotechnical borings necessary for the design of a pedestrian bridge over Alviso Slough. The current conceptual design for the subject Bridge includes abutment foundations near the top of the existing levees on each side of the Alviso Slough, downstream of the existing UPRR Bridge, and two pier foundations spaced evenly (@ 180-ft centers) between the abutments and outside of the existing main (low flow) channel of the slough. Figure 1 shows the proposed bridge alignment and borehole locations. Due to access issues, we plan to conduct the geotechnical investigation in phases. The first phase consists of the abutment borings (PED B-1 and PED B-2) and the second phase consists of the pier borings (PED B-3 and PED B-4). Only PED B-3 and PED B-4 would be in section 1602 jurisdiction.
The pier locations are within the channel on a soft, vegetated, tidal flood plain at elevation approximately 7.0 - 7.5 feet NAVD88. Because this area is marshy, a specialty drill-rig with very low pressure per square inch of ground surface will be required. Access by barge does not appear feasible because of insufficient water depth. Either a drilling rig capable of drilling 6-inch holes to a depth of approximately 140 feet or a cone penetration test (CPT) rig will be used. All drilling mud and cuttings would be contained and placed in containers for temporary storage at the designated location. If a CPT rig is used no drilling mud is needed and no soil cuttings are generated. A CPT hole is approximately 1-1/2 inches in diameter. Any boreholes would be grouted (if the boreholes do not fill in on their own), in accordance with Santa Clara Valley Water District requirements.
No work would be conducted in the live channel.

☐ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

A track-mounted specialty drill-rig with very low pressure per square inch of ground surface will be used for boring in the channel. The boreholes near the north and south abutment will be drilled using a truck-mounted, mud-rotary drill rig. Soil cuttings will be stored in 55-gal drums, left at an appropriate location (out of the channel) on the site for subsequent analysis and off-site disposal.

☐ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).	☑ Yes ☐ No (*Skip to box 11*)
D. Will the proposed project require work in the wetted portion of the channel?	☐ Yes (*Enclose a plan to divert water around work site*) ☑ No

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

The pier borings (PED B-3 and PED B-4) will be drilled down to approximately 140 feet below the ground surface. Vegetation, dominated by bulrush, will be flattened and subject to trampling due to the movement of the drill rig. However, we anticipate that this impact will be temporary as the vegetation will recuperate quickly with the onset of the growing season for bulrush and cattails.

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No

Vegetation Type	Temporary Impact	Permanent Impact
Bulrush (Scirpus spp.) and cattails (Typha spp.)	Linear feet: 350 Total area: 0.25 acres	Linear feet: 0 Total area: 0
Ruderal vegetation on banks.	Linear feet: 100 Total area:	Linear feet: Total area:

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
no trees are present within work area		n/a

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

California clapper rails (CCR) are found in the restored salt ponds (A6, A7, A5) closer to Coyote Creek. No CCR are known to occur in the project area.

☐ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

Alviso Slough Baylands Biological Resource Evaluation, HT Harvey 2001, Appendix E of the Lower Guadalupe River Flood Protection Project EIR

☐ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☐ Yes (*Enclose the biological study*) ☑ No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

☐ Yes (*Enclose the hydrological study*) ☑ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

No vegetation will be removed, only a relatively small area (0.25 acres) of vegetation will be trampled, therefore no significant amount of sediment will be mobilized.

Work will be conducted under dry conditions and no equipment will enter the live channel

☐ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Pre-construction surveys will be conducted within 2 weeks of project start to avoid disturbance to nesting birds (or other wildlife) by a biologist experienced with bird surveys following the protocol established by the SCVWD biologists and implemented on the Stream Maintenance Program. If an active nest is found, the biologist will determine the size and location of an appropriate protective buffer area (50 to 250 ft radius) to be established around the nest in accordance with species sensitivity. No impact to fish is anticipated since no work will occur in the active channel.

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Since impacts to vegetation will be temporary, no compensatory mitigation is proposed.

☐ *Continued on additional page(s)*

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A.	San Francisco Bay Conservation and Development Commission Permit	☑ Applied	☐ Issued
B.	Santa Clara Valley Water District Well Permit	☑ Applied	☐ Issued
C.		☐ Applied	☐ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?

☑ Yes (*Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each*)

☐ No (*Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared*)

☑ Notice of Exemption	☐ Mitigated Negative Declaration	☐ NEPA document (*type*):
☐ Initial Study	☐ Environmental Impact Report	☐ CESA document (*type*):
☐ Negative Declaration	☐ Notice of Determination *(Enclose)*	☐ ESA document (*type*):
☐ THP/ NTMP	☐ Mitigation, Monitoring, Reporting Plan	

B. State Clearinghouse Number (*if applicable*)	Not Yet Available		
C. Has a CEQA lead agency been determined?	☑ Yes (*Complete boxes D, E, and F*)	☐ No (*Skip to box 14.G*)	
D. CEQA Lead Agency	City of San Jose		
E. Contact Person	Janis Moore, Planner	F. Telephone Number	(408) 535-7815

G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.

The geotechnical investigation is required for the design of a pedestrian bridge over Alviso Slough. The pedestrian bridge will be part of Reach 9B of the San Jose section of the San Francisco Bay Trail. The approximately 11-mile San Jose Bay Trail is divided into 9 reaches and will accommodate both pedestrians and bicycles.

☐ *Continued on additional page(s)*

H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?

☑ Yes (*Enclose proof of payment*) ☐ No (*Briefly explain below the reason a filing fee has not been paid)*

The lead agency has determined that the project qualifies for a Categorical Exemption, therefore no significant review of CEQA documents will be required.

Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.

15. SITE INSPECTION

Check one box only.

☑ In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.

☐ I request the Department to first contact (*insert name*) _____ at (*insert telephone number*) _____ to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form)

☐ No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

D.D Sykes

Signature of Applicant or Applicant's Authorized Representative

1/12/07

Date

David Sykes

Print Name

CITY OF SAN JOSÉ, CALIFORNIA
DEPARTMENT OF PLANNING, BUILDING AND CODE ENFORCEMENT
STATEMENT OF EXEMPTION

FILE NO. PP06-214

LOCATION OF PROPERTY Alviso Slough/Guadalupe River, approximately 50-300 feet west of the Union Pacific Railroad bridge and south end of El Dorado Street in Alviso

PROJECT DESCRIPTION Geotechnical investigation consisting of four deep geotechnical borings for future pedestrian/bicycle bridge across Alviso Slough, as part of the Bay Trail Reach 9B Project. Boring locations will be at the top of levees near the proposed bridge abutments and in the slough channel bench area, above and outside the low flow channel, near proposed bridge pier locations.

ASSESSOR'S PARCEL NUMBER 015-41-003 AND 015-15-013

CERTIFICATION

Under the provisions of Section 15306 of the State Guidelines for Implementation of the California Environmental Quality Act (CEQA) as stated below, this project is found to be exempt from the environmental review requirements of Title 21 of the San José Municipal Code, implementing the California Environmental Quality Act of 1970, as amended.

Class 6 consists of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded.

Joseph Horwedel, Acting Director
Planning, Building and Code Enforcement

Date December 19, 2006

Deputy

Project Manager: Janis Moore

(Rev. 10/23/02)

Appendix C
Boring Logs and Cross Section

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-X SHEET 1 OF 1

BORING LOG EXPLANATION

PROJECT : Bay Trail Reach 9B Project LOCATION :

ELEVATION : (NAVD 88 Datum) DRILLING CONTRACTOR :

DRILLING METHOD AND EQUIPMENT :

WATER LEVELS : START : END : LOGGER :

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	1.0					
	2.5	1.5				
	3.5					
5	5.0		1-S			
	9.0					
10	10.5			3-5-6 (11)		
15						
20						
25						

Sample Interval: Top/Bottom (ft bgs)

Amount of Sample Recovered (ft)

Sample Number - Sample Type

(S) Standard split-spoon drive sampler, 2.0-inch OD, 1.4-inch ID

(MC) Modified California split-spoon drive sampler, 3.0-inch OD, 2.4-inch ID

(ST) Thin-walled Shelby tube sampler, 3.0-inch OD, 2.9-inch ID

(BU) Bulk sample collected from drill cuttings

Standard Penetration Test Results

Number of blows required to advance driven sampler over three 6-inch increments. Number in parenthesis is the total number of blows required to advance sampler 12 inches beyond the first 6-inch interval. Drive samplers advanced using a 140 lb hammer with a 30-inch drop. The blow counts shown have not been modified to account for equipment, field procedures, depth, and/or subsurface conditions.

"PUSH" Indicates sampler was pushed using hydraulic pistons on rig.

General Notes

1) Soil classifications are generally based on the Unified Soil Classification System. Classifications and descriptions made in the field have been modified based on the results of laboratory testing.

2) Boring logs depict subsurface conditions only at the specific locations and times the boring was made. Logs do not necessarily reflect strata variations that may exist between boring locations.

Comments

Comments and observations regarding drilling or sampling made by the driller or field personnel.

Field and Laboratory Tests

PP Unconfined compressive strength, measured using a pocket penetrometer device (see note 3)

Wc Moisture content (ASTM D-2216)*

UW-D Dry unit weight (ASTM D-2937)*

p200 Percentage of soil particles passing the No.200 sieve (ASTM D-422)

SA Indicates sieve analysis (ASTM D-1140) performed, see laboratory data sheets for test results

Atterberg Limits (ASTM D-4318)
LL = Liquid Limit
PL = Plastic Limit
PL = Plasticity Index
(NP Indicates non-plastic)

S_u(TX-UU) Unconsolidated, undrained triaxial shear strength determined by laboratory testing (ASTM D-2850). Confining pressure, in psf, shown in parenthesis.

S_u(TX-CU) Consolidated, undrained triaxial shear strength determined by laboratory testing (ASTM D-4767). Consolidation/confining pressure, in psf, shown in parenthesis.

CONSOL Indicates one dimensional consolidation test (ASTM D-2435) performed, see laboratory data sheets for test results

Lab Log Shelby tube sample extruded and logged by laboratory staff

* Multiple values shown where more than one test was performed on a sample

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:	
351143.T1.02	PED-B-1	SHEET 1 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : East bank of Alviso Slough approximately 50 feet west of UPRR rail

ELEVATION : 21.05 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, truck mounted rig, 3.875-inch diameter drag bit, 140-lb manual hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 3/21/07 08:15 END : 3/22/07 11:45 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
5	5.0					
	6.5	1.5	1-S	5-23-17 (40)	Top 12": LEAN CLAY (CL), brown, moist, stiff to very stiff Bottom 6": SILTY SAND WITH GRAVEL (SM), gray, moist, very dense (FILL?)	Top 12": PP = 2.0, 2.5, 3.0 tsf
10	10.0					
	11.5	1.2	2-S	6-4-5 (9)	SILTY SAND WITH GRAVEL (SM), gray, moist, loose (FILL?)	Wc = 20.7% p200 = 46.2%
15	15.0					
	16.5	1.5	3-MC	5-6-6 (12)	SILTY SAND WITH GRAVEL (SM), similar to above, brownish gray, medium dense (FILL?)	
20	20.0					
	21.5	1.0	4-S	3-3-5 (8)	FISH SCALES, gray, loose, with occasional gravel	Driller indicates loss of circulation, 26 feet casing pipe installed
25	25.0					
	27.5	1.5	5-ST	PUSH	Bottom of the tube: FAT CLAY (CH), gray, moist, soft	Push 30" @150 psi PP = 0.25, 0.25, 0.25 tsf Wc = 77.2%; UW-D = 53.6 pcf LL = 87, PL = 39, PI = 48 S_u(TX-UU) = 521 (2000 psf) CONSOL
30						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:	
351143.T1.02	PED-B-1	SHEET 2 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : East bank of Alviso Slough approximately 50 feet west of UPRR rail

ELEVATION : 21.05 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, truck mounted rig, 3.875-inch diameter drag bit, 140-lb manual hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 3/21/07 08:15 END : 3/22/07 11:45 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	30.0				Bottom of the tube: FAT CLAY (CH), similar to above, soft to firm	Push 30" @200 psi PP = 0.75, 0.75, 0.5 tsf Wc = 24.1%; UW-D = 101.9 pcf S_u(TX-CU) = 1113 psf (1500 psf) = 1883 psf (3000 psf) = 3243 psf (6000 psf)
	32.5	2.0	6-ST	PUSH		
35	35.0					
	36.5	1.5	7-S	0-2-2 (4)	SILTY SAND (SM), brownish gray, moist to wet, loose, fine-grained sand	Wc = 25.8% p200 = 35.0%
40	40.0					
	41.5	1.5	8-S	2-1-2 (3)	SILTY SAND (SM), simialr to above, more silty and clayey at the bottom	
45	45.0					
	46.5	1.5	9-S	0-3-2 (5)	SILT WITH SAND (ML), gray, moist to wet, firm, with occasional roots	Wc = 29.3% p200 = 55.5%
50	50.0					
	51.5	1.5	10-S	8-12-16 (28)	SILTY SAND (SM), gray, moist to wet, medium dense, fine-grained sand	p200 = 16.3%
55	55.0					
	56.5	1.5	11-MC	26-27-23 (50)	SAND WITH SILT AND GRAVEL (SP-SM), gray, moist to wet, dense	
60						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:	
351143.T1.02	PED-B-1	SHEET 3 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : East bank of Alviso Slough approximately 50 feet west of UPRR rail

ELEVATION : 21.05 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, truck mounted rig, 3.875-inch diameter drag bit, 140-lb manual hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 3/21/07 08:15 END : 3/22/07 11:45 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
60.0					SAND WITH SILT AND GRAVEL (SP-SM), similar to above, medium dense, with lens of fat clay	
	61.5	1.5	12-S	5-8-18 (26)		
65						
70	70.0					
	71.5	1.5	13-S	14-17-20 (37)	SAND WITH SILT AND GRAVEL (SP-SM), gray, wet, dense	p200 = 7.5% SA
75						
80	80.0					
	81.5	1.5	14-S	28-30-22 (52)	SAND WITH SILT AND GRAVEL (SP-SM), similar to above, very dense	Driller indicates loss of circulation
85						
90						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:	
351143.T1.02	PED-B-1	SHEET 4 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : East bank of Alviso Slough approximately 50 feet west of UPRR rail

ELEVATION : 21.05 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, truck mounted rig, 3.875-inch diameter drag bit, 140-lb manual hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 3/21/07 08:15 END : 3/22/07 11:45 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
90.0					Top 10": GRAVEL WITH SILT (GP-GM), gray, moist to wet, medium dense Middle 6": SILT (ML), gray, moist to wet, very stiff Bottom 2": POORLY GRADED SAND (SP), gray, moist to wet, medium dense	p200 = 5.3% SA (Top 10")
91.5	1.5	15-S	8-11-17 (28)			
95						
100	100.0					
	101.5	1.0	16-S	8-12-15 (27)	SILT (ML), brownish gray, moist, firm	PP = 0.75, 0.5, 1.0 tsf Wc = 31.0% LL = 54, PL = 25, PI = 29
105						
110	110.0					
	111.5	1.5	17-S	7-9-10 (19)	FAT CLAY (CH), mottled gray and brown, moist, stiff to very stiff	PP = 1.75, 2.0, 2.25 tsf
					Bottom of Hole at 111.5 ft bgs, 3/22/07 10:30	Hole backfilled with neat cement grout using drill rod as tremie pipe
115						
120						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-2 SHEET 1 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : West bank of Alviso Slough approximately 200 feet west of UPRR rail

ELEVATION : 16.24 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, truck mounted rig, 3.875-inch diameter drag bit, 140-lb manual hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 3/23/07 07:45 END : 3/23/07 17:00 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
5	5.0					
	6.5	1.0	1-S	4-6-5 (11)	SANDY LEAN CLAY (CL), brownish gray, moist, stiff (FILL?)	9" thich concrete cored @ 3.5' bgs
10	10.0					
	12.5	1.5	2-ST	PUSH	Top 9": FAT CLAY (CH), black, moist, firm Bottom 7": FISH SCALES AND SHELLS, light gray	Push top 6" @150 psi and bottom 12" @300 psi Wc = 56.5%; UW-D = 66.5 pcf S_u(TX-UU) = 362 psf (993 psf)
15	15.0					
	16.5	0.2	3-S	2-2-2 (4)	FAT CLAY (CH), gray, moist, firm, with shells	Wc = 32.4%
20	20.0					
	21.5	1.5	4-MC	4-5-10 (15)	FAT CLAY (CH), dark gray, moist to wet, stiff	PP = 1.25, 1.0, 1.0 tsf Wc = 29.5%; UW-D = 94.0 pcf
25	25.0					
	26.5	1.0	5-S	5-5-5 (10)	SILTY SAND WITH GRAVEL(SM), brown, moist to wet, loose, fine-grained sand	p200 = 26.7%
30						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-2 SHEET 2 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : West bank of Alviso Slough approximately 200 feet west of UPRR rail

ELEVATION : 16.24 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, truck mounted rig, 3.875-inch diameter drag bit, 140-lb manual hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 3/23/07 07:45 END : 3/23/07 17:00 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	30.0				SILTY SAND WITH GRAVEL(SM), similar to above	Wc = 25.7% p200 = 44.2%
	31.5	1.2	6-S	2-4-5 (9)		
35	35.0				CLAYEY SILT (ML), brown, moist, firm	PP = 1.0, 0.75, 0.5 tsf
	36.5	1.5	7-S	2-2-5 (7)		
40	40.0				Bottom of the tube: SANDY SILT (ML), brown, moist to wet, soft to firm, fine-grained sand	Push 30" @130 psi PP = 0.5, 0.5, 0.5 tsf Wc = 29.1%; UW-D = 94.0 pcf p200 = 67.7%
	42.5	2.0	8-ST	PUSH		
45	45.0				SILTY SAND (SM), similar to above, wetter, firm	
	46.5	1.5	9-S	3-2-3 (5)		
50	50.0				POORLY GRADED SAND (SP), mottled gray and brown, moist, medium dense, fine-grained sand	
	51.5	1.5	10-MC	7-12-15 (27)		
55	55.0				SAND WITH SILT AND GRAVEL (SP-SM), gray, moist to wet, dense	p200 = 8.9% SA
	56.5	1.5	11-S	11-15-20 (35)		
60						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-2 SHEET 3 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : West bank of Alviso Slough approximately 200 feet west of UPRR rail

ELEVATION : 16.24 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, truck mounted rig, 3.875-inch diameter drag bit, 140-lb manual hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 3/23/07 07:45 END : 3/23/07 17:00 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
60.0					SAND WITH SILT AND GRAVEL (SP-SM), similar to above	
61.5	1.5	12-S		15-17-19 (36)		
65						
70.0						
71.5	1.5	13-S		7-11-12 (23)	SILT WITH SAND (ML), mottled gray and brown, moist to wet, very stiff	
75						
80.0						
81.5	1.5	14-S		17-17-14 (31)	Top 6": SANDY SILT (ML), dark gray, moist to wet, very stiff Bottom 12": SAND WITH SILT (SP-SM), dark gray, moist to wet, dense	Driller indicates loss of circulation p200 = 7.7% (Bottom 12")
85						
90						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-2 SHEET 4 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : West bank of Alviso Slough approximately 200 feet west of UPRR rail

ELEVATION : 16.24 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, truck mounted rig, 3.875-inch diameter drag bit, 140-lb manual hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 3/23/07 07:45 END : 3/23/07 17:00 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
90.0					Top12": GRAVEL WITH SILT (GP-GM), gray, wet, dense Bottom 6": POORLY GRADED SAND (SP), brownish gray, moist to wet, dense	
91.5	1.5	15-S	11-13-25 (38)			
95						
100	100.0					
	101.5	1.5	16-S	5-7-8 (15)	LEAN CLAY (CL), brownish gray, moist, firm to stiff	PP = 0.75, 0.5, 1.0 tsf Wc = 24.9% LL = 37, PL = 16, PI = 21
105						
110	110.0					
	111.5	1.5	17-S	6-7-10 (17)	FAT CLAY (CH), mottled gray and brown, moist, firm	PP = 0.75, 0.5, 0.75 tsf
					Bottom of Hole at 111.5 ft bgs, 3/23/07 16:00	Hole backfilled with neat cement grout using drill rod as tremie pipe
115						
120						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-3 SHEET 1 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : On the alignment of B-1 and B-2 approximately 180 feet from B-1

ELEVATION : 7.35 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, track mounted rig, 3.875-inch diameter drag bit, 140-lb automatic-trip hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 4/11/07 10:30 END : 4/12/07 11:15 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	3.0					
	4.5	1.5	1-S	0-0-0 (0)	FAT CLAY (CH), dark gray to black, moist to wet, very soft	PP = 0 tsf Wc = 114.6%
5						
	8.0					
	9.5	1.2	2-S	1-1-1 (2)	SANDY FAT CLAY (CH), dark gray, wet, soft, with occasional gravel	PP = 0.25, 0, 0 tsf
10						
	13.0					
	15.5	2.0	3-ST	PUSH	Bottom of the tube: FAT CLAY (CH), dark gray, wet, soft	Push 30" @ 0 psi Wc = 58.5%; UW-D = 64.5 pcf LL = 73, PL = 31, PI = 42 S_u(TX-CU) = 450 psf (700 psf) = 839 psf (1400 psf) = 1408 psf (2800 psf) CONSOL
15						
	18.0					
	19.5	0.5	4-S	0-1-1 (2)	FAT CLAY (CH), similar to above	Wc = 38.0%
20						
	23.0					
	24.5	1.5	5-S	1-0-1 (1)	LEAN CLAY (CL), dark gray, moist, soft to very soft	PP = 0.25, 0.125, 0.25 tsf Wc = 29.3% LL = 34, PL = 18, PI = 16
25						
	28.0					
	29.5	1.5	6-MC	0-0-1 (1)	LEAN CLAY (CL), similar to above, with occasional gravel	PP = 0.125, 0.125, 0.25 tsf
30						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-3 SHEET 2 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : On the alignment of B-1 and B-2 approximately 180 feet from B-1

ELEVATION : 7.35 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, track mounted rig, 3.875-inch diameter drag bit, 140-lb automatic-trip hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 4/11/07 10:30 END : 4/12/07 11:15 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
33.0						
34.5	1.0	7-S	2-4-4 (8)		SILTY SAND (SM), dark gray, wet, loose, with occasional gravel	p200 = 28.2%
35						
38.0						
39.5	1.5	8-S	4-3-8 (11)		SILTY SAND (SM), dark gray, wet, medium dense, wiht occasional gravel	Wc = 21.5% p200 = 14.7%
40						
43.0						
44.5	1.2	9-S	5-8-15 (23)		POORLY GRADED SAND (SP), gray, wet, medium dense, fine-grained sand	Driller indicates caving in the hole, 45' casing pipe installed
45						
48.0						
49.5	1.0	10-S	6-8-10 (18)		SAND WITH SILT (SP-SM), gray, wet, medium dense, fine-grained sand	p200 = 6.0% SA
50						
53.0						
54.5	1.0	11-S	3-7-16 (23)		POORLY GRADED SAND (SP), similar to above	
55						
58.0						
59.5	1.5	12-MC	10-20-23 (43)		SAND WITH GRAVEL (SP), gray, wet, dense	
60						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-3 SHEET 3 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : On the alignment of B-1 and B-2 approximately 180 feet from B-1

ELEVATION : 7.35 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, track mounted rig, 3.875-inch diameter drag bit, 140-lb automatic-trip hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 4/11/07 10:30 END : 4/12/07 11:15 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
65						
	68.0					
	69.5	1.5	13-S	15-24-40 (64)	SAND WITH GRAVEL (SP), similar to above, very dense	p200 = 2.7% SA
70						
75						
	78.0					
	79.5	1.5	14-S	5-3-4 (7)	Top 6": SAND WITH GRAVEL AND CLAY (SP), gray, wet, dense Bottom 12": CLAYEY SILT (ML), gray, moist, firm	PP (bottom 12') = 0.5, 0.75, 0.75 tsf
80						
85						
	88.0					
	90.5	2.0	15-ST	PUSH	Bottom of the Tube: FAT CLAY (CH), gray brown, moist, stiff to very stiff	Push first 12" @ 0 psi, second 6" @ 300 psi and last 6" @ 600 psi PP = 2.0, 1.75, 1.75 tsf Wc = 23.8%; UW-D = 102.6 pcf S_u(TX-UU) = 2121 (5000 psf) CONSOL
90						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-3 SHEET 4 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : On the alignment of B-1 and B-2 approximately 180 feet from B-1

ELEVATION : 7.35 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, track mounted rig, 3.875-inch diameter drag bit, 140-lb automatic-trip hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 4/11/07 10:30 END : 4/12/07 11:15 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
95						
	98.0					
	99.5	1.5	16-S	6-9-11 (20)	FAT CLAY (CH), mottled gray and brown, moist, very stiff	PP = 2.25, 2.0, 2.5 tsf
100						
105						
	108.0					
	109.5	1.5	17-S	3-9-13 (22)	FAT CLAY (CH), similar to above	PP = 3.0, 2.5, 2.5 tsf
110						
115						
	118.0					
	119.5	1.5	18-S	7-10-13 (23)	FAT CLAY (CH), similar to above, stiff	PP = 1.75, 1.5, 1.75 tsf
120					Bottom of Hole at 119.5 ft bgs, 4/12/07 10:10	Hole backfilled with neat cement grout using drill rod as tremie pipe

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-4 SHEET 1 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : On the alignment of B-1 and B-2 approximately 360 feet from B-1

ELEVATION : 6.92 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, track mounted rig, 3.875-inch diameter drag bit, 140-lb automatic-trip hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 4/12/07 14:00 END : 4/13/07 13:30 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
5						
8.0						
9.5	1.5	1-S		0-0-0 (0)	FAT CLAY (CH), dark gray to black, wet, very soft	PP = 0, 0, 0 tsf Wc = 85.8%
10						
15						
18.0						
19.5	1.5	2-S		0-0-1 (1)	FAT CLAY (CH), similar to above, with occasional roots	PP = 0, 0, 0 tsf Wc = 87.0%
20						
25						
28.0						
29.5	1.5	3-S		2-3-4 (7)	FAT CLAY (CH), gray, moist, firm	PP = 1.0, 0.75, 0.5 tsf Wc = 39.0%
30						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-4 SHEET 2 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : On the alignment of B-1 and B-2 approximately 360 feet from B-1

ELEVATION : 6.92 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, track mounted rig, 3.875-inch diameter drag bit, 140-lb automatic-trip hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 4/12/07 14:00 END : 4/13/07 13:30 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
35						
38.0						
39.5	0.8	4-S		1-0-2 (2)	FAT CLAY (CH), similar to above, soft	Driller indicates caving in the hole, 40' casing pipe installed PP = 0.125, 0.25, 0.25 tsf Wc = 44.2%
40						
45						
48.0						
49.5	1.0	5-S		4-3-4 (7)	SILTY SAND WITH GRAVEL (SM), gray, wet, loose	Driller indicates caving in the hole, another 10' casing pipe installed p200 = 36.8%
50						
55						
58.0						
59.5	1.5	6-S		10-10-6 (16)	Top 12": GRAVEL WITH SILT AND SAND (GP-GM), gray, wet, medium dense Bottom 6": SILT (ML), gray, moist, stiff	p200 = 6.6% (Top 12")
60						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
351143.T1.02	PED-B-4 SHEET 3 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : On the alignment of B-1 and B-2 approximately 360 feet from B-1

ELEVATION : 6.92 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, track mounted rig, 3.875-inch diameter drag bit, 140-lb automatic-trip hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 4/12/07 14:00 END : 4/13/07 13:30 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
65						
68.0						
69.5	1.2	7-S		10-13-19 (32)	POORLY GRADED SAND (SP), gray, moist to wet, dense	
70						
75						
78.0						
79.5	1.0	8-S		15-13-15 (28)	SAND WITH SILT AND GRAVEL (SP-SM), brownish gray, wet, medium dense	p200 = 7.9%
80						
85						
88.0						
89.5	1.5	9-S		5-6-7 (13)	FAT CLAY WITH SILT (CH), gray brown, moist, firm to stiff	PP = 0.5, 1.0, 0.75 tsf
90						

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:	
351143.T1.02	PED-B-4	SHEET 4 OF 4

SOIL BORING LOG

PROJECT : Bay Trail Reach 9B, Alviso, CA

LOCATION : On the alignment of B-1 and B-2 approximately 360 feet from B-1

ELEVATION : 6.92 ft (NAVD 88)

DRILLING CONTRACTOR : Pitcher Drilling, East Palo Alto, California

DRILLING METHOD AND EQUIPMENT : Mud-rotary wash, track mounted rig, 3.875-inch diameter drag bit, 140-lb automatic-trip hammer

WATER LEVELS : Not measured (rotary wash drilling) START : 4/12/07 14:00 END : 4/13/07 13:30 LOGGER : Jian Hu

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
95						
	98.0					
	99.5	1.5	10-MC	5-8-8 (16)	FAT CLAY (CH), gray, moist to wet, firm, with orange staining	PP = 0.25, 0.5, 0.75 tsf
100						
105						
	108.0					
	110.5	2.0	11-ST	PUSH	Bottom of the tube: SILTY SAND (SM), gray, wet, very stiff, with chunks of woods, fine-grained sand	Driller indicates hard pushing, pushed 24" up to 1000 psi PP = 2.5, 2.0, 2.5 tsf Wc = 16.5% p200 = 29.3%
110						
115						
	118.0					
	119.5	1.5	12-S	4-9-12 (21)	FAT CLAY (CH), gray with brown color mottled, moist stiff to very stiff	PP = 2.25, 2.25, 1.75 tsf
120					Bottom of Hole at 119.5 ft bgs, 4/13/07 11:45	Hole backfilled with neat cement grout using drill rod as tremie pipe

North

South

Elevation (ft)

Distance Along Baseline (ft)

PED-B-1

N Value	USCS	
40	CL	
9	SM	
12		
8	Fish Scales	
	CH	
4	SM	
3	ML	
5		
28		
50		
26		
37	SP-SM	
52		
28		
27	ML	
19	CH	

PED-B-3

N Value	USCS	
0	CH	
2		
2		
1	CL	
1		
8	SM	
11		
23		
18		
23		
43	SP-SM	
64		
7		
20	CH	
22		
23		

PED-B-4

N Value	USCS	
0	CH	
1		
7		
2		
7	SM	
16		
32	SP-SM	
28		
13	CH	
16		
21	SM	
	CH	

PED-B-2

N Value	USCS	
11	CL	
	CH	
	Fish Scales	
4	CH	
15		
10	SM	
9		
7	ML	
5		
27		
35		
36		
23	SP-SM	
31		
38		
15	CL	
17	CH	

CH2MHILL

LITHOLOGY GRAPHICS

BR-Lean Clay | Silty Sand | Fat Clay | Silt | Poorly Graded Sand with Silt

Note: Changes in lithology are interpreted and may not reflect actual condition.

Bay Trail Reach 9B
Alviso, CA

Project Number: 351143.T1.02

STRATIGRAPHY & GW - B SIZE ALVISO_SLOUGH_BIKE_BRIDGE_FENCES.GPJ CH2M GEOTECH.GDT 5/29/07

Appendix D
Geotechnical Laboratory Data Sheets

ETS

Environmental Technical Services

975 Transport Way, Suite 2
Petaluma, CA 94954
(707) 778-9605/FAX 778-9612

-Soil, Water & Air Testing & Monitoring
-Analytical Labs
-Technical Support

Serving people and the environment so that both benefit.

COMPANY: RGH Geotech, 1305 N. Dutton Avenue, Santa Rosa, CA 95401				ANALYST(S)	SUPERVISOR
ATTN: Terry McCue			DATE of	D. Salinas	D. Jacobson
JOB SITE: Alviso Bike Bridge, Alviso, California		DATE RECEIVED	COMPLETION	S. Santos	LAB DIRECTOR
JOB #: 351143.T1.02		4/27/2007	5/7/2007		G.S. Conrad PhD

LAB SAMPLE NUMBER	SAMPLE ID	DESCRIPTION of SOIL and/or SEDIMENT	SOIL pH -log[H+]	MINIMUM RESISTIVITY ohm-cm	ELECTRICAL CONDUCTIVITY µmhos/cm	SULFATE SO4 ppm	CHLORIDE Cl ppm
02546-1	ABB1/SC	B-1 @ 45-46.5'	7.97	196	[5100]	930	2,991
02546-2	ABB2/SC	B-2 @ 5.0-6.5'	8.05	556	[1800]	810	2,605
02546-3	ABB3/SC	B-2 @ 50-51.5'	9.02	345	[2900]	750	1,221
02546-4	ABB4/SC	B-3 @ 28-29.5'	8.08	113	[8800]	3,780	11,841
02546-5	ABB5/SC	B-4 @ 58-59.5'	8.44	192	[5200]	570	2,721
02546-6	ABB6/SC	B-4 @ 98-99.5'	8.37	128	[7800]	1,140	8,091
Method	Detection	Limits -->	—	1	0.1	1	1

LAB SAMPLE NUMBER	SAMPLE ID	DESCRIPTION of SOIL and/or SEDIMENT	SALINITY ECe mmhos/cm	SOLUBLE SULFIDES (S=) ppm	SOLUBLE CYANIDES (CN=) ppm	REDOX mV	PERCENT MOISTURE %
02546-1	ABB1/SC	B-1 @ 45-46.5'				+272.5	
02546-2	ABB2/SC	B-2 @ 5.0-6.5'				+279.3	
02546-3	ABB3/SC	B-2 @ 50-51.5'				+234.5	
02546-4	ABB4/SC	B-3 @ 28-29.5'				+181.5	
02546-5	ABB5/SC	B-4 @ 58-59.5'				+186.5	
02546-6	ABB6/SC	B-4 @ 98-99.5'				+225.7	
Method	Detection	Limits -->	—	0.1	0.1	1	0.1

COMMENTS

Resistivities are in the 100 to 600 ohm-cm range which is quite poor, but all soil reactions (i.e., pHs) are moderately alkaline basically being in the 8-9 range; sulfates are elevated, and two are in the 1000-4,000 ppm range; chlorides are elevated w/ two being extreme at 8,000-12,000 ppm; redoxes are mod. strong. The CalTrans times to perf for galvanized steel are as follows: for ABB1 & 18 ga steel the time is over 12 yrs, and for 12 ga it goes to 28 yrs; for ABB2 the respective times are at 19 yrs, and 43 yrs; for ABB3 they are 16 yrs, and 35.5 yrs; for ABB4 they are 10 & 22 yrs; for ABB5 they are 12 & 28 yrs; and for ABB6 they are 10 & 23 yrs. Steel pitting times are short as follows: ABB1 w/ rate @ 0.57 mm/yr = 2 mm @ 3.5 yrs; ABB2 @ 0.155 ≈ 13 yrs; ABB3 @ 0.38 ≈ 5.3 yrs; ABB4 @ 0.65 ≈ 3.0 yrs; ABB5 @ 0.55 ≈ 3.6 yrs; and ABB6 @ 0.62 ≈ 3.2 yrs. All chlorides are problematic, two particularly so. Times to corrosion of standard rebar in standard concrete mix are as follows: ABB1 @ 23 yrs; ABB2 @ 24 yrs; ABB3 @ 33 yrs; ABB4 @ 13 yrs; ABB5 @ 23 yrs; and ABB6 @ 15 yrs. Some sulfates are close to 1,000, and two are well over. Considering redoxes, even those close to 1,000 are likely to have some impact on cement, mortar and grout. None of these soils would benefit from alkaline treatment. The moderate redoxes are likely to have an adverse impact on construction materials; i.e., perf and pitting time estimates, poor as they are, are likely to be high under the circumstances. To increase metals longevity in these soils would require materials upgrading (i.e., increased gauge or more resistant steel type); and/or other actions can be taken (e.g. wrapping steel, special engineering fill, cathodic protection, coatings, plastic pipe, etc.). Increasing rebar life would involve upgrading as well (i.e., thicker concrete, resistant concrete, rebar barrier [e.g. siloxanes, etc.], ICCP, ECE, cathodic protection, corrosion inhibitors, etc.). Last, considering SO4, Cl and redox levels, it would be prudent to upgade to more resistant concrete (e.g. ASTM Type II at least, and ASTM Type V especially for the worst two).

\\\\NOTES: Methods ara from following sources: extractions by Cal Trans protocols as per Cal Test 417 (SO4), 422 (Cl), and 532/643 (pH & resistivity); &/or by ASTM Vol. 4.08 & ASTM Vol. 11.01 (=EPA Methods of Chemical Analysis, or Standard Methods); pH - ASTM G 51; Spec. Cond. - ASTM D 1125; resistivity - ASTM G 57; redox - Pt probe/ISE; sulfate - extraction Title 22, detection ASTM D 516 (=EPA 375.4); chloride - extraction Title 22, detection ASTM D 512 (=EPA 325.3); sulfides - extraction by Title 22, and detection EPA 376.2 (= SMEWW 4500-S D); cyanides - extraction by Title 22, and detection by ASTM D 4374 (=EPA 335.2).

RGH Consultants, Inc.

MOISTURE DENSITY

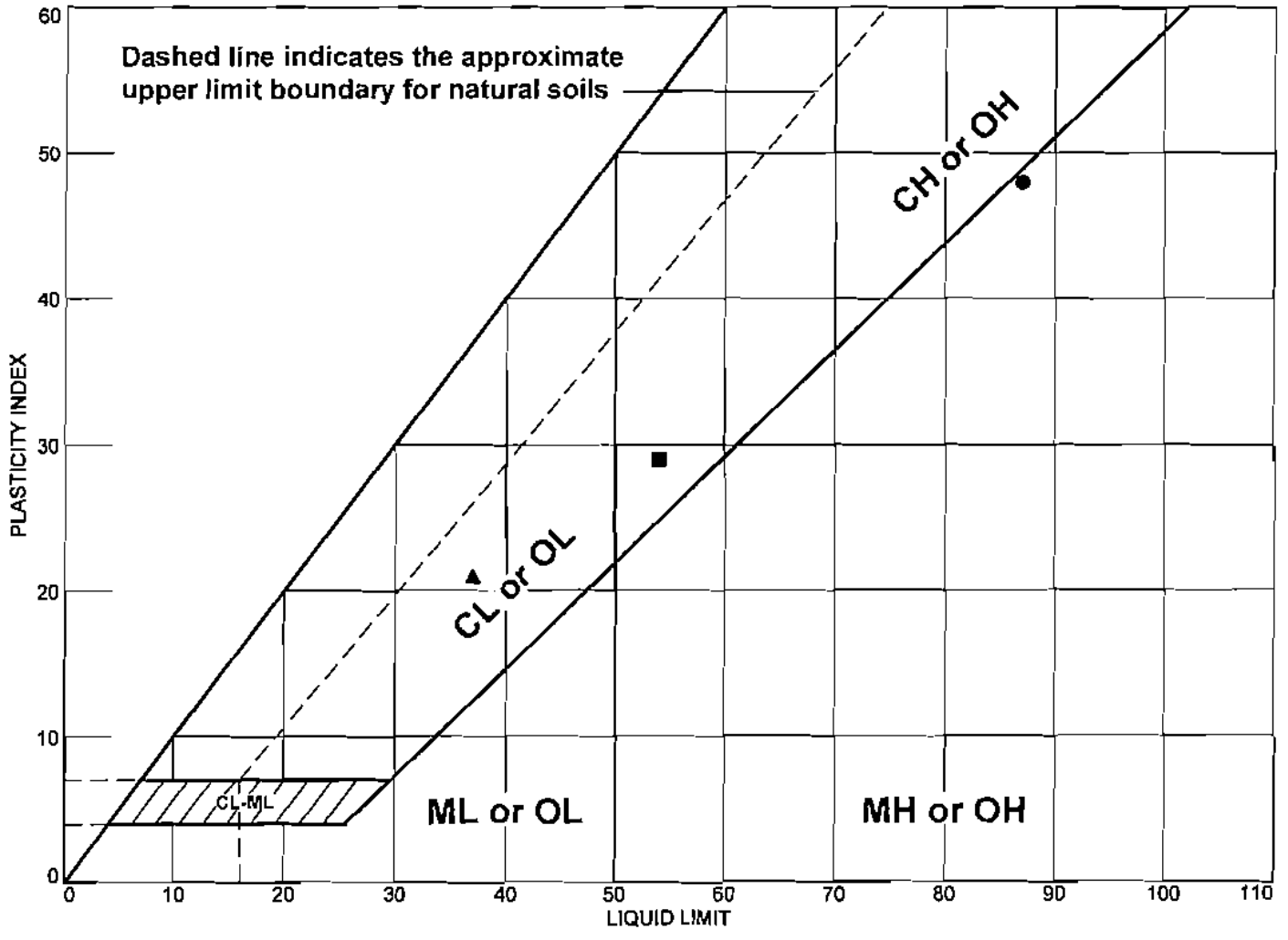
Project Name: Alviso Bike Bridge Investigation **Project #:** 351143.T1.02 **Date:** 5/9/2007

Boring	B-1/S-2	B-1/S-7	B-1/S-9	B-1/S-17	B-2/ST-3	B-2/MC-4	B-2/S-6	B-2/ST-8
Depth	10-11.5'	35-36.5'	45-46.5'	110-111.5'	15-16.5'	20-21.5'	30-31.5'	40-42.5'
Length (in)						5.70		5.50
Diameter (in)						2.43		2.87
Tube + Wet Soil (g)						846.5		1129.8
Tube (g)						0.0		0.0
Wet Soil (g)						846.5		1129.8
Tare + Wet Soil (g)	837.3	744.6	871.3	257.0	98.0	291.5	737.8	629.3
Tare + Dry Soil (g)	708.2	609.0	698.6	207.8	86.2	236.6	609.3	506.1
Tare Weight (g)	84.4	83.8	110.0	49.2	49.8	50.3	110.2	82.2
Moisture Loss (g)	129.1	135.6	172.7	49.2	11.8	54.9	128.5	123.2
Dry Soil (g)	623.8	525.2	588.6	158.6	36.4	186.3	499.1	423.9
Wet Density (pcf)						122		121
Dry Density (pcf)						94		94
Moisture Content (%)	20.7	25.8	29.3	31.0	32.4	29.5	25.7	29.1

Boring	B-2/S-16	B-3/S-1	B-3/S-4	B-3/S-5	B-3/S-8	B-4/S-1	B-4/S-2	B-4/S-3
Depth	100-101.5'	3-4.5'	18-19.5'	23-24.5'	38-39.5'	8-9.5'	18-19.5'	28-29.5'
Length (in)								
Diameter (in)								
Tube + Wet Soil (g)								
Tube (g)								
Wet Soil (g)								
Tare + Wet Soil (g)	320.9	247.8	244.1	338.3	741.8	326.7	216.4	253.4
Tare + Dry Soil (g)	266.8	142.1	190.7	273.1	630.0	198.7	139.1	196.4
Tare Weight (g)	49.8	49.9	50.1	50.2	110.1	49.6	50.2	50.1
Moisture Loss (g)	54.1	105.7	53.4	65.2	111.8	128.0	77.3	57.0
Dry Soil (g)	217.0	92.2	140.6	222.9	519.9	149.1	88.9	146.3
Wet Density (pcf)								
Dry Density (pcf)								
Moisture Content (%)	24.9	114.6	38.0	29.3	21.5	85.8	87.0	39.0

Boring	B-4/S-4	B-4/ST-11						
Depth	38-39.5'	108-110.5'						
Length (in)								
Diameter (in)								
Tube + Wet Soil (g)								
Tube (g)								
Wet Soil (g)								
Tare + Wet Soil (g)	247.3	897.5						
Tare + Dry Soil (g)	186.8	782.2						
Tare Weight (g)	49.8	83.1						
Moisture Loss (g)	60.5	115.3						
Dry Soil (g)	137.0	699.1						
Wet Density (pcf)								
Dry Density (pcf)								
Moisture Content (%)	44.2	16.5						

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Black Elastic Silt (MH)	87	39	48			MH
■	Grey Fat Clay (CH)	54	25	29			CH
▲	Grey Lean Clay W/Sand (CL)	37	16	21			CL

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B

Alviso Bike Bridge Investigation

● **Source of Sample:** B-1 **Depth:** 25.0-27.5' **Sample Number:** ST-5

■ **Source of Sample:** B-1 **Depth:** 110.0-111.5' **Sample Number:** S-17

▲ **Source of Sample:** B-2 **Depth:** 100.0-101.5' **Sample Number:** S-16

Remarks:

RGH CONSULTANTS, INC.

Plate

Tested By: CMc **Checked By:** TMc

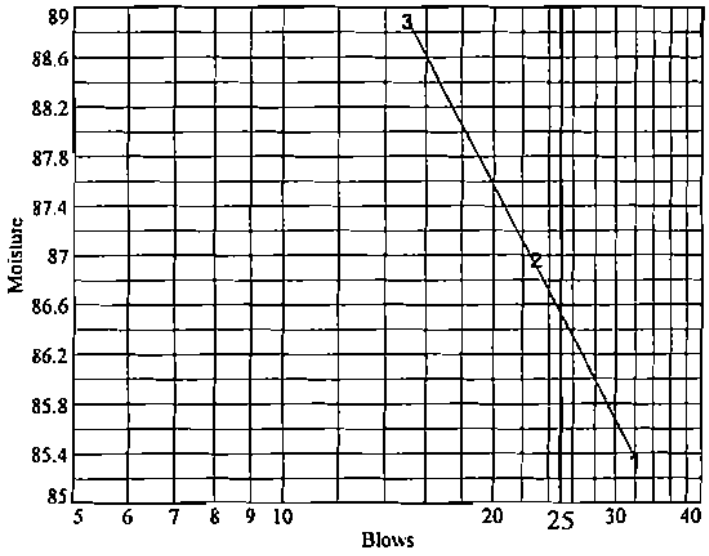
LIQUID AND PLASTIC LIMIT TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-1
Depth: 25.0-27.5'
Sample Number: ST-5
Material Description: Black Elastic Silt (MH)
USCS: MH
Tested by: CMc
Checked by: TMc

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	19.56	20.11	21.48			
Dry+Tare	15.66	15.84	16.52			
Tare	11.09	10.93	10.94			
# Blows	32	23	15			
Moisture	85.3	87.0	88.9			



Liquid Limit= 87
Plastic Limit= 39
Plasticity Index= 48

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	6.15	5.98			
Dry+Tare	5.65	5.51			
Tare	4.35	4.30			
Moisture	38.5	38.8			

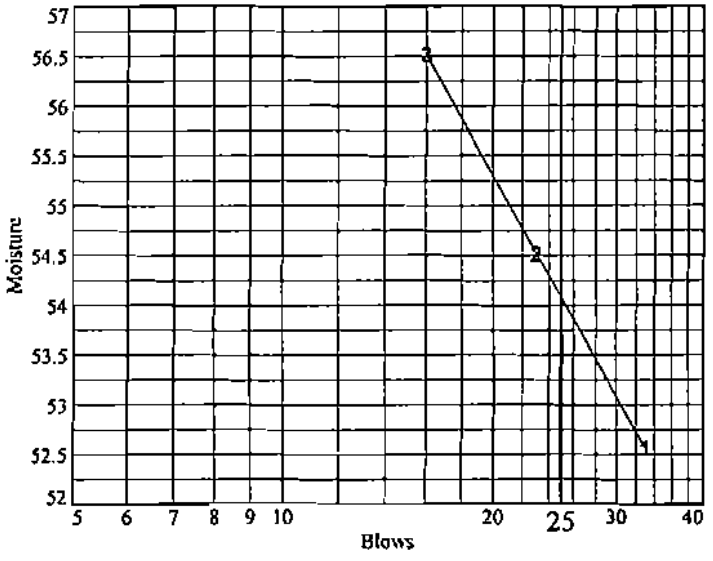
LIQUID AND PLASTIC LIMIT TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-1
Depth: 110.0-111.5' **Sample Number:** S-17
Material Description: Grey Fat Clay (CH)
USCS: CH
Tested by: CMc **Checked by:** TMc

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	20.15	21.77	21.93			
Dry+Tare	16.98	18.03	18.03			
Tare	10.95	11.17	11.13			
# Blows	33	23	16			
Moisture	52.6	54.5	56.5			



Liquid Limit= 54
Plastic Limit= 25
Plasticity Index= 29

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	6.19	6.42			
Dry+Tare	5.82	6.00			
Tare	4.33	4.29			
Moisture	24.8	24.6			

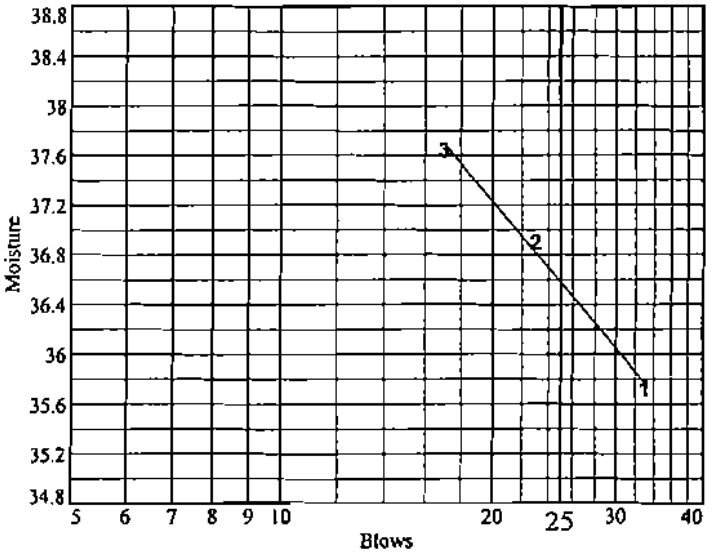
LIQUID AND PLASTIC LIMIT TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-2
Depth: 100.0-101.5'
Sample Number: S-16
Material Description: Grey Lean Clay W/Sand (CL)
USCS: CL
Tested by: CMc
Checked by: TMc

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.74	24.29	23.49			
Dry+Tare	20.36	20.71	20.06			
Tare	10.90	11.01	10.95			
# Blows	33	23	17			
Moisture	35.7	36.9	37.7			

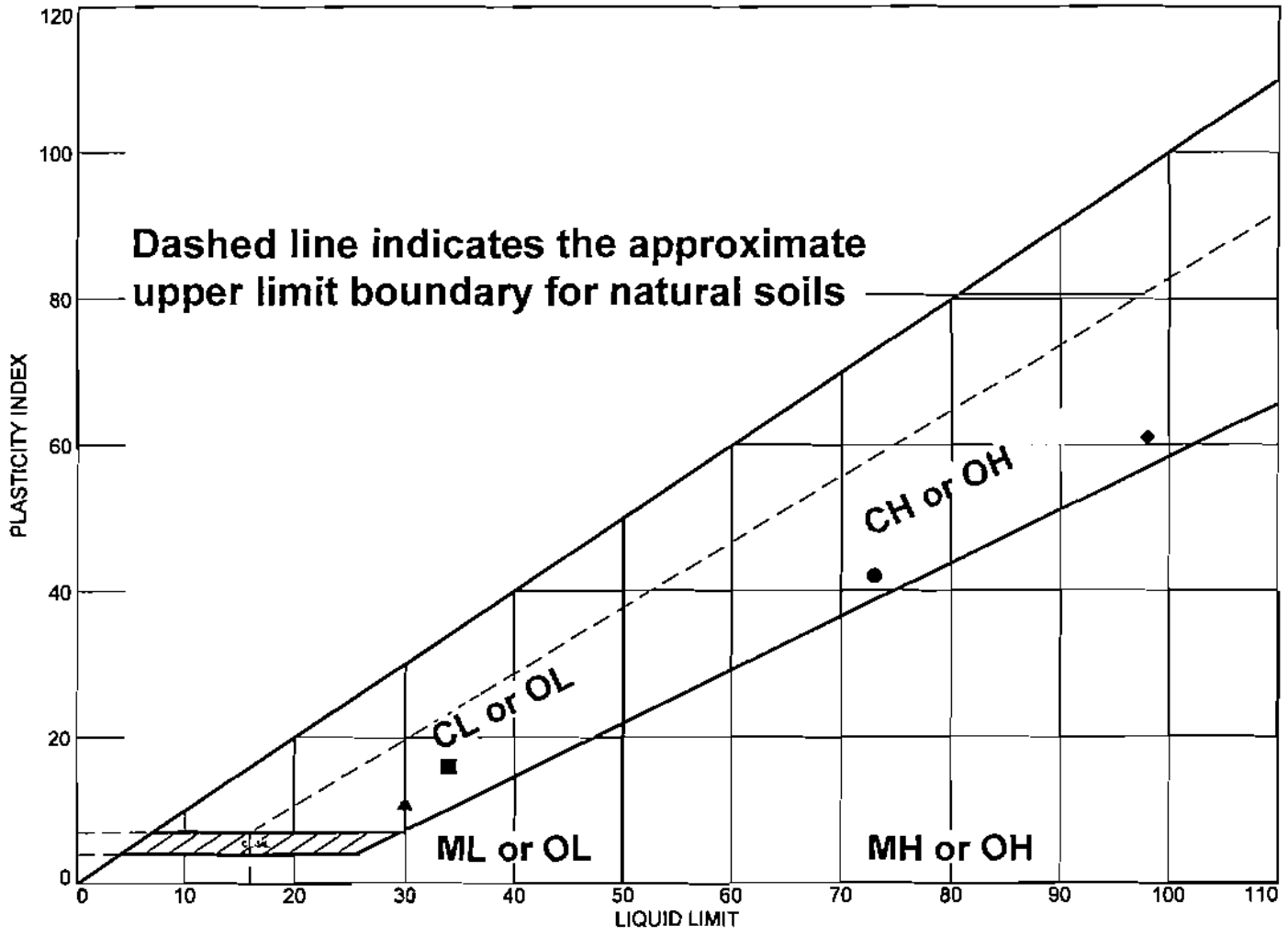


Liquid Limit= 37
Plastic Limit= 16
Plasticity Index= 21

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	6.66	7.19			
Dry+Tare	6.30	6.79			
Tare	4.09	4.33			
Moisture	16.3	16.3			

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Grey Fat Clay (CH)	73	31	42			CH
■	Brown Lean Clay W/Sand (CL)	34	18	16			CL
▲	Brown Lean Clay W/Sand (CL)	30	19	11			CL
◆	Grey Fat Clay (CH)	98	37	61			CH

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B

Alviso Bike Bridge Investigation

● **Source of Sample:** B-3 **Depth:** 13.0-14.5' **Sample Number:** ST-3

■ **Source of Sample:** B-3 **Depth:** 23.0-24.5' **Sample Number:** S-5

▲ **Source of Sample:** B-3 **Depth:** 108.0-109.5' **Sample Number:** S-17

◆ **Source of Sample:** B-4 **Depth:** 18.0-19.5' **Sample Number:** S-2

Remarks:

RGH CONSULTANTS, INC.

Plate

Tested By: CMc **Checked By:** TMc

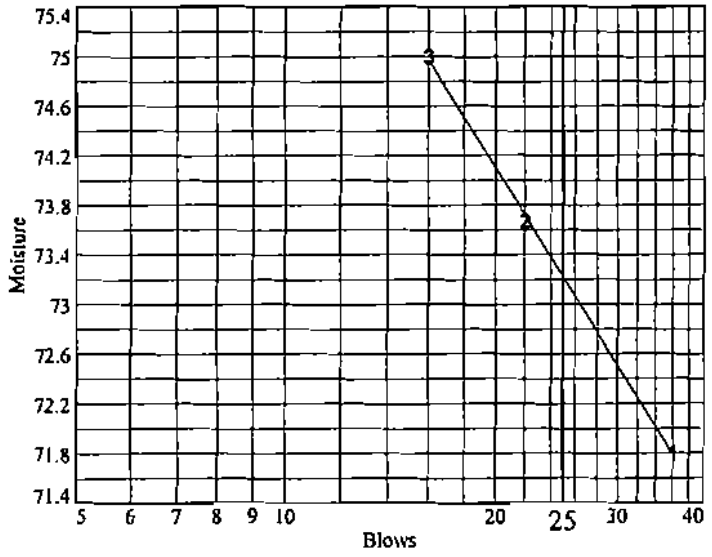
LIQUID AND PLASTIC LIMIT TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-3
Depth: 13.0-14.5' **Sample Number:** ST-3
Material Description: Grey Fat Clay (CH)
USCS: CH
Tested by: CMc **Checked by:** TMc

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	21.46	20.85	22.46			
Dry+Tare	17.13	16.68	17.57			
Tare	11.10	11.02	11.05			
# Blows	36	22	16			
Moisture	71.8	73.7	75.0			



Liquid Limit= 73
Plastic Limit= 31
Plasticity Index= 42

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	6.40	6.48			
Dry+Tare	5.87	5.96			
Tare	4.11	4.28			
Moisture	30.1	31.0			

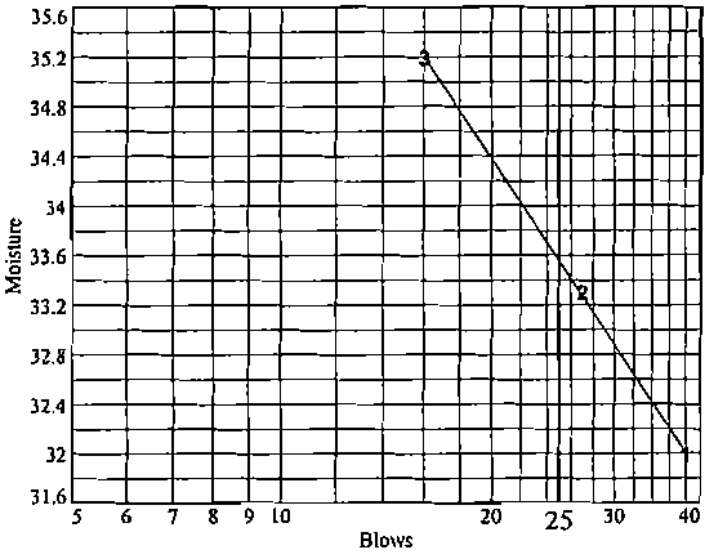
LIQUID AND PLASTIC LIMIT TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-3
Depth: 23.0-24.5' **Sample Number:** S-5
Material Description: Brown Lean Clay W/Sand (CL)
USCS: CL
Tested by: CMc **Checked by:** TMc

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	22.59	24.14	24.35			
Dry+Tare	19.82	20.85	20.88			
Tare	11.16	10.97	11.02			
# Blows	38	27	16			
Moisture	32.0	33.3	35.2			



Liquid Limit= 34
Plastic Limit= 18
Plasticity Index= 16

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	6.62	7.05			
Dry+Tare	6.24	6.60			
Tare	4.09	4.08			
Moisture	17.7	17.9			

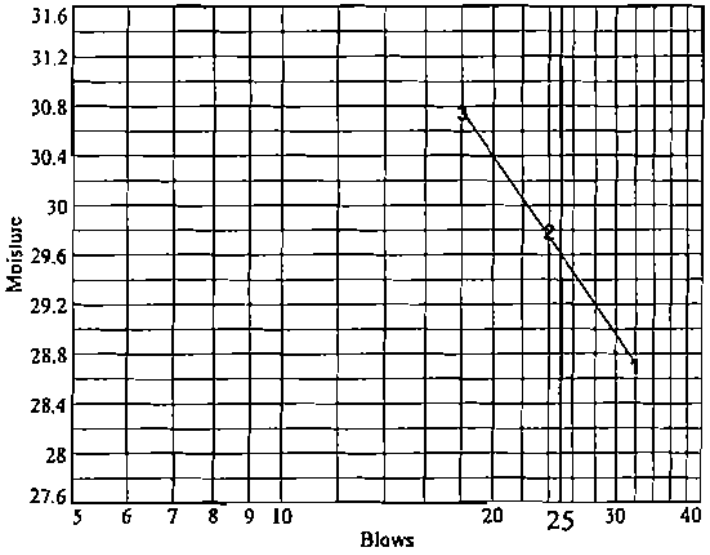
LIQUID AND PLASTIC LIMIT TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-3
Depth: 108.0-109.5' **Sample Number:** S-17
Material Description: Brown Lean Clay W/Sand (CL)
USCS: CL
Tested by: CMc **Checked by:** TMc

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	20.75	23.20	21.44			
Dry+Tare	18.58	20.40	18.98			
Tare	11.02	11.00	10.98			
# Blows	32	24	18			
Moisture	28.7	29.8	30.8			



Liquid Limit= 30
Plastic Limit= 19
Plasticity Index= 11

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	7.09	6.88			
Dry+Tare	6.65	6.46			
Tare	4.31	4.27			
Moisture	18.8	19.2			

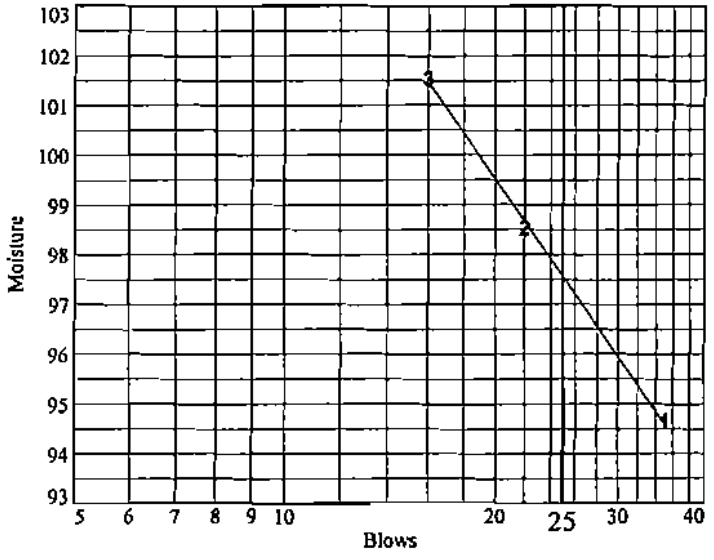
LIQUID AND PLASTIC LIMIT TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-4
Depth: 18.0-19.5' **Sample Number:** S-2
Material Description: Grey Fat Clay (CH)
USCS: CH
Tested by: CMc **Checked by:** TMc

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	20.97	20.15	20.15			
Dry+Tare	16.19	15.43	15.57			
Tare	11.14	10.64	11.06			
# Blows	35	22	16			
Moisture	94.7	98.5	101.6			

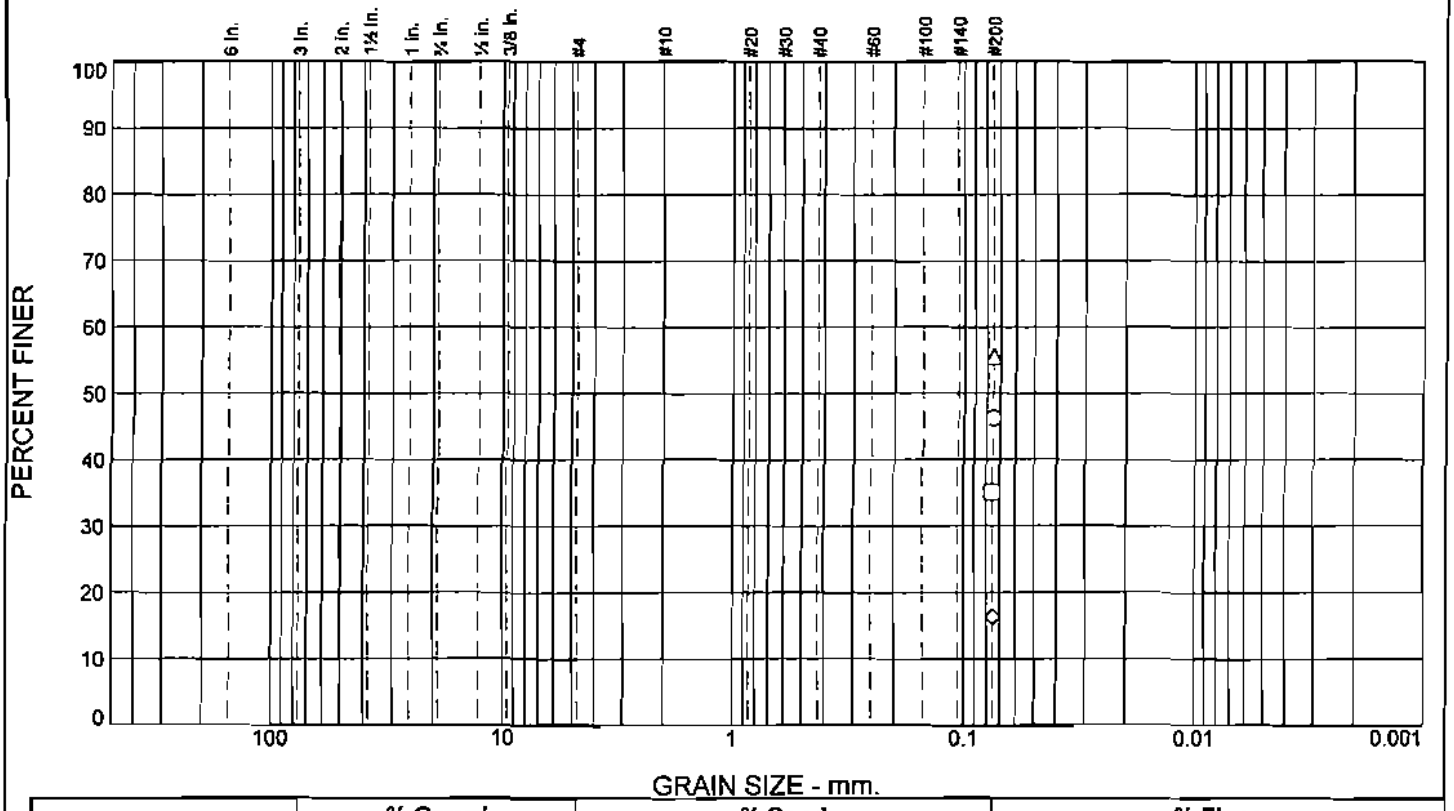


Liquid Limit= 98
Plastic Limit= 37
Plasticity Index= 61

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	6.07	6.12			
Dry+Tare	5.56	5.63			
Tare	4.17	4.30			
Moisture	36.7	36.8			

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							46.2	
□							35.0	
△							55.5	
◇							16.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○										
□										
△										
◇										

Material Description	USCS	AASHTO
○ Brown Silty Sand (SM)	SM	
□ Grey Silty Sand (SM)	SM	
△ Dark Grey Silt W/Sand (ML)	ML	
◇ Brown Silty Sand (SM)	SM	

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B

○ **Source of Sample:** B-1 **Depth:** 10.0-11.5' **Sample Number:** S-2

□ **Source of Sample:** B-1 **Depth:** 35.0-36.5' **Sample Number:** S-7

△ **Source of Sample:** B-1 **Depth:** 45.0-46.5' **Sample Number:** S-9

◇ **Source of Sample:** B-1 **Depth:** 50.0-51.5' **Sample Number:** S-10

Remarks:

RGH CONSULTANTS, INC.

Plate

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-1
Depth: 50.0-51.5' **Sample Number:** S-10
Material Description: Brown Silty Sand (SM)
USCS Classification: SM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 608.60
Tare Wt. = 109.80
Minus #200 from wash = 16.3%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
705.80	109.80	109.80	#200		16.3

Percentage Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Madium	Fine	Total	Silt	Clay	Total
										16.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{50}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-1
Depth: 35.0-36.5' **Sample Number:** S-7
Material Description: Grey Silty Sand (SM)
USCS Classification: SM

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 425.20
Tare Wt. = 83.80
Minus #200 from wash = 35.0%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
609.00	83.80	83.80	#200		35.0

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										35.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-1
Depth: 45.0-46.5' **Sample Number:** S-9
Material Description: Dark Grey Silt W/Sand (ML)
USCS Classification: ML

Sieve Analysis

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 371.70
Tare Wt. = 110.00
Minus #200 from wash = 55.5%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
698.60	110.00	110.00	#200		55.5

Results (Graphical Computations)

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										55.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-1
Depth: 50.0-51.5' **Sample Number:** S-10
Material Description: Brown Silty Sand (SM)
USCS Classification: SM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 608.60
Tare Wt. = 109.80
Minus #200 from wash = 16.3%

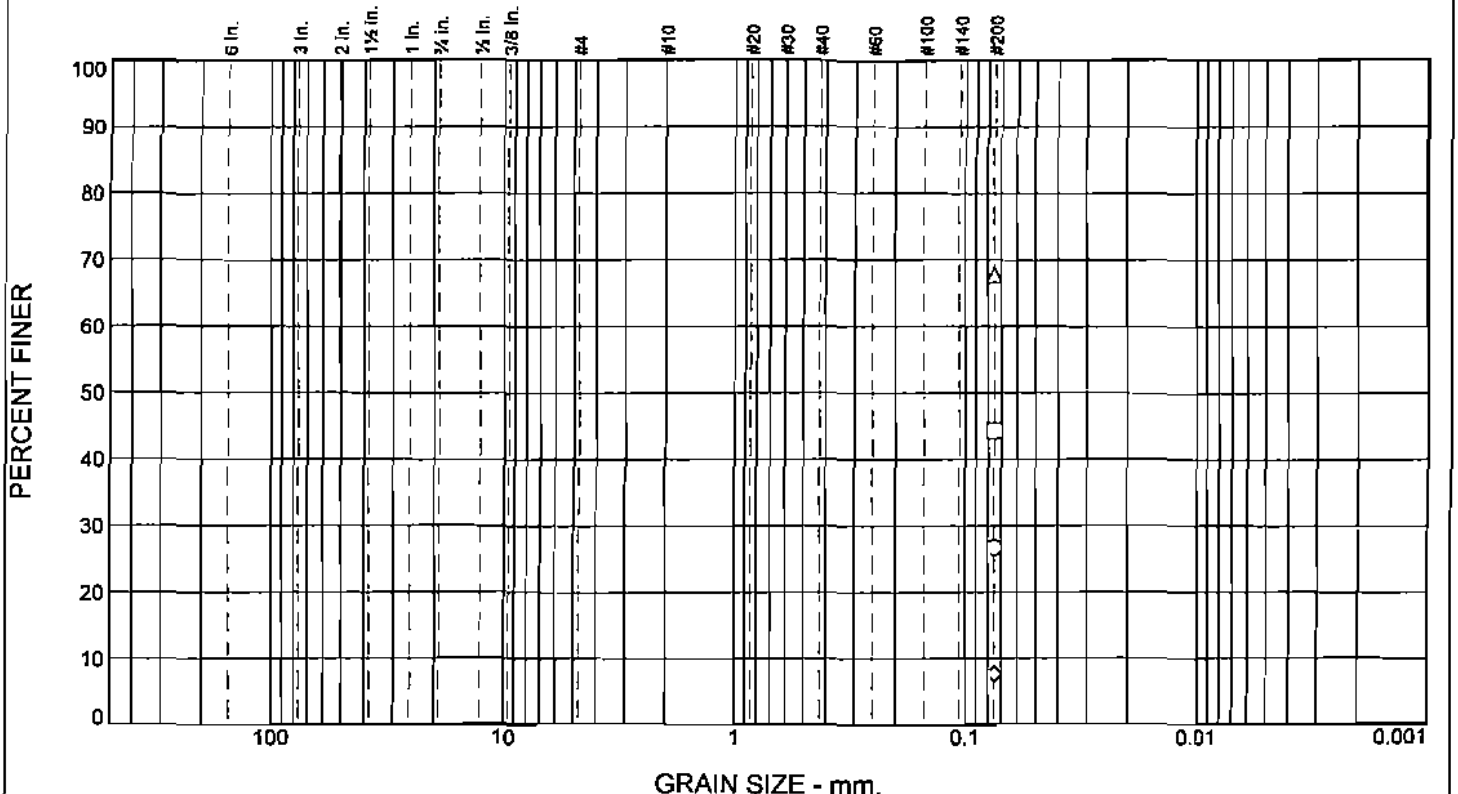
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
705.80	109.80	109.80	#200		16.3

Graphical Gradation Data

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										16.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							26.7	
□							44.2	
△							67.7	
◇							7.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○										
□										
△										
◇										

Material Description	USCS	AASHTO
○ Brown Silty Sand (SM)	SM	
□ Brown Silty Sand (SM)	SM	
△ Brown Sandy Silt (ML)	ML	
◇ Black Sand W/Silt (SP-SM)	SP-SM	

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B

○ **Source of Sample:** B-2 **Depth:** 25.0-26.5' **Sample Number:** S-5

□ **Source of Sample:** B-2 **Depth:** 30.0-31.5' **Sample Number:** S-6

△ **Source of Sample:** B-2 **Depth:** 40.0-42.5' **Sample Number:** ST-8

◇ **Source of Sample:** B-2 **Depth:** 80.5-81.5' **Sample Number:** S-14B

Remarks:

RGH CONSULTANTS, INC.

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GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-1
Depth: 50.0-51.5' **Sample Number:** S-10
Material Description: Brown Silty Sand (SM)
USCS Classification: SM

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 608.60
Tare Wt. = 109.80
Minus #200 from wash = 16.3%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
705.80	109.80	109.80	#200		16.3

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										16.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-2
Depth: 30.0-31.5' **Sample Number:** S-6
Material Description: Brown Silty Sand (SM)
USCS Classification: SM

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 388.50
Tare Wt. = 110.20
Minus #200 from wash = 44.2%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
609.30	110.20	110.20	#200		44.2

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										44.2

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-2
Depth: 40.0-42.5' **Sample Number:** ST-8
Material Description: Brown Sandy Silt (ML)
USCS Classification: ML

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 219.30
Tare Wt. = 82.20
Minus #200 from wash = 67.7%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
506.10	82.20	82.20	#200		67.7

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										67.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-2
Depth: 80.5-81.5' **Sample Number:** S-14B
Material Description: Blaek Sand W/Silt (SP-SM)
USCS Classification: SP-SM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 631.70
Tare Wt. = 110.20
Minus #200 from wash = 7.7%

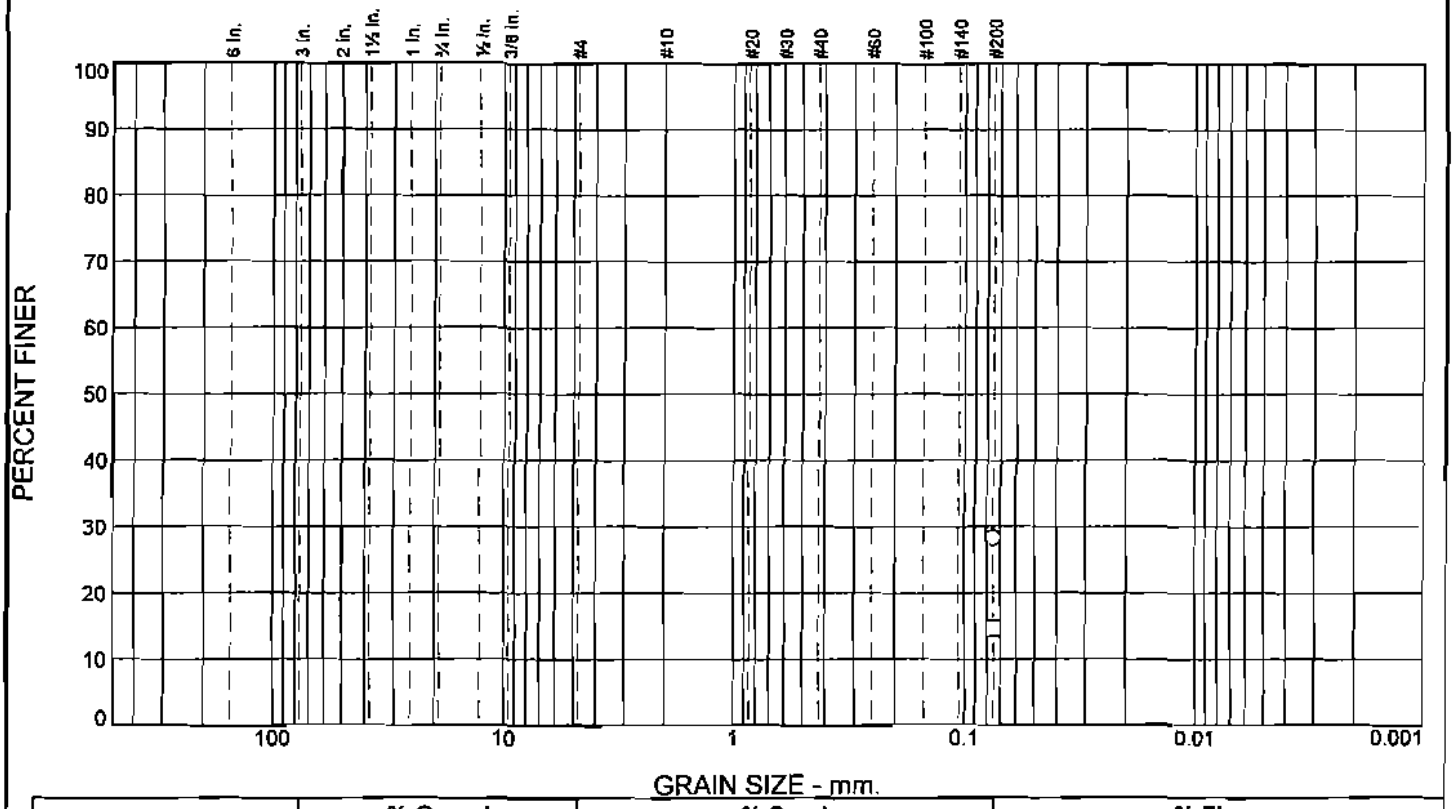
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
675.00	110.20	110.20	#200		7.7

Equivalent Composition

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										7.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							28.2	
□							14.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○										
□										

Material Description	USCS	AASHTO
○ Black Silty Sand (SM)	SM	
□ Grey Silty Sand (SM)	SM	

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B

○ **Source of Sample:** B-3 **Depth:** 33.0-34.5' **Sample Number:** S-7

□ **Source of Sample:** B-3 **Depth:** 38.0-39.5' **Sample Number:** S-8

Remarks:

RGH CONSULTANTS, INC.

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GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-3
Depth: 33.0-34.5' **Sample Number:** S-7
Material Description: Black Silty Sand (SM)
USCS Classification: SM

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 355.50
Tare Wt. = 84.80
Minus #200 from wash = 28.2%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
461.90	84.80	84.80	#200		28.2

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										28.2

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-3
Depth: 38.0-39.5' **Sample Number:** S-8
Material Description: Grey Silty Sand (SM)
USCS Classification: SM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 553.80
Tara Wt. = 110.10
Minus #200 from wash = 14.7%

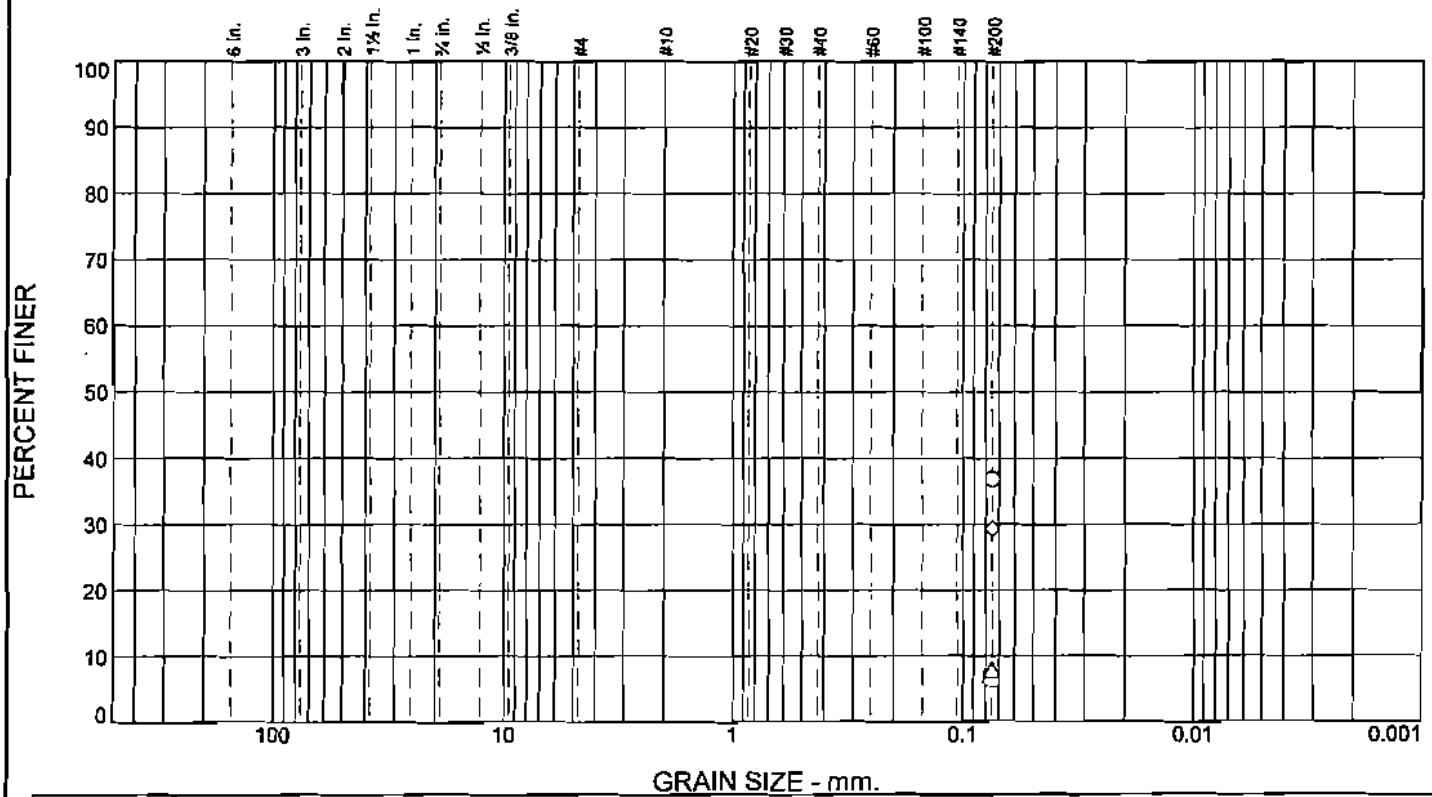
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
630.00	110.10	110.10	#200		14.7

Percent Composition

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										14.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							36.8	
□							6.6	
△							7.9	
◇							29.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○										
□										
△										
◇										

Material Description	USCS	AASHTO
○ Black Silty Sand (SM)	SM	
□ Black Gravel W/Silt And Sand (GP-GM)	GP-GM	
△ Black Sand W/Silt And Gravel (SP-SM)	SP-SM	
◇ Grey Silty Sand (SM)	SM	

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B

○ **Source of Sample:** B-4 **Depth:** 48.0-49.5' **Sample Number:** S-5

□ **Source of Sample:** B-4 **Depth:** 58.0-59.0' **Sample Number:** S-6A

△ **Source of Sample:** B-4 **Depth:** 78.0-79.5' **Sample Number:** S-8

◇ **Source of Sample:** B-4 **Depth:** 108.0-110.5' **Sample Number:** ST-11

Remarks:

RGH CONSULTANTS, INC.

Plate

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-4
Depth: 48.0-49.5' **Sample Number:** S-5
Material Description: Black Silty Sand (SM)
USCS Classification: SM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 532.50
Tare Wt. = 103.10
Minus #200 from wash = 36.8%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
782.90	103.10	103.10	#200		36.8

Sieve Test Results

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										36.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-4
Depth: 58.0-59.0' **Sample Number:** S-6A
Material Description: Black Gravel W/Silt And Sand (GP-GM)
USCS Classification: GP-GM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 533.50
Tare Wt. = 103.10
Minus #200 from wash = 6.6%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
563.70	103.10	103.10	#200		6.6

Percent Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										6.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-4
Depth: 78.0-79.5' **Sample Number:** S-8
Material Description: Black Sand W/Silt And Gravel (SP-SM)
USCS Classification: SP-SM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 675.40
Tare Wt. = 100.60
Minus #200 from wash = 7.9%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
724.90	100.60	100.60	#200		7.9

Percentage Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										7.9

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-4
Depth: 108.0-110.5' **Sample Number:** ST-11
Material Description: Grey Silty Sand (SM)
USCS Classification: SM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 577.20
Tare Wt. = 83.10
Minus #200 from wash = 29.3%

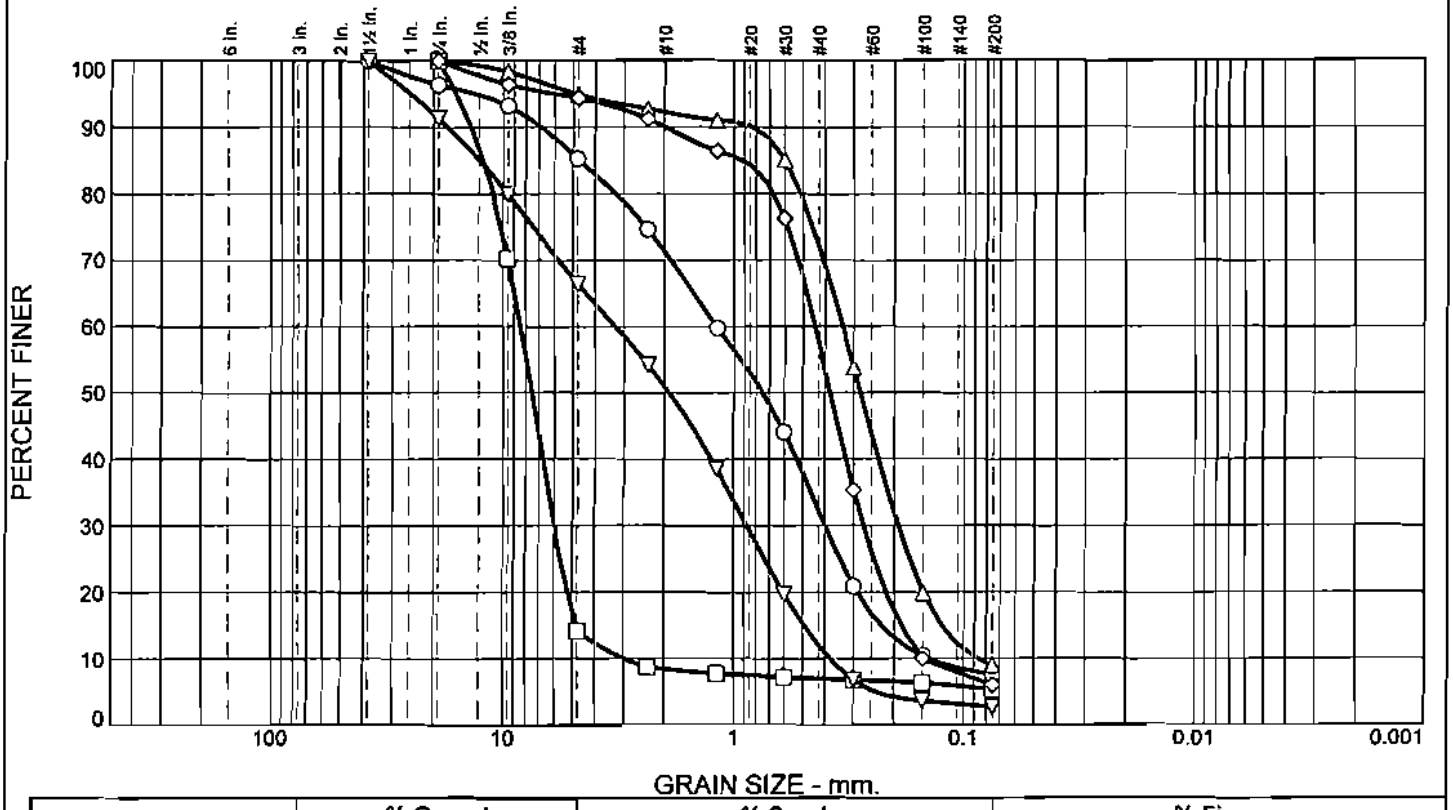
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
782.20	83.10	83.10	#200		29.3

Percent Composition

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
										29.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	3.6	11.1	14.0	39.1	24.7	7.5	
□	0.0	0.0	85.9	5.7	1.4	1.7	5.3	
△	0.0	0.0	5.1	2.7	20.1	63.2	8.9	
◇	0.0	0.0	5.7	4.2	32.7	51.4	6.0	
▽	0.0	8.6	25.0	15.5	38.9	9.3	2.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			4.6607	1.1929	0.7493	0.3993	0.2280	0.1410	0.95	8.46
□			12.2334	8.3835	7.4953	5.9906	4.8353	2.9713	1.44	2.82
△			0.5993	0.3359	0.2805	0.1925	0.1250	0.0863	1.28	3.89
◇			0.9158	0.4429	0.3796	0.2723	0.1867	0.1503	1.11	2.95
▽			12.6562	3.2710	1.9130	0.8736	0.4921	0.3791	0.62	8.63

	Material Description	USCS	AASHTO
○	Black Sand W/Silt And Gravel (SP-SM)	SP-SM	
□	Brown Gravel W/Silt (GP-GM)	GP-GM	
△	Brown Sand W/Silt (SP-SM)	SP-SM	
◇	Black Sand W/Silt (SP-SM)	SP-SM	
▽	Black Sand W/Gravel (SP)	SP	

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B

○ **Source of Sample:** B-1 **Depth:** 70.0-71.5' **Sample Number:** S-13

□ **Source of Sample:** B-1 **Depth:** 90.0-91.0' **Sample Number:** S-15A

△ **Source of Sample:** B-2 **Depth:** 55.0-56.5' **Sample Number:** S-11

◇ **Source of Sample:** B-3 **Depth:** 48.0-49.5' **Sample Number:** S-10

▽ **Source of Sample:** B-3 **Depth:** 68.0-69.5' **Sample Number:** S-13

Remarks:

RGH CONSULTANTS, INC.

Plate

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-1
Depth: 70.0-71.5' **Sample Number:** S-13
Material Description: Black Sand W/Silt And Gravel (SP-SM)
USCS Classification: SP-SM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 569.30
Tare Wt. = 0.00
Minus #200 from wash = 7.5%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
615.70	0.00	0.00	3		
			1.5	0.00	100.0
			.75	22.30	96.4
			.375	41.90	93.2
			#4	90.80	85.3
			#8	156.10	74.6
			#16	247.70	59.8
			#30	344.70	44.0
			#50	487.20	20.9
			#100	551.60	10.4
			#200	569.30	7.5

Percent Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	3.6	11.1	14.7	14.0	39.1	24.7	77.8			7.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1410	0.2280	0.2902	0.3993	0.7493	1.1929	3.2515	4.6607	6.8925	13.1196

Fineness Modulus	C_u	C_c
3.15	8.46	0.95

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-1
Depth: 90.0-91.0' **Sample Number:** S-15A
Material Description: Brown Gravel W/Silt (GP-GM)
USCS Classification: GP-GM

Sieve Analysis

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 255.40
Tare Wt. = 0.00
Minus #200 from wash = 5.3%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
269.80	0.00	0.00	3		
			1.5		
			.75	0.00	100.0
			.375	80.20	70.3
			#4	231.80	14.1
			#8	246.30	8.7
			#16	249.10	7.7
			#30	250.30	7.2
			#50	251.40	6.8
			#100	252.70	6.3
			#200	255.40	5.3

Percentage Composition

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	85.9	85.9	5.7	1.4	1.7	8.8			5.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
2.9713	4.8353	5.2518	5.9906	7.4953	8.3835	11.0860	12.2334	13.7911	15.9958

Fineness Modulus	C_u	C_c
5.79	2.82	1.44

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-2
Depth: 55.0-56.5' **Sample Number:** S-11
Material Description: Brown Sand W/Silt (SP-SM)
USCS Classification: SP-SM

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 479.90
Tare Wt. = 0.00
Minus #200 from wash = 8.9%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
527.00	0.00	0.00	3		
			1.5		
			.75	0.00	100.0
			.375	8.90	98.3
			#4	27.10	94.9
			#8	38.50	92.7
			#16	47.60	91.0
			#30	78.90	85.0
			#50	243.70	53.8
			#100	422.40	19.8
			#200	479.90	8.9

Percentages

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	5.1	5.1	2.7	20.1	63.2	86.0			8.9

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0863	0.1250	0.1507	0.1925	0.2805	0.3359	0.5123	0.5993	0.8302	4.9051

Fineness Modulus	C_u	C_c
1.65	3.89	1.28

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-3
Depth: 48.0-49.5' **Sample Number:** S-10
Material Description: Black Sand W/Silt (SP-SM)
USCS Classification: SP-SM

Sieve Analysis

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 569.70
Tare Wt. = 0.00
Minus #200 from wash = 6.0%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
606.10	0.00	0.00	3		
			1.5		
			.75	0.00	100.0
			.375	22.00	96.4
			#4	34.40	94.3
			#8	53.00	91.3
			#16	82.80	86.3
			#30	144.30	76.2
			#50	392.40	35.3
			#100	545.70	10.0
			#200	569.70	6.0

Percentage Summaries

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	5.7	5.7	4.2	32.7	51.4	88.3			6.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{50}	D_{80}	D_{85}	D_{90}	D_{95}
0.1503	0.1867	0.2172	0.2723	0.3796	0.4429	0.6722	0.9158	1.9851	6.1213

Fineness Modulus	C_u	C_c
2.10	2.95	1.11

GRAIN SIZE DISTRIBUTION TEST DATA

5/11/2007

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02
Location: B-3
Depth: 68.0-69.5' **Sample Number:** S-13
Material Description: Black Sand W/Gravel (SP)
USCS Classification: SP

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 755.90
Tare Wt. = 0.00
Minus #200 from wash = 2.7%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
776.70	0.00	0.00	3		
			1.5	0.00	100.0
			.75	67.00	91.4
			.375	156.10	79.9
			#4	260.70	66.4
			#8	355.60	54.2
			#16	478.30	38.4
			#30	623.80	19.7
			#50	723.70	6.8
			#100	748.40	3.6
			#200	755.90	2.7

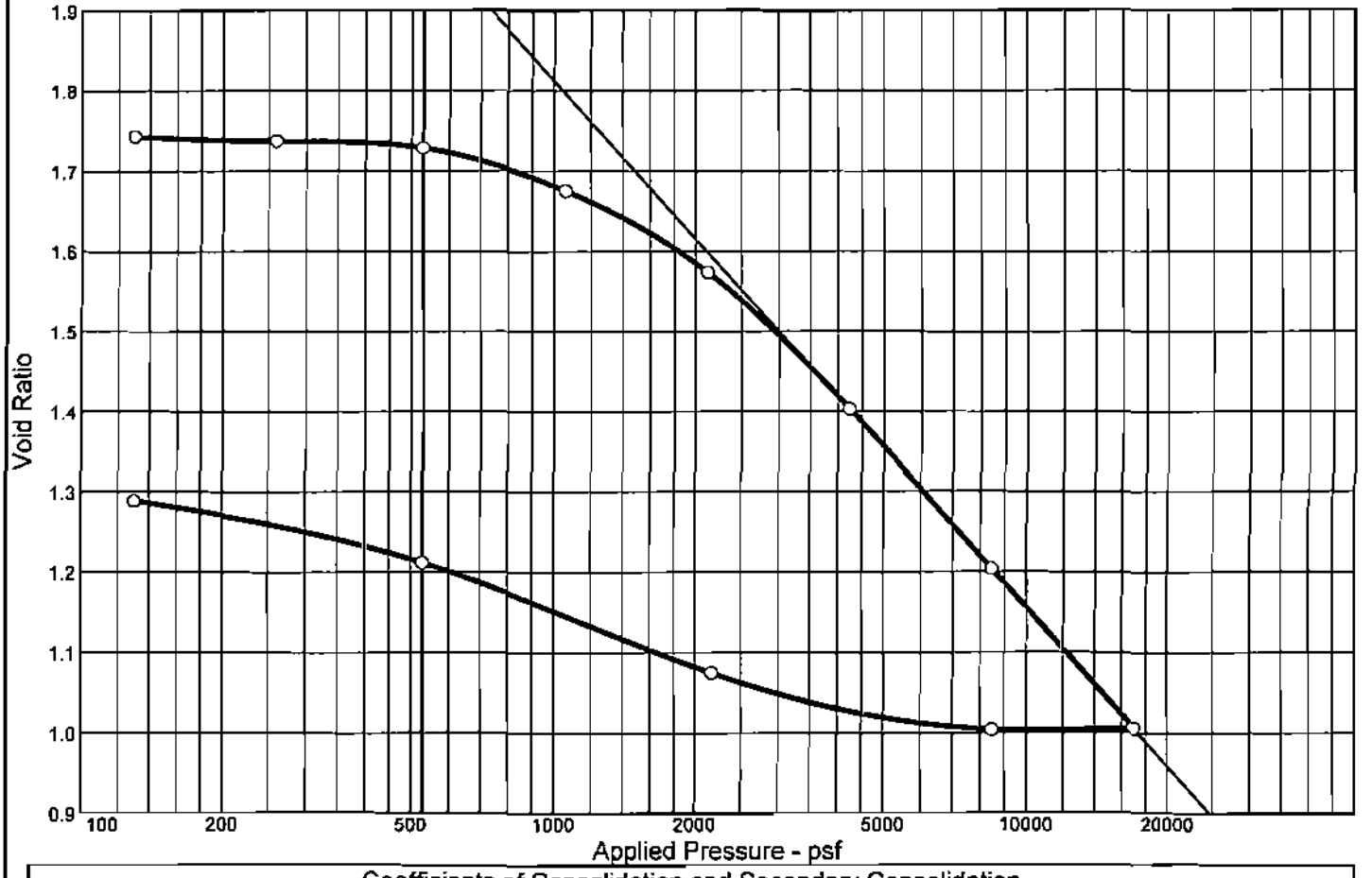
Percentage Composition

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	8.6	25.0	33.6	15.5	38.9	9.3	63.7			2.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.3791	0.4921	0.6074	0.8736	1.9130	3.2710	9.5746	12.6562	17.3255	25.0386

Fineness Modulus	C_u	C_c
4.40	8.63	0.62

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (psf)	C_v (ft.2/day)	C_α	No.	Load (psf)	C_v (ft.2/day)	C_α	No.	Load (psf)	C_v (ft.2/day)	C_α
5	2120	0.04	0.006								
6	4230	0.03	0.012								

Natural Sat.	Natural Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_o
99.4 %	65.6 %	60.6	87	48	2.70		1440	0.66	0.12			1.782

MATERIAL DESCRIPTION	USCS	AASHTO
Black Elastic Silt (MH)	MH	

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation

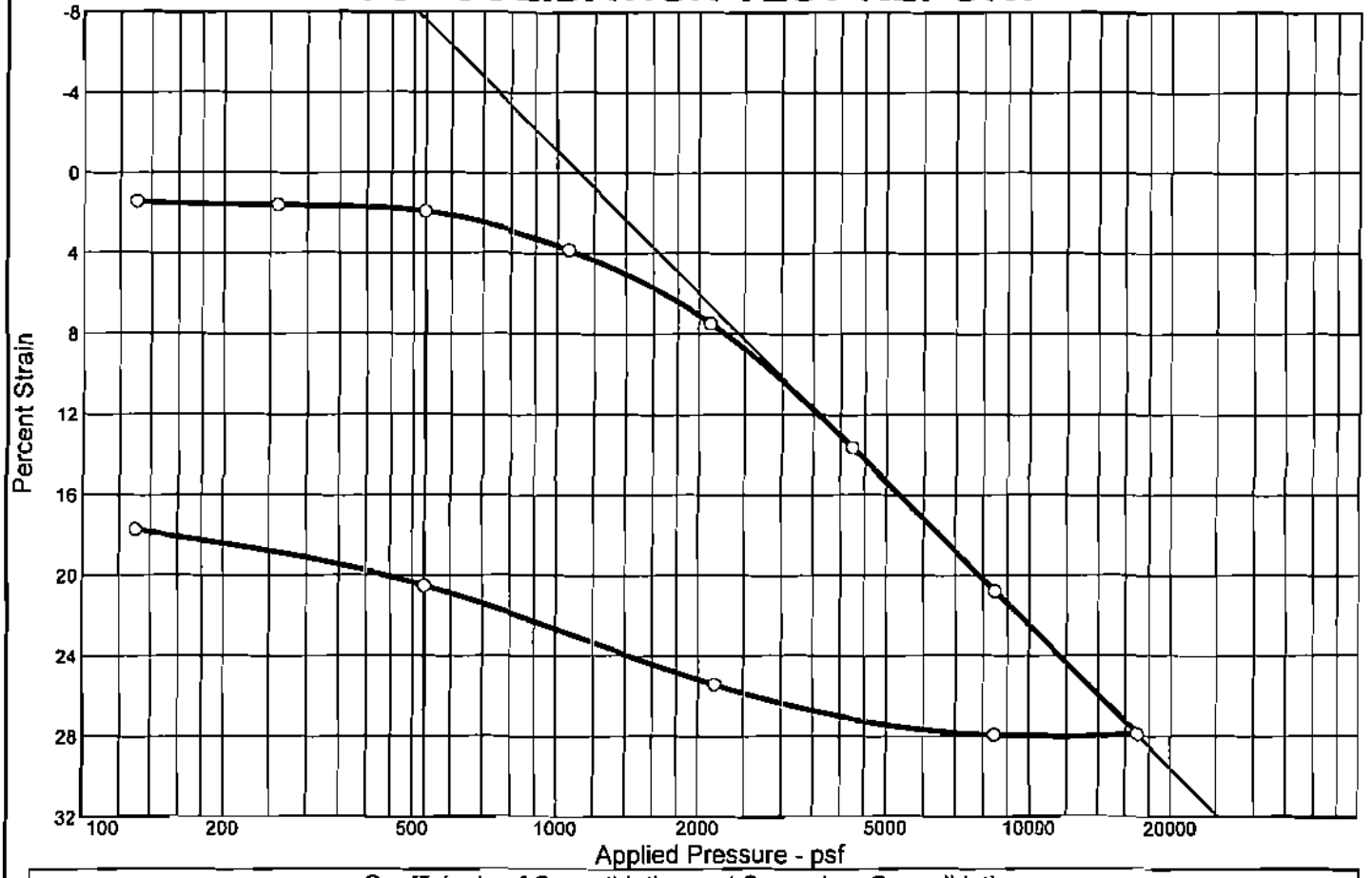
Source: B-1 **Sample No.:** ST-5 **Elev./Depth:** 25.0-27.5'

RGH CONSULTANTS, INC.

Remarks:

Plate

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (psf)	C_v (ft.2/day)	C_α	No.	Load (psf)	C_v (ft.2/day)	C_α	No.	Load (psf)	C_v (ft.2/day)	C_α
5	2120	0.04	0.006								
6	4230	0.03	0.012								

Natural Sat.	Natural Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_o
99.4 %	65.6 %	60.6	87	48	2.70		1440	0.66	0.12			1.782

MATERIAL DESCRIPTION	USCS	AASHTO
Black Elastic Silt (MH)	MH	

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation

Source: B-1 **Sample No.:** ST-5 **Elev./Depth:** 25.0-27.5'

R G H CONSULTANTS, INC.

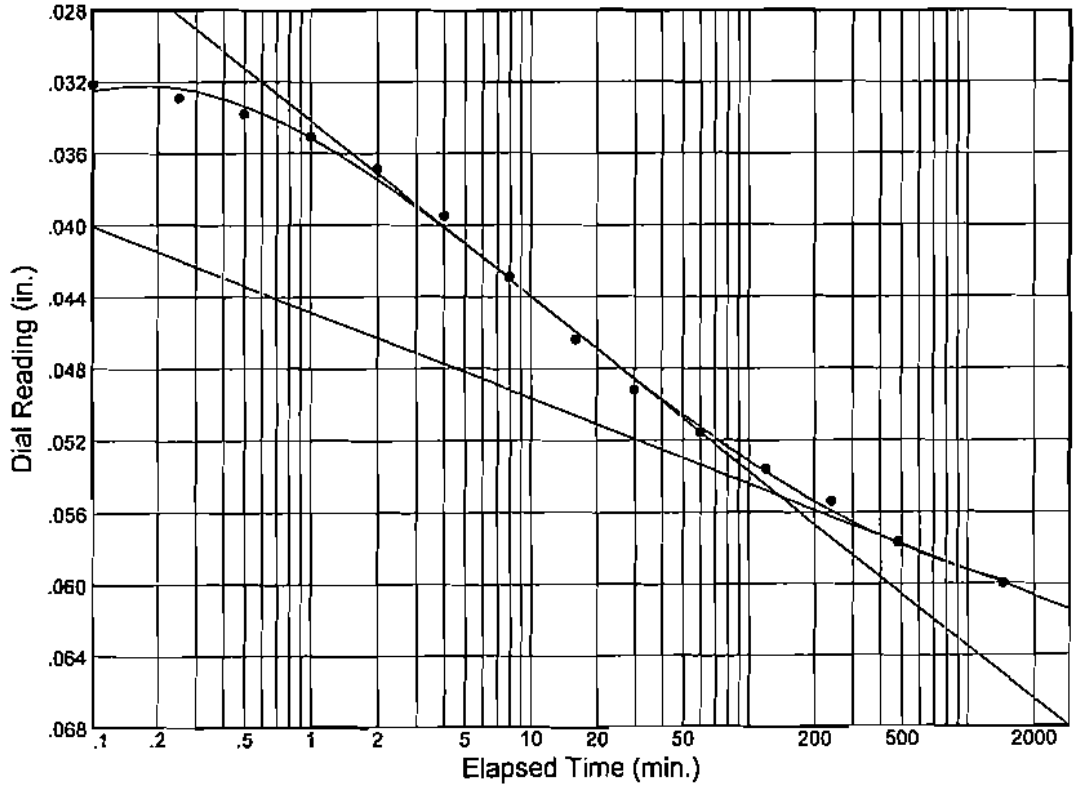
Remarks:

Plate

Dial Reading vs. Time

Project No.: 351143.T1.02
Project: Bay Trail Reach 9B

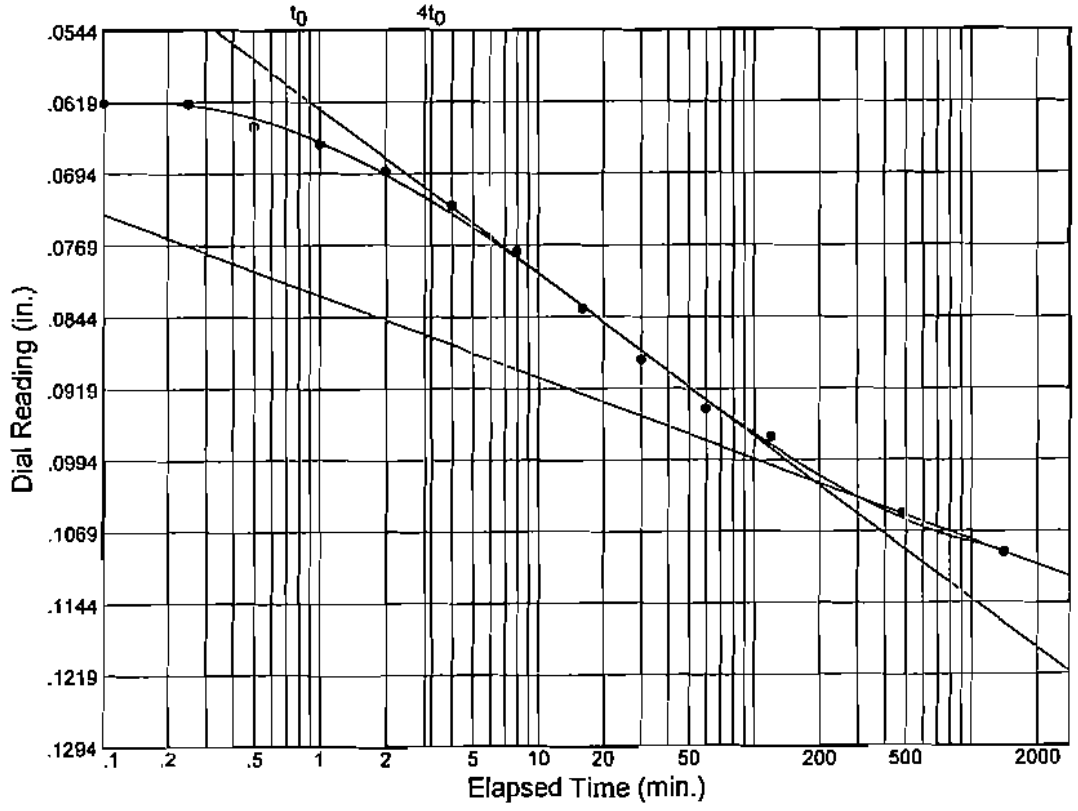
Source: B-1 Sample No.: ST-5 Elev./Depth: 25.0-27.5'



Load No.= 5
Load= 2120 psf
D_0 = 0.03080
D_{50} = 0.04295
D_{100} = 0.05509
T_{50} = 7.85 min.

C_v @ T_{50}
0.04 ft.^{2}/day

C_α = 0.006



Load No.= 6
Load= 4230 psf
D_0 = 0.05821
D_{50} = 0.07991
D_{100} = 0.10161
T_{50} = 10.04 min.

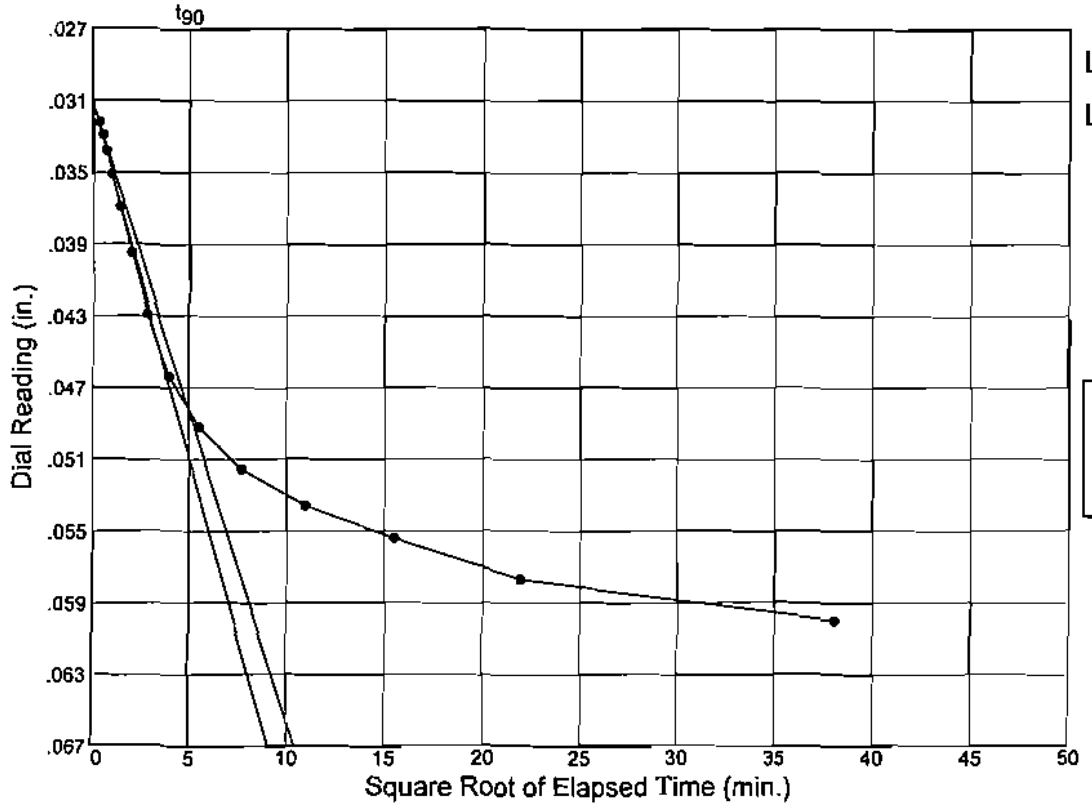
C_v @ T_{50}
0.03 ft.^{2}/day

C_α = 0.012

Dial Reading vs. Time

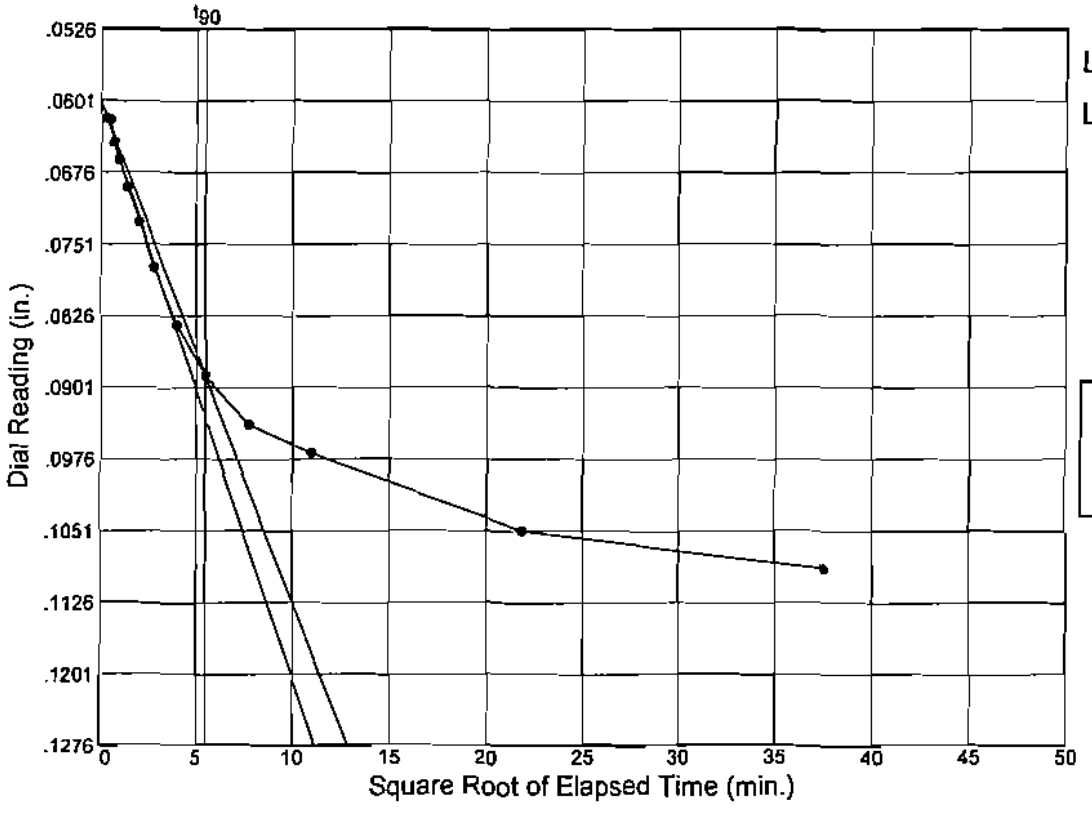
Project No.: 351143.T1.02
Project: Bay Trail Reach 9B

Source: B-1 Sample No.: ST-5 Elev./Depth: 25.0-27.5'



Load No.= 5
Load= 2120 psf
D_0 = 0.03114
D_{90} = 0.04820
D_{100} = 0.05010
T_{90} = 24.50 min.

C_v @ T_{90}
0.05 ft.^{2}/day



Load No.= 6
Load= 4230 psf
D_0 = 0.06012
D_{90} = 0.08891
D_{100} = 0.09211
T_{90} = 30.03 min.

C_v @ T_{90}
0.04 ft.^{2}/day

CONSOLIDATION TEST DATA

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02

Sample Data

Source: B-1
Sample No.: ST-5
Elev. or Depth: 25.0-27.5' **Sample Length(in./cm.):**
Location:
Description: Black Elastic Silt (MH)
Liquid Limit: 87 **Plasticity Index:** 48
USCS: MH **AASHTO:** **Figure No.:**
Testing Remarks:

Test Specimen Data

TOTAL SAMPLE		BEFORE TEST		AFTER TEST	
Wet w+t =	184.50 g.	Consolidometer # = 1		Wet w+t =	137.10 g.
Dry w+t =	145.80 g.			Dry w+t =	109.00 g.
Tare Wt. =	86.80 g.	Spec. Gravity = 2.70		Tare Wt. =	50.40 g.
Height =	.80 in.	Height = .80 in.			
Diameter =	2.43 in.	Diameter = 2.43 in.			
Weight =	97.70 g.	Defl. Table = Unit 1,2	Max 33870 (inches/psf)		
Moisture =	65.6 %	Ht. Solids = 0.2875 in.		Moisture =	48.0 %
Wet Den. =	100.3 pcf	Dry Wt. = 59.00 g.*		Dry Wt. =	58.60 g.
Dry Den. =	60.6 pcf	Void Ratio = 1.782		Void Ratio =	1.289
		Saturation = 99.4 %			

*** Initial dry weight used in calculations**

End-of-Load Summary

Pressure (psf)	Final Dial (in.)	Machine Defl. (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Compression /Swell
start	0.00000				1.782	
130	0.01150	0.00010			1.743	1.4 Comprs.
260	0.01300	0.00000			1.737	1.6 Comprs.
530	0.01600	0.00050			1.728	1.9 Comprs.
1060	0.03200	0.00120			1.675	3.8 Comprs.
2120	0.06210	0.00210	0.05		1.574	7.5 Comprs.
4230	0.11270	0.00360	0.04		1.403	13.6 Comprs.
8470	0.17280	0.00650			1.204	20.8 Comprs.
16940	0.23240	0.00920			1.006	27.9 Comprs.
8470	0.23400	0.01030			1.004	28.0 Comprs.
2170	0.20350	0.00000			1.075	25.4 Comprs.
530	0.17080	0.00670			1.212	20.5 Comprs.
130	0.14640	0.00450			1.289	17.7 Comprs.

C_c = 0.66 P_c = 1440 psf C_r = 0.12

Pressure: 2120 psf **TEST READINGS** **Load No. 5**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	09:30:00	0.03200	11	10:30:00	0.05370
2	09:30:06	0.03430	12	11:30:00	0.05570
3	09:30:15	0.03500	13	13:30:00	0.05750
4	09:30:30	0.03590	14	17:30:00	0.05980
5	09:31:00	0.03720	15	+01 09:38:00	0.06210
6	09:32:00	0.03900			
7	09:34:00	0.04160			
8	09:38:00	0.04500			
9	09:46:00	0.04850			
10	10:00:00	0.05130			

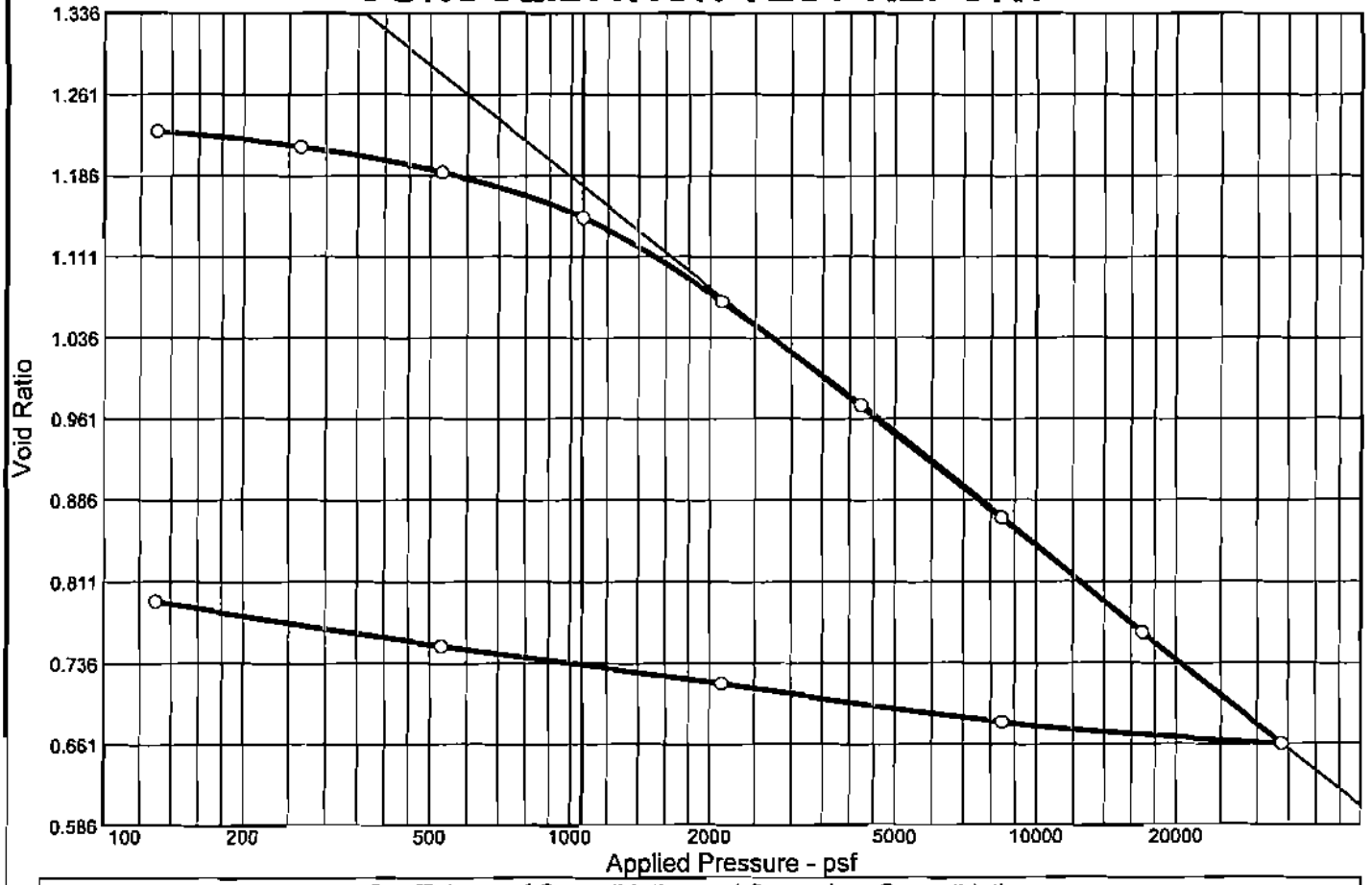
Void Ratio = 1.574 **Compression** = 7.5 %
D_0 = 0.03114 D_{90} = 0.04820 D_{100} = 0.05010
C_v **at 24.5 min.** = 0.05 ft.^{2}/day

Pressure: 4230 psf **TEST READINGS** **Load No. 6**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	09:43:00	0.06210	11	10:43:00	0.09760
2	09:43:06	0.06560	12	11:43:00	0.10060
3	09:43:15	0.06570	13	17:43:00	0.10870
4	09:43:30	0.06810	14	+01 09:11:00	0.11270
5	09:44:00	0.06990			
6	09:45:00	0.07280			
7	09:47:00	0.07640			
8	09:51:00	0.08120			
9	09:59:00	0.08720			
10	10:13:00	0.09250			

Void Ratio = 1.403 **Compression** = 13.6 %
D_0 = 0.06012 D_{90} = 0.08891 D_{100} = 0.09211
C_v **at 30.0 min.** = 0.04 ft.^{2}/day

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (psf)	C_v (ft.2/day)	C_α	No.	Load (psf)	C_v (ft.2/day)	C_α	No.	Load (psf)	C_v (ft.2/day)	C_α
4	1060	1.30	0.003								
5	2120	0.60	0.005								

Natural Sat.	Natural Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_o
99.4 %	45.5 %	75.4	73	42	2.70		1397	0.34	0.05			1.236

MATERIAL DESCRIPTION	USCS	AASHTO
Grey Fat Clay (CH)	CH	

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation

Source: B-3 **Sample No.:** ST-3 **Elev./Depth:** 13.0-14.5'

RGH CONSULTANTS, INC.

Remarks:

Plate

CONSOLIDATION TEST REPORT

Coefficients of Consolidation and Secondary Consolidation

No.	Load (psf)	C_v (ft.2/day)	C_α	No.	Load (psf)	C_v (ft.2/day)	C_α	No.	Load (psf)	C_v (ft.2/day)	C_α
4	1060	1.30	0.003								
5	2120	0.60	0.005								

Natural Sat.	Natural Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_o
99.4 %	45.5 %	75.4	73	42	2.70		1397	0.34	0.05			1.236

MATERIAL DESCRIPTION	USCS	AASHTO
Grey Fat Clay (CH)	CH	

Project No. 351143.T1.02 **Client:** CH2M HILL

Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation

Source: B-3 **Sample No.:** ST-3 **Elev./Depth:** 13.0-14.5'

R G H CONSULTANTS, INC.

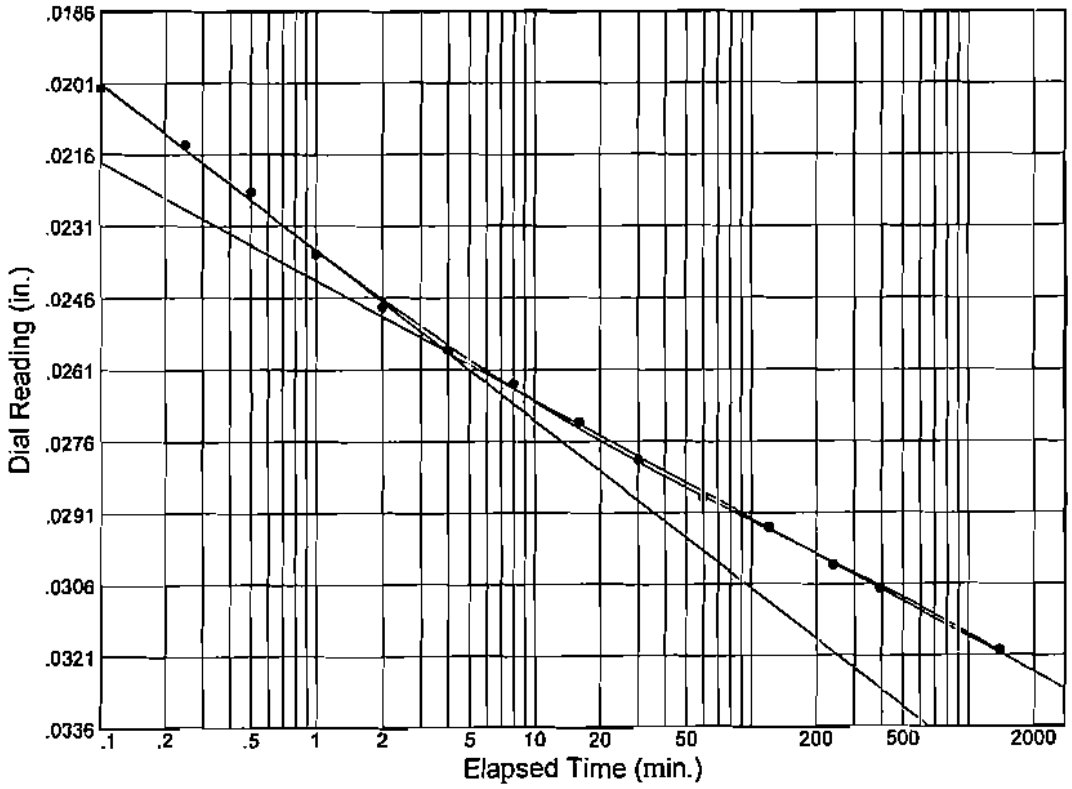
Remarks:

Plate

Dial Reading vs. Time

Project No.: 351143.T1.02
Project: Bay Trail Reach 9B

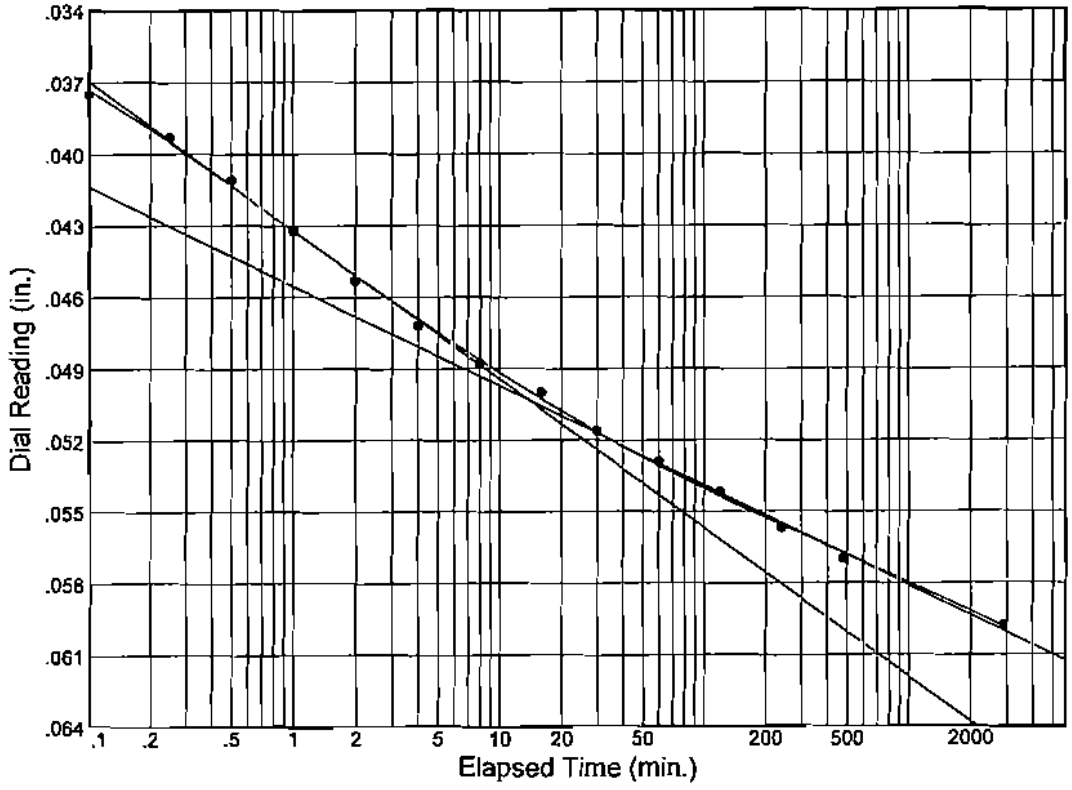
Source: B-3 Sample No.: ST-3 Elev./Depth: 13.0-14.5'



Load No.= 4
Load= 1060 psf
D_0 = 0.01700
D_{50} = 0.02136
D_{100} = 0.02572
T_{50} = 0.23 min.

C_v @ T_{50}
1.30 ft.^{2}/day

C_α = 0.003



Load No.= 5
Load= 2120 psf
D_0 = 0.03200
D_{50} = 0.04114
D_{100} = 0.05027
T_{50} = 0.46 min.

C_v @ T_{50}
0.60 ft.^{2}/day

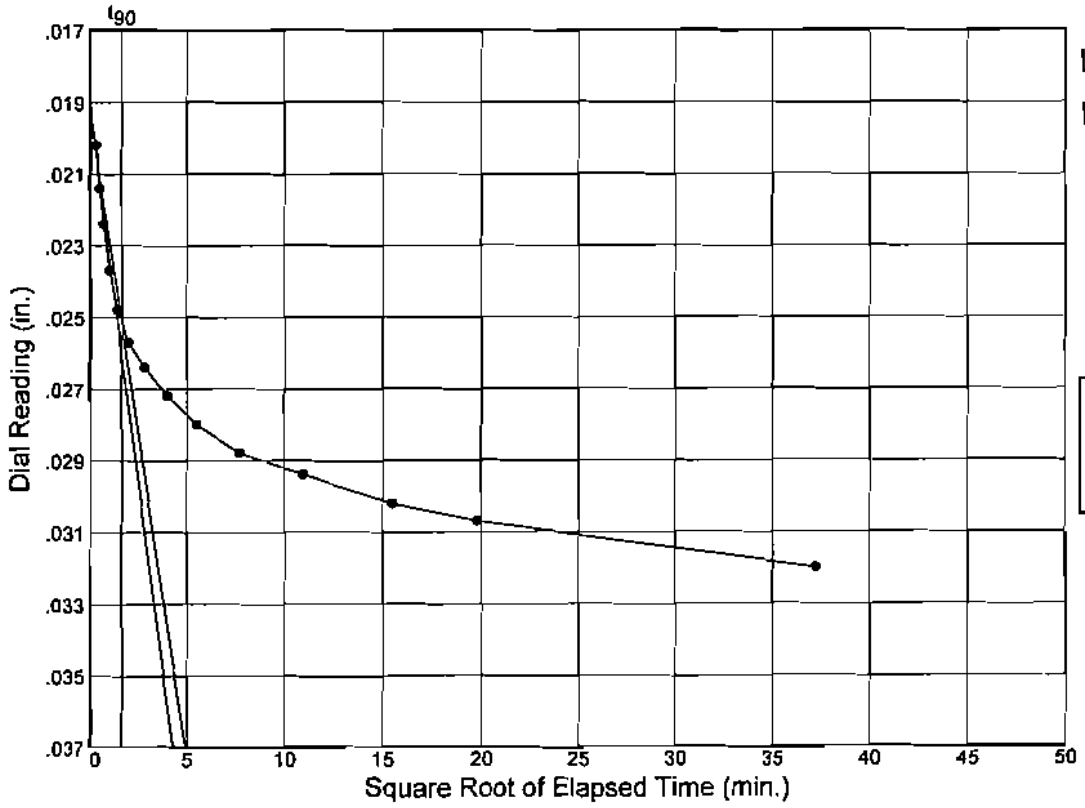
C_α = 0.005

Plate

Dial Reading vs. Time

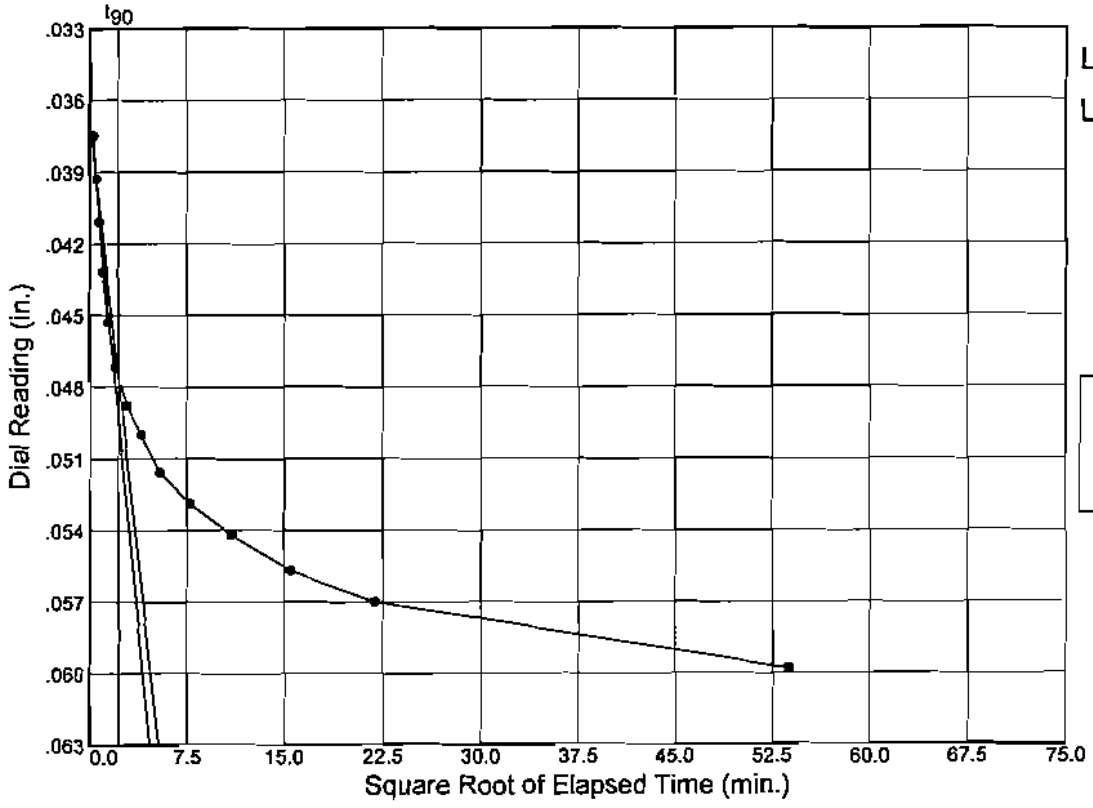
Project No.: 351143.T1.02
Project: Bay Trail Reach 9B

Source: B-3 Sample No.: ST-3 Elev./Depth: 13.0-14.5'



Load No.= 4
Load= 1060 psf
D_0 = 0.01924
D_{90} = 0.02515
D_{100} = 0.02580
T_{90} = 2.69 min.

C_v @ T_{90}
0.47 ft.^{2}/day



Load No.= 5
Load= 2120 psf
D_0 = 0.03662
D_{90} = 0.04762
D_{100} = 0.04884
T_{90} = 4.91 min.

C_v @ T_{90}
0.25 ft.^{2}/day

Plate

RGH CONSULTANTS, INC.

CONSOLIDATION TEST DATA

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02

Sample Data

Source: B-3
Sample No.: ST-3
Elev. or Depth: 13.0-14.5'
Sample Length(in./cm.):
Location:
Description: Grey Fat Clay (CH)
Liquid Limit: 73
Plasticity Index: 42
USCS: CH
AASHTO:
Figure No.:
Testing Remarks:

Test Specimen Data

TOTAL SAMPLE		BEFORE TEST		AFTER TEST	
Wet w+t =	197.50 g.	**Consolidometer #** =	2	**Wet w+t** =	144.20 g.
Dry w+t =	164.10 g.			**Dry w+t** =	122.60 g.
Tare Wt. =	90.70 g.	**Spec. Gravity** =	2.70	**Tare Wt.** =	49.30 g.
Height =	.80 in.	**Height** =	.80 in.		
Diameter =	2.43 in.	**Diameter** =	2.43 in.		
Weight =	106.80 g.	**Defl. Table** =	Unit 1,2	Max 33870 (inches/psf)	
Moisture =	45.5 %	**Ht. Solids** =	0.3577 in.	**Moisture** =	29.5 %
Wet Den. =	109.7 pcf	**Dry Wt.** =	73.40 g.*	**Dry Wt.** =	73.30 g.
Dry Den. =	75.4 pcf	**Void Ratio** =	1.236	**Void Ratio** =	0.793
		Saturation =	99.4 %		

*** Initial dry weight used in calculations**

End-of-Load Summary

Pressure (psf)	Final Dial (in.)	Machine Defl. (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Compression /Swell
start	0.00000				1.236	
130	0.00340	0.00010			1.227	0.4 Comprs.
265	0.00870	0.00030			1.213	1.0 Comprs.
530	0.01750	0.00050			1.189	2.1 Comprs.
1060	0.03320	0.00120	0.47		1.147	4.0 Comprs.
2120	0.06190	0.00210	0.25		1.069	7.5 Comprs.
4230	0.09770	0.00360			0.973	11.8 Comprs.
8470	0.13780	0.00650			0.869	16.4 Comprs.
16940	0.17810	0.00920			0.764	21.1 Comprs.
33870	0.21800	0.01220			0.661	25.7 Comprs.
8470	0.20890	0.01030			0.681	24.8 Comprs.
2120	0.19410	0.00830			0.717	23.2 Comprs.
530	0.18000	0.00670			0.752	21.7 Comprs.
130	0.16320	0.00450			0.793	19.8 Comprs.

C_c = 0.34 P_c = 1397 psf C_r = 0.05

Pressure: 1060 psf **TEST READINGS** **Load No. 4**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	09:53:00	0.01750	11	10:53:00	0.03000
2	09:53:06	0.02140	12	11:53:00	0.03060
3	09:53:15	0.02260	13	13:53:00	0.03140
4	09:53:30	0.02360	14	16:25:00	0.03190
5	09:54:00	0.02490	15	+01 09:02:00	0.03320
6	09:55:00	0.02600			
7	09:57:00	0.02690			
8	10:01:00	0.02760			
9	10:09:00	0.02840			
10	10:23:00	0.02920			

Void Ratio = 1.147 **Compression** = 4.0 %
D_0 = 0.01924 D_{90} = 0.02515 D_{100} = 0.02580
C_v **at 2.7 min.** = 0.47 ft.^{2}/day

Pressure: 2120 psf **TEST READINGS** **Load No. 5**

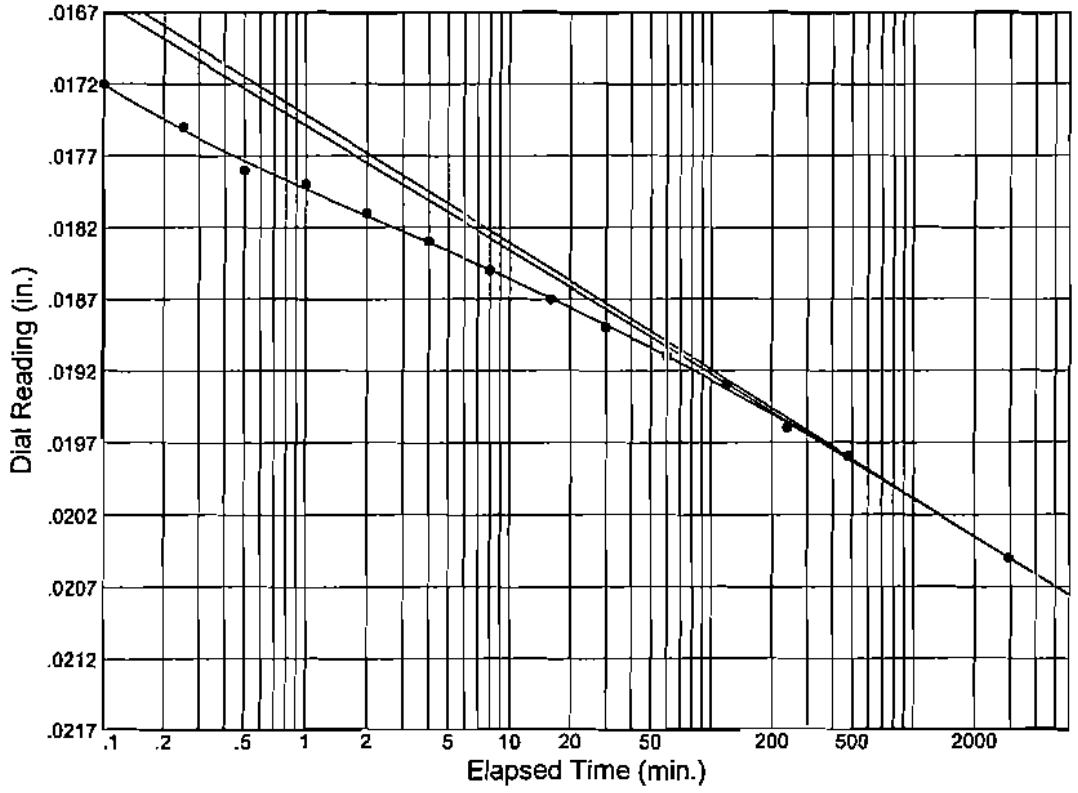
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	09:10:00	0.03320	11	10:10:00	0.05500
2	09:10:06	0.03960	12	11:10:00	0.05630
3	09:10:15	0.04140	13	13:10:00	0.05780
4	09:10:30	0.04320	14	17:10:00	0.05910
5	09:11:00	0.04530	15	+02 09:20:00	0.06190
6	09:12:00	0.04740			
7	09:14:00	0.04930			
8	09:18:00	0.05090			
9	09:26:00	0.05210			
10	09:40:00	0.05370			

Void Ratio = 1.069 **Compression** = 7.5 %
D_0 = 0.03662 D_{90} = 0.04762 D_{100} = 0.04884
C_v **at 4.9 min.** = 0.25 ft.^{2}/day

Dial Reading vs. Time

Project No.: 351143.T1.02
Project: Bay Trail Reaeh 9B

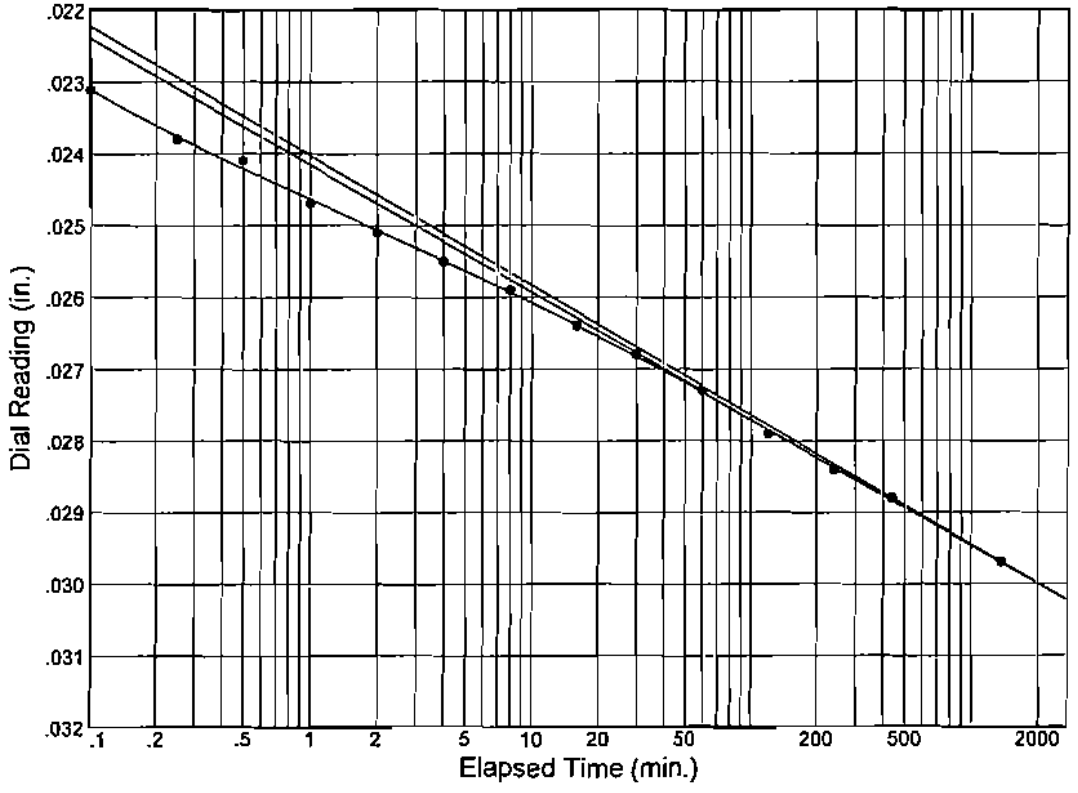
Source: B-3 Sample No.: ST-15 Elev./Depth: 88.0-90.5'



Load No.= 6
Load= 4230 psf
D_0 = 0.01480
D_{50} = 0.01761
D_{100} = 0.02042
T_{50} = 0.33 min.

C_v @ T_{50}
0.90 ft.^{2}/day

C_α = 0.001



Load No.= 7
Load= 8470 psf
D_0 = 0.02050
D_{50} = 0.02563
D_{100} = 0.03077
T_{50} = 5.02 min.

C_v @ T_{50}
0.06 ft.^{2}/day

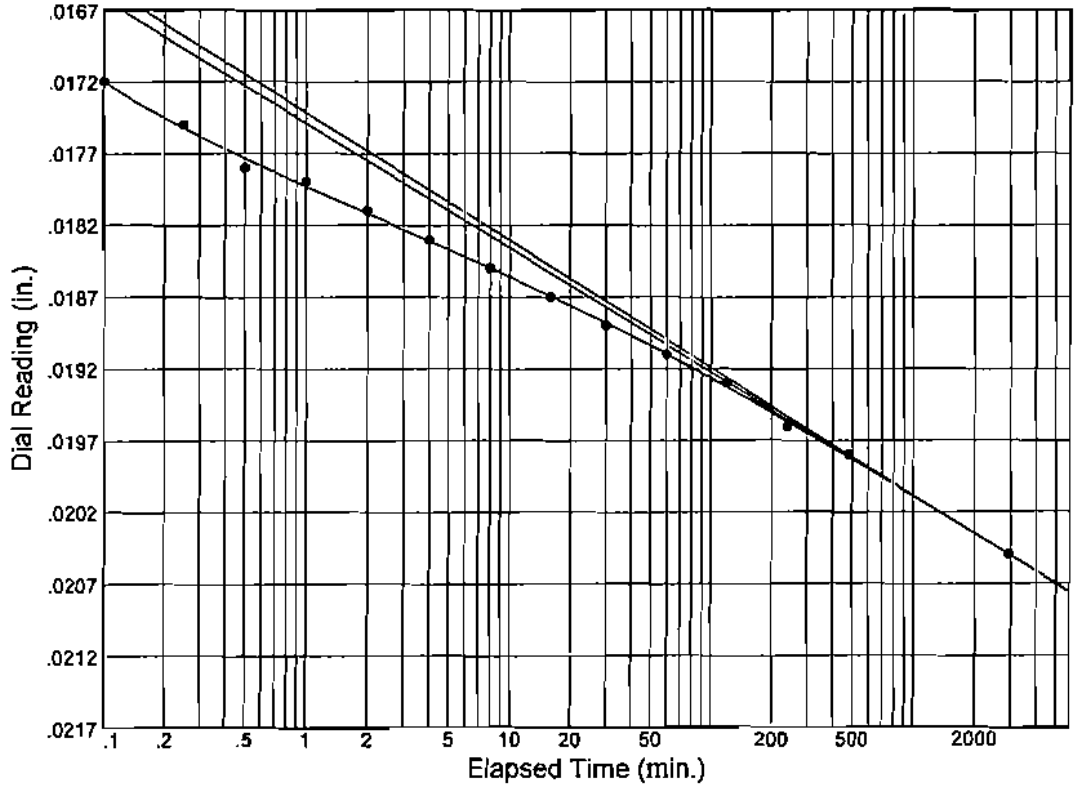
C_α = 0.002

Plate

Dial Reading vs. Time

Project No.: 351143.T1.02
Project: Bay Trail Reach 9B

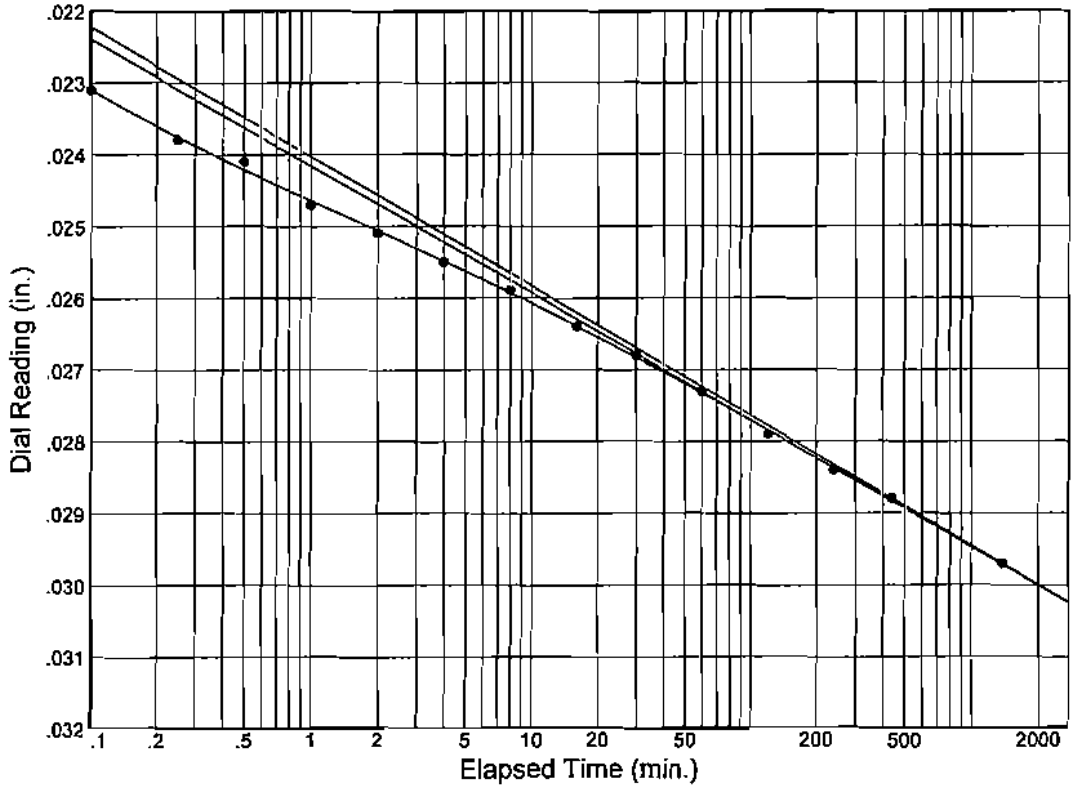
Source: B-3 Sample No.: ST-15 Elev./Depth: 88.0-90.5'



Load No.= 6
Load= 4230 psf
D_0 = 0.01480
D_{50} = 0.01761
D_{100} = 0.02042
T_{50} = 0.33 min.

C_v @ T_{50}
0.90 ft.^{2}/day

C_α = 0.001



Load No.= 7
Load= 8470 psf
D_0 = 0.02050
D_{50} = 0.02563
D_{100} = 0.03077
T_{50} = 5.02 min.

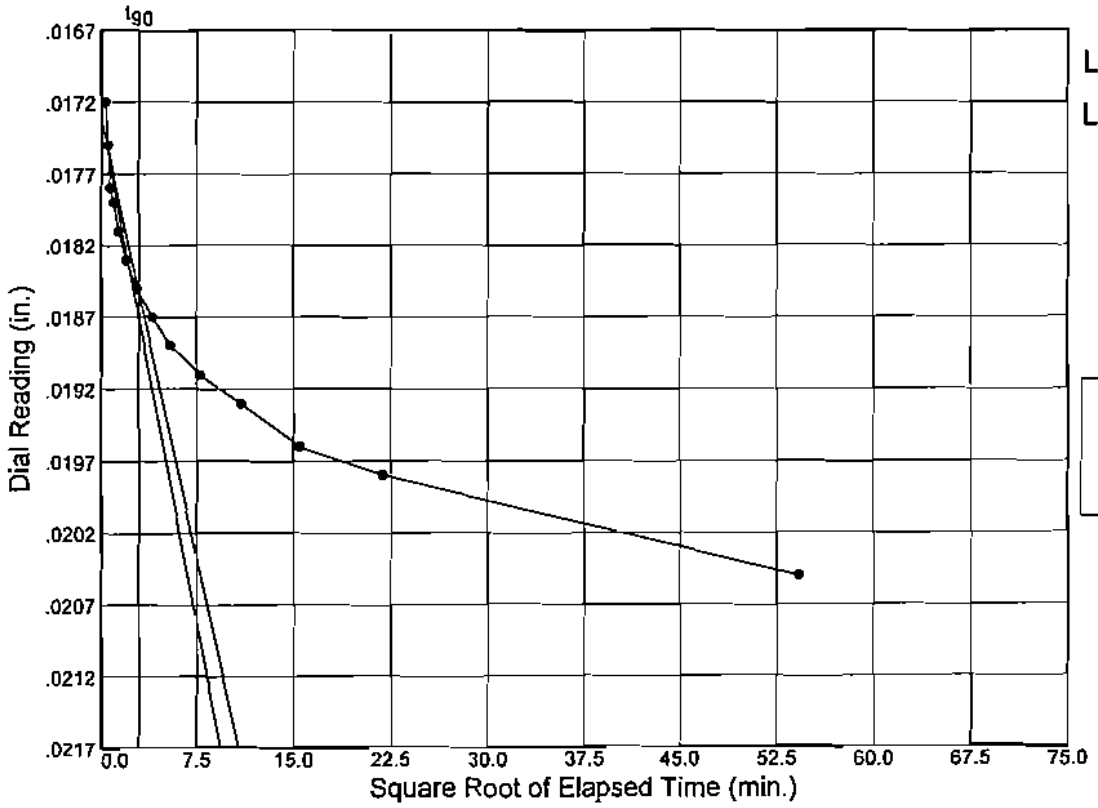
C_v @ T_{50}
0.06 ft.^{2}/day

C_α = 0.002

Dial Reading vs. Time

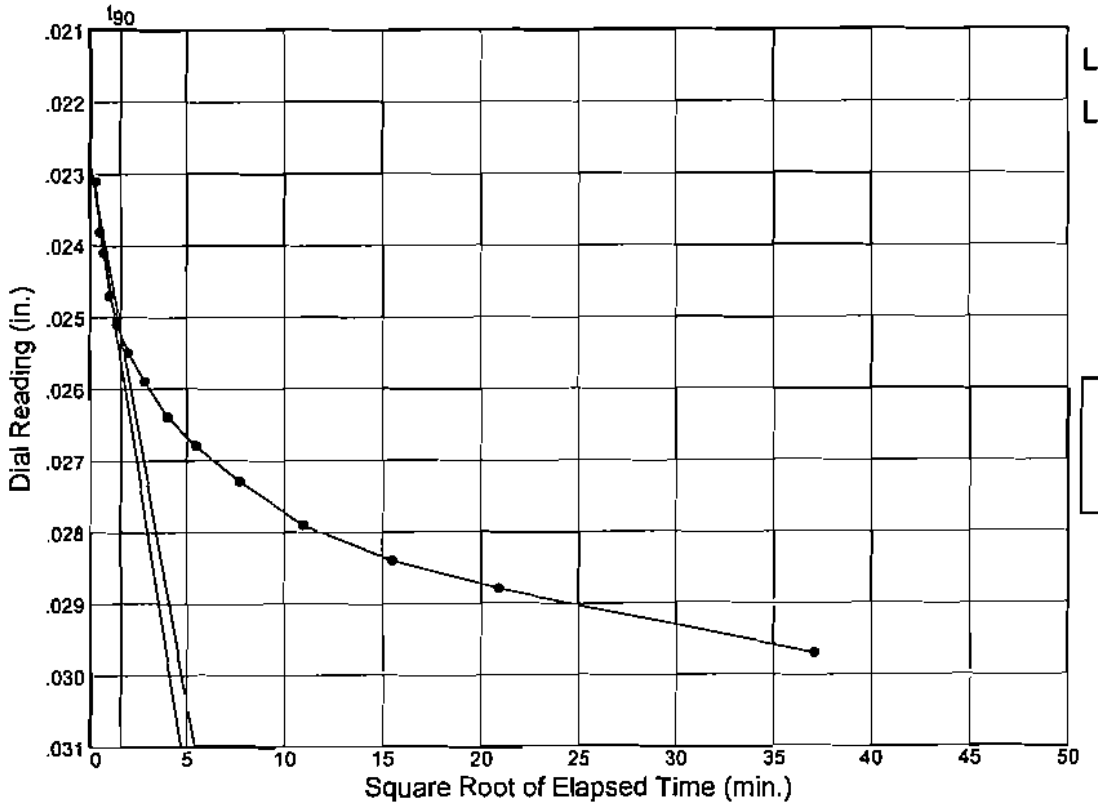
Project No.: 351143.T1.02
Project: Bay Trail Reach 9B

Source: B-3 Sample No.: ST-15 Elev./Depth: 88.0-90.5'



Load No.= 6
Load= 4230 psf
D_0 = 0.01731
D_{90} = 0.01852
D_{100} = 0.01866
T_{90} = 8.81 min.

C_v @ T_{90}
0.15 ft.^{2}/day



Load No.= 7
Load= 8470 psf
D_0 = 0.02278
D_{90} = 0.02523
D_{100} = 0.02551
T_{90} = 2.60 min.

C_v @ T_{90}
0.49 ft.^{2}/day

Plate

RGH CONSULTANTS, INC.

CONSOLIDATION TEST DATA

Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project Number: 351143.T1.02

Sample Data

Source: B-3
Sample No.: ST-15
Elev. or Depth: 88.0-90.5' **Sample Length(in./cm.):**
Location:
Description: Brown Fat Clay (CH)
Liquid Limit: **Plasticity Index:**
USCS: CH **AASHTO:** **Figure No.:**
Testing Remarks:

Test Specimen Data

TOTAL SAMPLE		BEFORE TEST		AFTER TEST	
Wet w+t =	208.00 g.	Consolidometer # =	1	Wet w+t =	226.00 g.
Dry w+t =	182.60 g.			Dry w+t =	205.10 g.
Tare Wt. =	87.00 g.	Spec. Gravity =	2.70	Tare Wt. =	109.80 g.
Height =	.80 in.	Height =	.80 in.		
Diameter =	2.43 in.	Diameter =	2.43 in.		
Weight =	121.00 g.	Defl. Table =	Unit 1,2	Max 33870 (inches/psf)	
Moisture =	26.6 %	Ht. Solids =	0.4659 in.	Moisture =	21.9 %
Wet Den. =	124.2 pcf	Dry Wt. =	95.60 g.*	Dry Wt. =	95.30 g.
Dry Den. =	98.2 pcf	Void Ratio =	0.717	Void Ratio =	0.592
		Saturation =	100.0 %		

*** Initial dry weight used in calculations**

End-of-Load Summary

Pressure (psf)	Final Dial (in.)	Machine Defl. (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Compression /Swell
start	0.00000				0.717	
130	0.00260	0.00010			0.712	0.3 Comprs.
265	0.00520	0.00030			0.707	0.6 Comprs.
530	0.00820	0.00050			0.701	1.0 Comprs.
1060	0.01210	0.00120			0.694	1.4 Comprs.
2120	0.01690	0.00210			0.685	1.9 Comprs.
4230	0.02410	0.00360	0.15		0.673	2.6 Comprs.
8470	0.03620	0.00650	0.49		0.653	3.7 Comprs.
16940	0.06380	0.00920			0.600	6.8 Comprs.
33870	0.10820	0.01220			0.511	12.0 Comprs.
8470	0.09910	0.01030			0.527	11.1 Comprs.
2120	0.08870	0.00830			0.545	10.1 Comprs.
130	0.06300	0.00450			0.592	7.3 Comprs.

C_c = 0.30 P_c = 12405 psf C_r = 0.03

Pressure: 4230 psf **TEST READINGS** **Load No. 6**

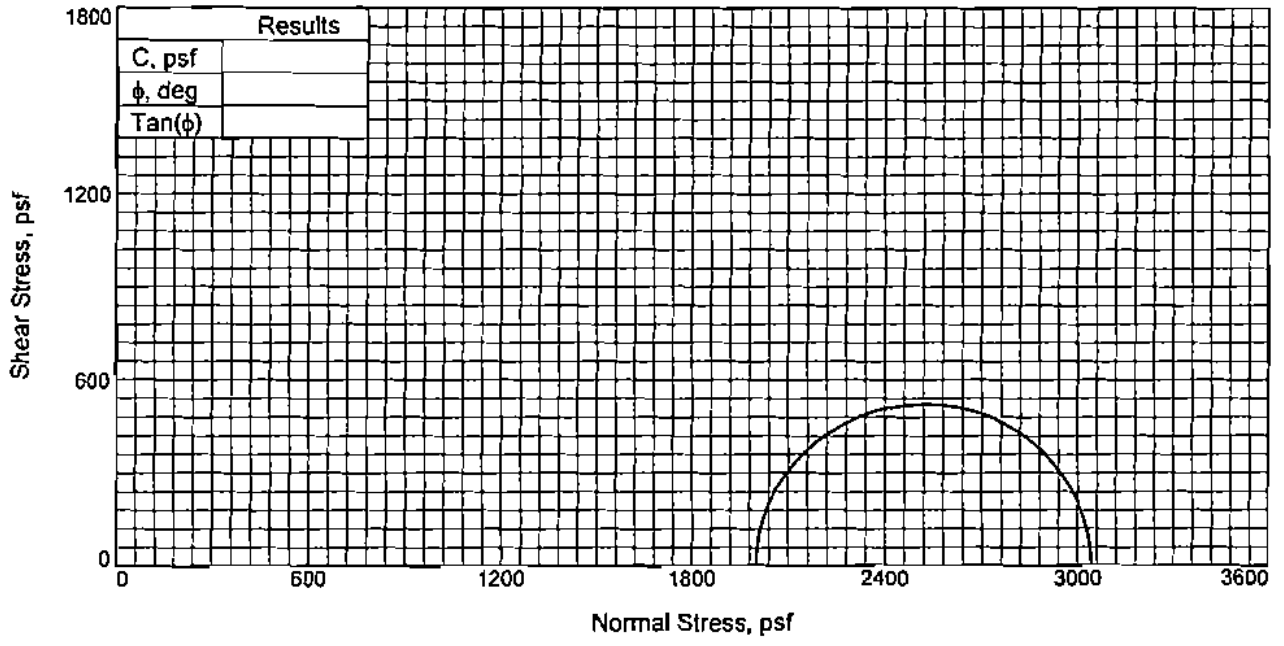
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	09:20:00	0.01690	11	10:20:00	0.02270
2	09:20:06	0.02080	12	11:20:00	0.02290
3	09:20:15	0.02110	13	13:20:00	0.02320
4	09:20:30	0.02140	14	17:20:00	0.02340
5	09:21:00	0.02150	15	+02 10:21:00	0.02410
6	09:22:00	0.02170			
7	09:24:00	0.02190			
8	09:28:00	0.02210			
9	09:36:00	0.02230			
10	09:50:00	0.02250			

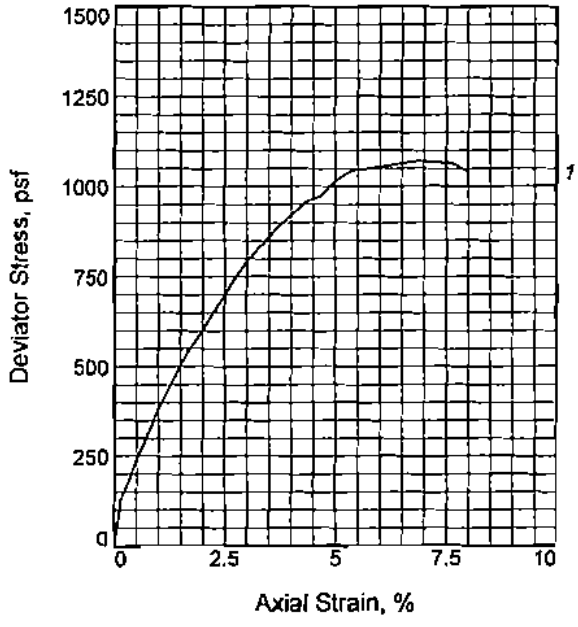
Void Ratio = 0.673 **Compression** = 2.6 %
D_0 = 0.01731 D_{90} = 0.01852 D_{100} = 0.01866
C_v at 8.8 min. = 0.15 ft.^{2}/day

Pressure: 8470 psf **TEST READINGS** **Load No. 7**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	10:27:00	0.02410	11	11:27:00	0.03380
2	10:27:06	0.02960	12	12:27:00	0.03440
3	10:27:15	0.03030	13	14:27:00	0.03490
4	10:27:30	0.03060	14	17:45:00	0.03530
5	10:28:00	0.03120	15	+01 09:25:00	0.03620
6	10:29:00	0.03160			
7	10:31:00	0.03200			
8	10:35:00	0.03240			
9	10:43:00	0.03290			
10	10:57:00	0.03330			

Void Ratio = 0.653 **Compression** = 3.7 %
D_0 = 0.02278 D_{90} = 0.02523 D_{100} = 0.02551
C_v at 2.6 min. = 0.49 ft.^{2}/day





Sample No.		1
Initial	Water Content, %	77.2
	Dry Density, pcf	53.6
	Saturation, %	97.2
	Void Ratio	2.1457
	Diameter, in.	2.87
	Height, in.	6.00
At Test	Water Content, %	77.2
	Dry Density, pcf	53.6
	Saturation, %	97.2
	Void Ratio	2.1457
	Diameter, in.	2.87
	Height, in.	6.00
Strain rate, in./min.		0.08
Back Pressure, psf		0.0
Cell Pressure, psf		2000.2
Fail. Stress, psf		1042.3
Strain, %		5.3
Ult. Stress, psf		1071.4
Strain, %		
σ_1 Failure, psf		3042.5
σ_3 Failure, psf		2000.2

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Black Elastic Silt (MH)

LL= 87 **PL=** 39 **PI=** 48
Assumed Specific Gravity= 2.70
Remarks:

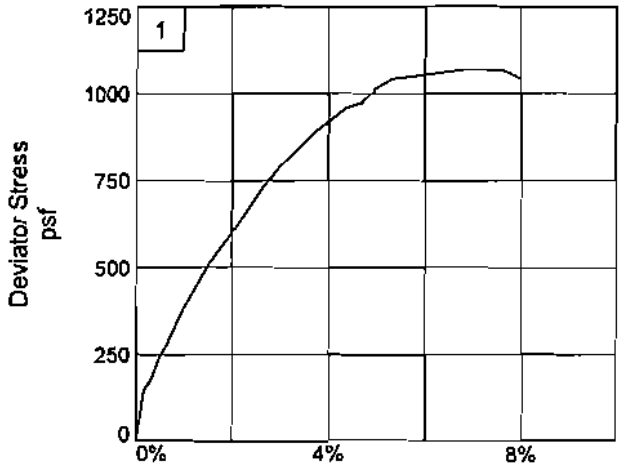
Client: CH2M HILL

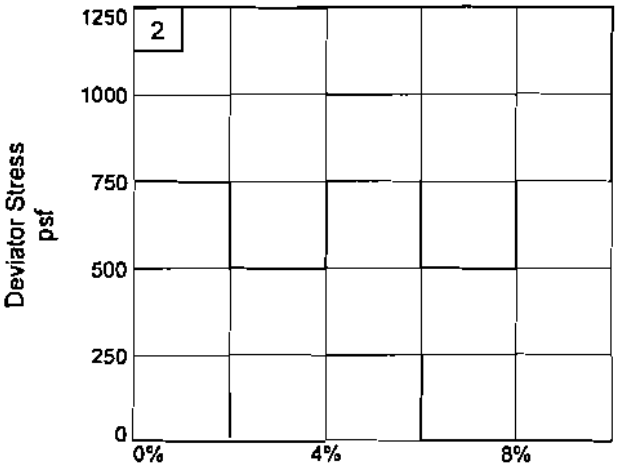
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Source of Sample: B-1 **Depth:** 25.0-27.5'
Sample Number: ST-5
Proj. No.: 351143.T1.02 **Date Sampled:** 4-20-07

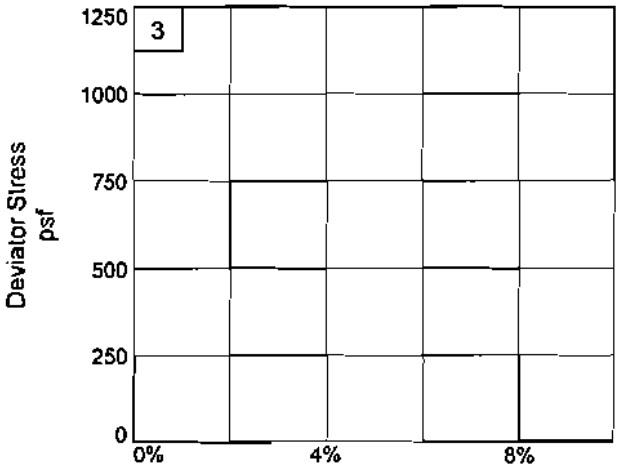
RGH CONSULTANTS, INC.

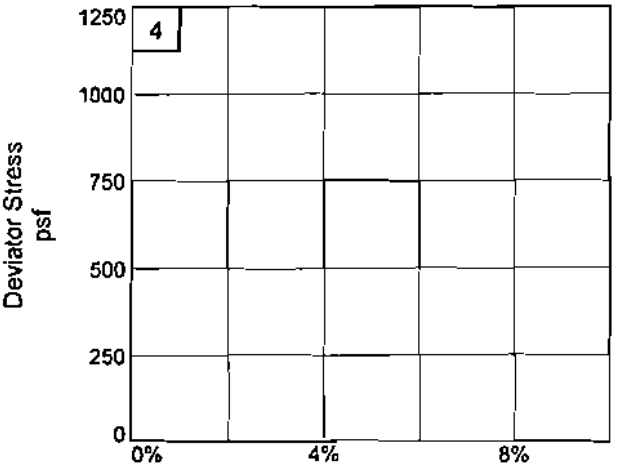
Plate _____

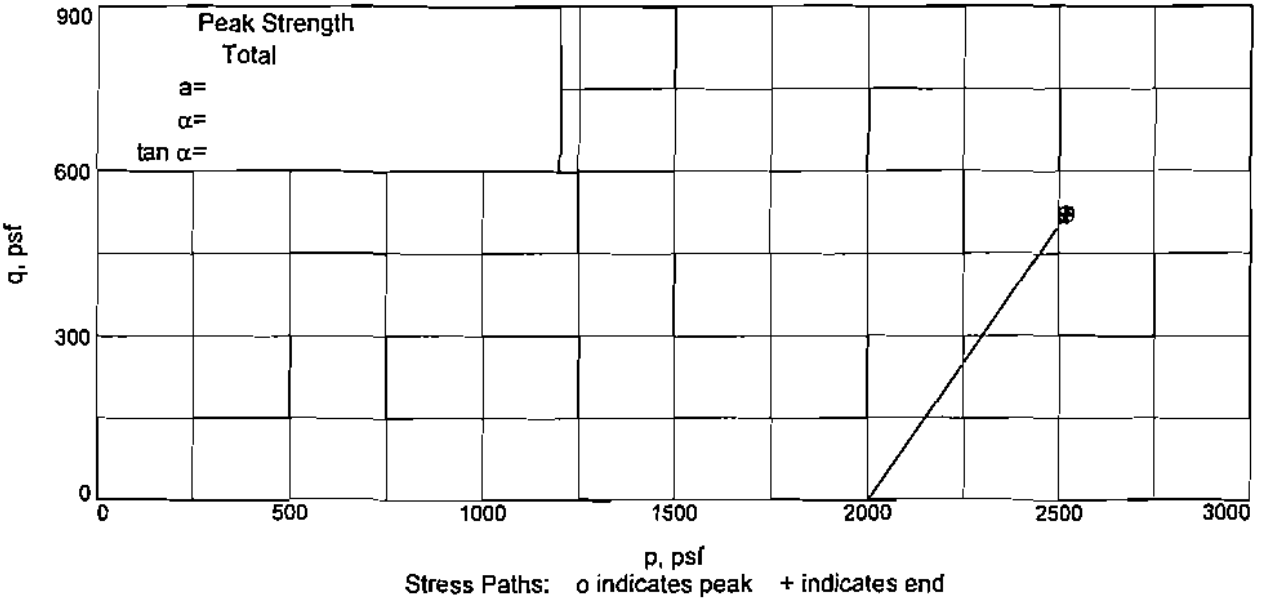
Tested By: CMc **Checked By:** TMc











Client: CH2M HILL
Project: Bay Trail Reach 9B
Source of Sample: B-1 **Depth:** 25.0-27.5' **Sample Number:** ST-5
Project No.: 351143.T1.02 **Plate** _____

RGH CONSULTANTS, INC.

Tested By: CMc **Checked By:** TMc

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

5/11/2007
9:49 AM

Date:	4-20-07		
Client:	CH2M HILL		
Project:	Bay Trail Reach 9B Alviso Bike Bridge Investigation		
Project No.:	351143.T1.02		
Location:	B-1		
Depth:	25.0-27.5'	**Sample Number:**	ST-5
Description:	Black Elastic Silt (MH)		
Remarks:			
Type of Sample:	Undisturbed		
Assumed Specific Gravity=2.70	**LL=87**	**PL=39**	**PI=48**
Test Method:	ASTM D 2850		

Parameters for Specimen(s)

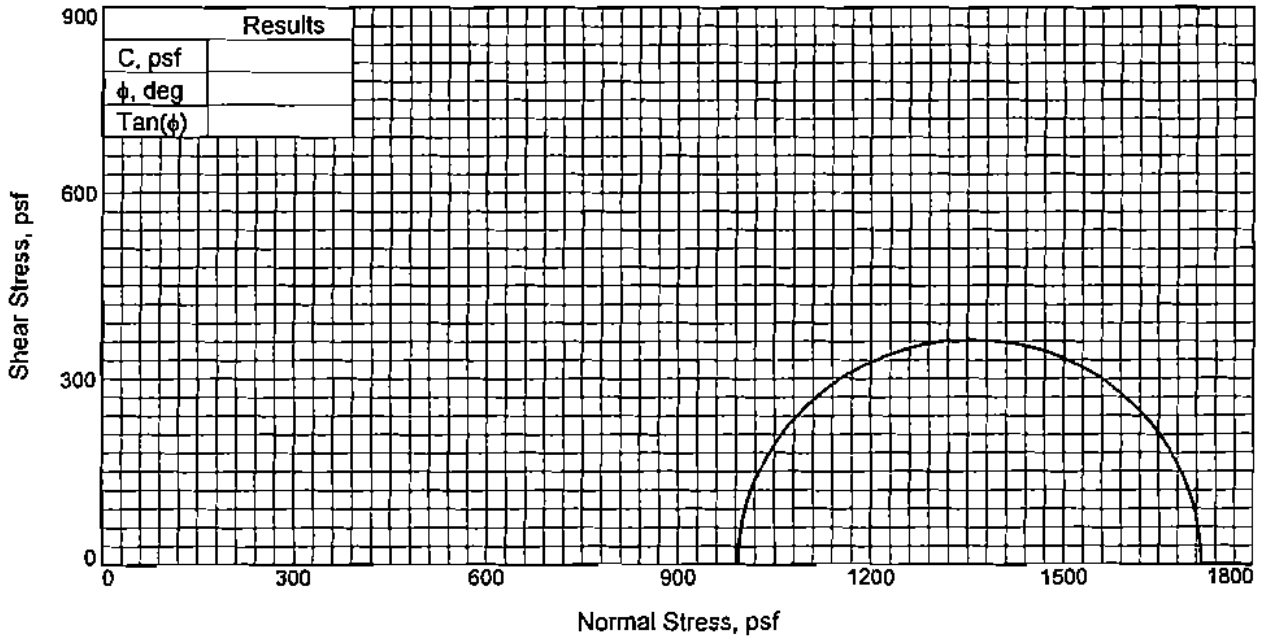
Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	252.100	252.100
Moisture content: Dry soil+tare, gms.	163.900	163.900
Moisture content: Tare, gms.	49.700	49.700
Moisture, %	77.2	77.2
Moist specimen weight, gms.	967.6	
Diameter, in.	2.87	
Area, in.²	6.47	
Height, in.	6.00	
Wet Density, pcf	95.0	
Dry density, pcf	53.6	
Void ratio	2.1457	
Saturation, %	97.2	

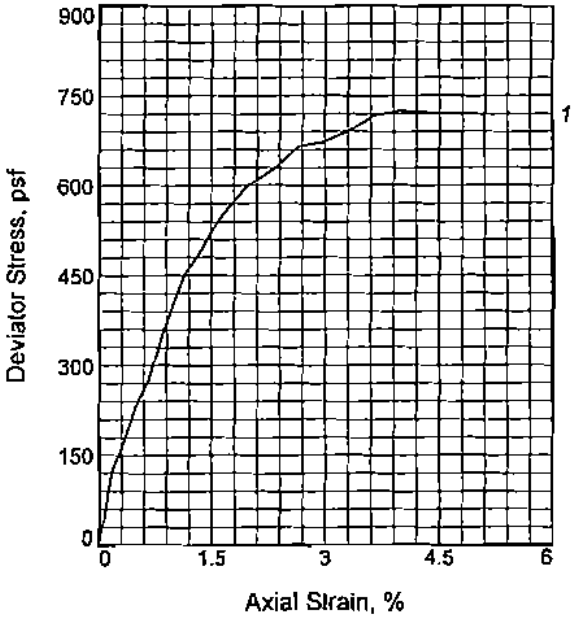
Test Readings for Specimen(s)

Load ring constant = .458 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 13.890 psi (2000.2 psf)
Back pressure = 0.000 psi (0.0 psf)
Strain rate, in./min. = 0.08
Fail. Stress = 1042.3 psf at reading no. 21
Ult. Stress = 1071.4 psf at reading no. 26

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Princ. Stress psf	Major Princ. Stress psf	1:3 Ratio	P psf	Q psf
0	0.0000	0.00	0.0	0.0	0.0	2000.2	2000.2	1.00	2000.2	0.0
1	0.0100	14.00	6.4	0.2	142.5	2000.2	2142.6	1.07	2071.4	71.2
2	0.0200	18.00	8.2	0.3	182.9	2000.2	2183.1	1.09	2091.6	91.4
3	0.0300	24.00	11.0	0.5	243.4	2000.2	2243.6	1.12	2121.9	121.7
4	0.0400	28.00	12.8	0.7	283.5	2000.2	2283.7	1.14	2141.9	141.8
5	0.0500	33.00	15.1	0.8	333.6	2000.2	2333.8	1.17	2167.0	166.8
6	0.0600	38.00	17.4	1.0	383.5	2000.2	2383.7	1.19	2191.9	191.8
7	0.0700	42.00	19.2	1.2	423.2	2000.2	2423.3	1.21	2211.8	211.6
8	0.0800	46.00	21.1	1.3	462.7	2000.2	2462.9	1.23	2231.5	231.4
9	0.0900	50.00	22.9	1.5	502.1	2000.2	2502.2	1.25	2251.2	251.0
10	0.1000	54.00	24.7	1.7	541.3	2000.2	2541.5	1.27	2270.8	270.7
11	0.1200	60.00	27.5	2.0	599.4	2000.2	2599.6	1.30	2299.9	299.7
12	0.1400	67.00	30.7	2.3	667.1	2000.2	2667.3	1.33	2333.7	333.6
13	0.1600	74.00	33.9	2.7	734.3	2000.2	2734.4	1.37	2367.3	367.1
14	0.1800	80.00	36.6	3.0	791.1	2000.2	2791.3	1.40	2395.7	395.6
15	0.2000	85.00	38.9	3.3	837.7	2000.2	2837.8	1.42	2419.0	418.8
16	0.2200	90.00	41.2	3.7	883.9	2000.2	2884.0	1.44	2442.1	441.9
17	0.2400	94.00	43.1	4.0	920.0	2000.2	2920.1	1.46	2460.1	460.0
18	0.2600	98.00	44.9	4.3	955.8	2000.2	2955.9	1.48	2478.1	477.9
19	0.2800	100.00	45.8	4.7	971.9	2000.2	2972.1	1.49	2486.1	485.9
20	0.3000	105.00	48.1	5.0	1016.9	2000.2	3017.1	1.51	2508.6	508.5
21	0.3200	108.00	49.5	5.3	1042.3	2000.2	3042.5	1.52	2521.3	521.2
22	0.3400	109.00	49.9	5.7	1048.3	2000.2	3048.4	1.52	2524.3	524.1
23	0.3600	110.00	50.4	6.0	1054.1	2000.2	3054.3	1.53	2527.2	527.1
24	0.3800	111.00	50.8	6.3	1059.9	2000.2	3060.1	1.53	2530.1	530.0
25	0.4000	112.00	51.3	6.7	1065.7	2000.2	3065.8	1.53	2533.0	532.8
26	0.4200	113.00	51.8	7.0	1071.4	2000.2	3071.5	1.54	2535.8	535.7
27	0.4400	113.00	51.8	7.3	1067.5	2000.2	3067.7	1.53	2533.9	533.8
28	0.4600	113.00	51.8	7.7	1063.7	2000.2	3063.8	1.53	2532.0	531.8
29	0.4800	111.00	50.8	8.0	1041.1	2000.2	3041.2	1.52	2520.7	520.5





Sample No.		1
Initial	Water Content, %	56.5
	Dry Density, pcf	66.5
	Saturation, %	99.4
	Void Ratio	1.5336
	Diameter, in.	2.87
	Height, in.	6.05
At Test	Water Content, %	56.5
	Dry Density, pcf	66.5
	Saturation, %	99.4
	Void Ratio	1.5336
	Diameter, in.	2.87
	Height, in.	6.05
Strain rate, in./min.		0.08
Back Pressure, psf		0.0
Cell Pressure, psf		993.6
Fail. Stress, psf		724.5
Strain, %		4.0
Ult. Stress, psf		724.5
Strain, %		
σ_1 Failure, psf		1718.1
σ_3 Failure, psf		993.6

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Grey Sandy Fat Clay (CH)

Assumed Specific Gravity= 2.70
Remarks:

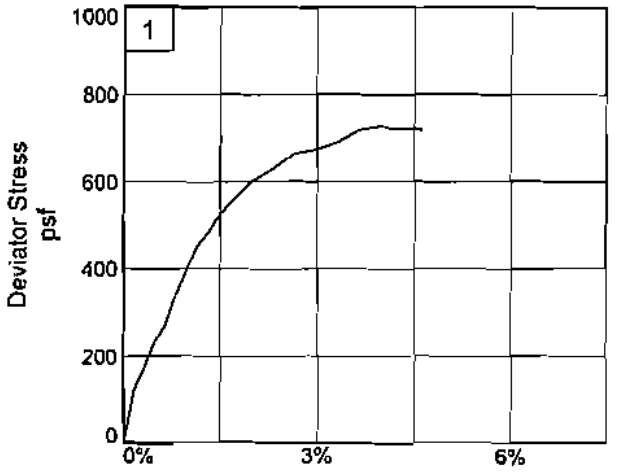
Client: CH2M HILL

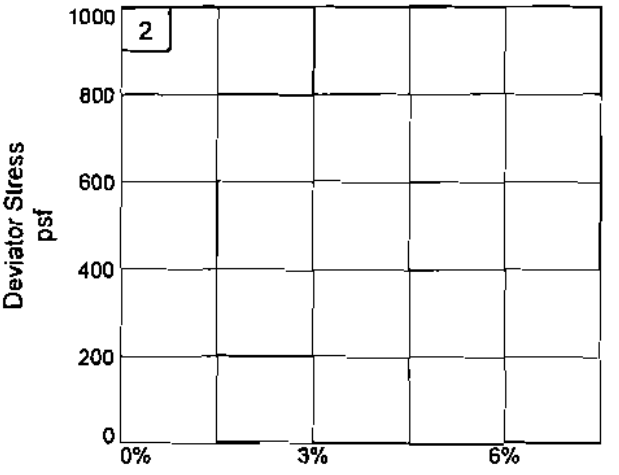
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Source of Sample: B-2 **Depth:** 10.0-12.5'
Sample Number: ST-2
Proj. No.: 351143.T1.02 **Date Sampled:** 4-20-07

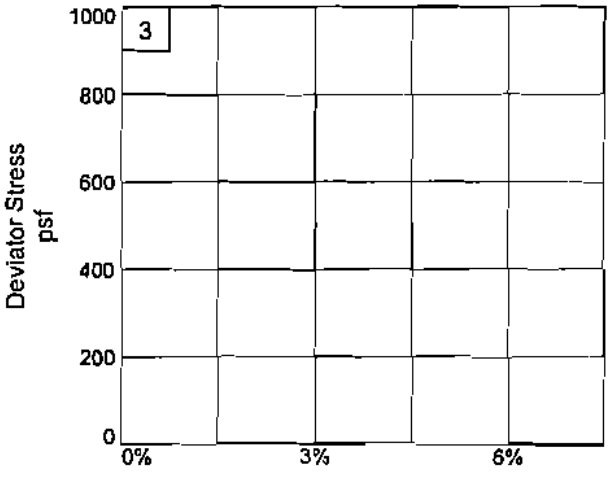
RGH CONSULTANTS, INC.

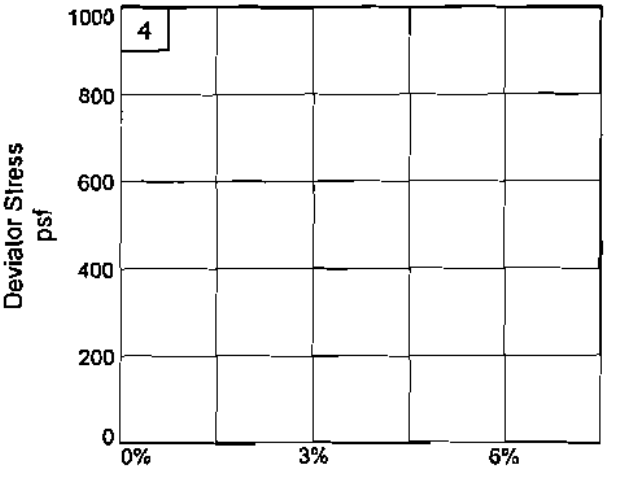
Plate _____

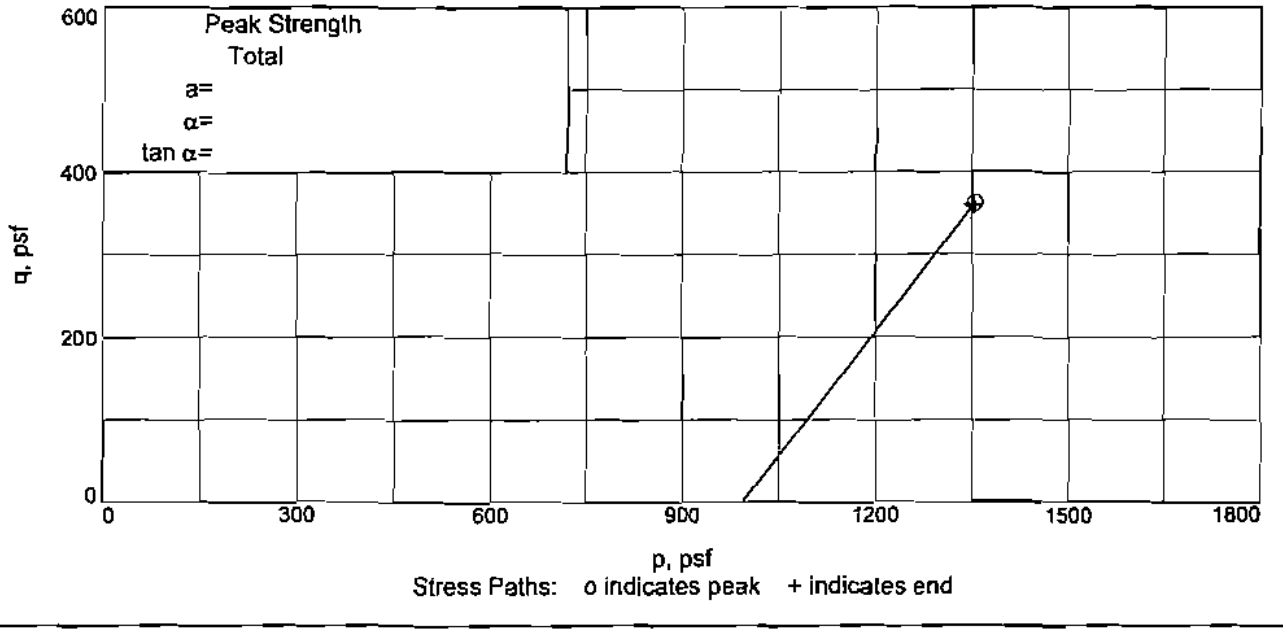
Tested By: CMc **Checked By:** TMc











Stress Paths: o indicates peak + indicates end

Client: CH2M HILL
Project: Bay Trail Reach 9B
Source of Sample: B-2 **Depth:** 10.0-12.5' **Sample Number:** ST-2
Project No.: 351143.T1.02 **Plate** _____

RGH CONSULTANTS, INC.

Tested By: CMc **Checked By:** TMc

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

5/11/2007
9:49 AM

Date:	4-20-07		
Client:	CH2M HILL		
Project:	Bay Trail Reach 9B Alviso Bike Bridge Investigation		
Project No.:	351143.T1.02		
Location:	B-2		
Depth:	10.0-12.5'	**Sample Number:**	ST-2
Description:	Grey Sandy Fat Clay (CH)		
Remarks:			
Type of Sample:	Undisturbed		
Assumed Specific Gravity=2.70	**LL=**	**PL=**	**PI=**
Test Method:	ASTM D 2850		

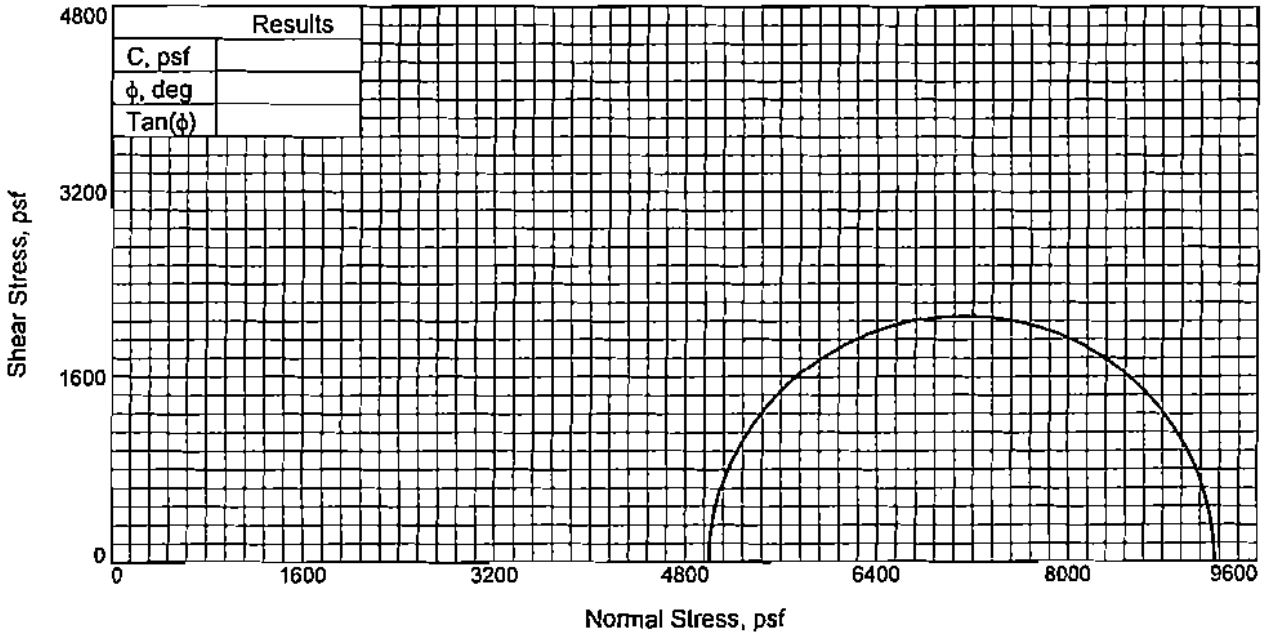
Parameters for Specimen No. 1

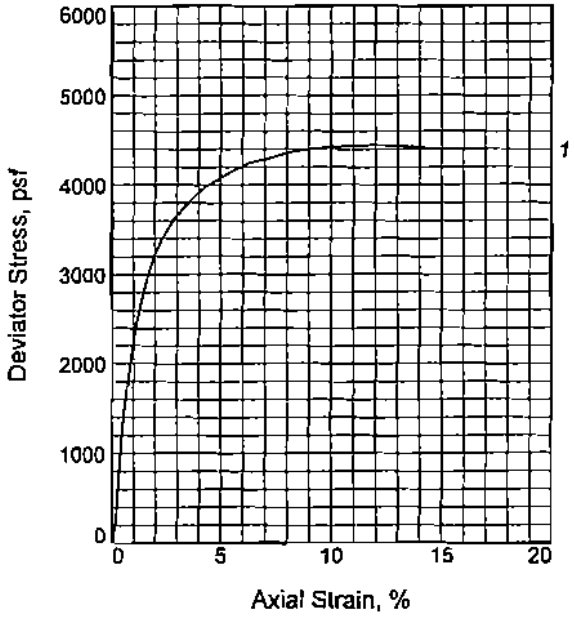
Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	317.600	317.600
Moisture content: Dry soil+tare, gms.	221.000	221.000
Moisture content: Tare, gms.	49.900	49.900
Moisture, %	56.5	56.5
Moist specimen weight, gms.	1069.4	
Diameter, in.	2.87	
Area, in.²	6.47	
Height, in.	6.05	
Wet Density, pcf	104.1	
Dry density, pcf	66.5	
Void ratio	1.5336	
Saturation, %	99.4	

Test Readings for Specimen No. 1

Load ring constant = .458 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 6.900 psi (993.6 psf)
Back pressure = 0.000 psi (0.0 psf)
Strain rate, in./min. = 0.08
Fail. Stress = 724.5 psf **at reading no.** 17
Ult. Stress = 724.5 psf **at reading no.** 17

No.	Def. Dial In.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Princ. Stress psf	Major Princ. Stress psf	1:3 Ratio	P psf	Q psf
0	0.0000	0.00	0.0	0.0	0.0	993.6	993.6	1.00	993.6	0.0
1	0.0100	12.00	5.5	0.2	122.1	993.6	1115.7	1.12	1054.7	61.1
2	0.0200	17.00	7.8	0.3	172.7	993.6	1166.3	1.17	1080.0	86.4
3	0.0300	23.00	10.5	0.5	233.3	993.6	1226.9	1.23	1110.3	116.7
4	0.0400	27.00	12.4	0.7	273.4	993.6	1267.0	1.28	1130.3	136.7
5	0.0500	34.00	15.6	0.8	343.8	993.6	1337.4	1.35	1165.5	171.9
6	0.0600	40.00	18.3	1.0	403.7	993.6	1397.3	1.41	1195.5	201.9
7	0.0700	45.00	20.6	1.2	453.5	993.6	1447.1	1.46	1220.3	226.7
8	0.0800	48.00	22.0	1.3	482.9	993.6	1476.5	1.49	1235.0	241.4
9	0.0900	52.00	23.8	1.5	522.2	993.6	1515.8	1.53	1254.7	261.1
10	0.1000	55.00	25.2	1.7	551.4	993.6	1545.0	1.55	1269.3	275.7
11	0.1200	60.00	27.5	2.0	599.5	993.6	1593.1	1.60	1293.4	299.8
12	0.1400	63.00	28.9	2.3	627.4	993.6	1621.0	1.63	1307.3	313.7
13	0.1600	67.00	30.7	2.6	665.0	993.6	1658.6	1.67	1326.1	332.5
14	0.1800	68.00	31.1	3.0	672.6	993.6	1666.2	1.68	1329.9	336.3
15	0.2000	70.00	32.1	3.3	690.0	993.6	1683.6	1.69	1338.6	345.0
16	0.2200	73.00	33.4	3.6	717.2	993.6	1710.8	1.72	1352.2	358.6
17	0.2400	74.00	33.9	4.0	724.5	993.6	1718.1	1.73	1355.8	362.2
18	0.2600	74.00	33.9	4.3	722.0	993.6	1715.6	1.73	1354.6	361.0
19	0.2800	74.00	33.9	4.6	719.5	993.6	1713.1	1.72	1353.3	359.7





Sample No.		1
Initial	Water Content, %	23.8
	Dry Density, pcf	102.6
	Saturation, %	99.8
	Void Ratio	0.6432
	Diameter, in.	2.87
	Height, in.	6.05
At Test	Water Content, %	23.8
	Dry Density, pcf	102.6
	Saturation, %	99.8
	Void Ratio	0.6432
	Diameter, in.	2.87
	Height, in.	6.05
Strain rate, in./min.		0.08
Back Pressure, psf		0.0
Cell Pressure, psf		4999.7
Fail. Stress, psf		4242.1
Strain, %		6.3
Ult. Stress, psf		4445.8
Strain, %		
σ_1 Failure, psf		9241.8
σ_3 Failure, psf		4999.7

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Brown Fat Clay (CH)

Assumed Specific Gravity= 2.70
Remarks:

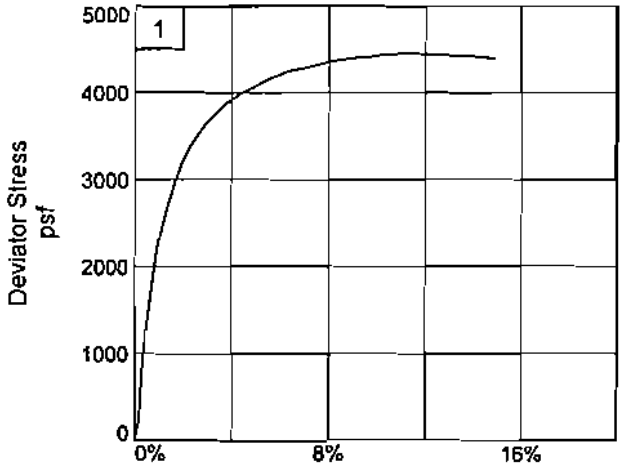
Client: CH2M HILL

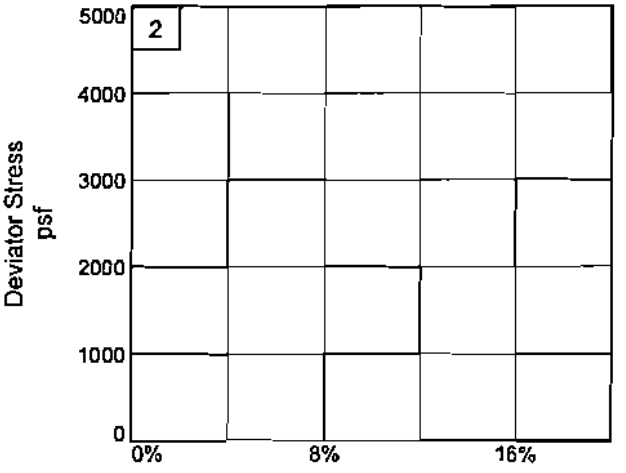
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Source of Sample: B-3 **Depth:** 88.0-90.5'
Sample Number: ST-15
Proj. No.: 351143.T1.02 **Date Sampled:** 5-3-07

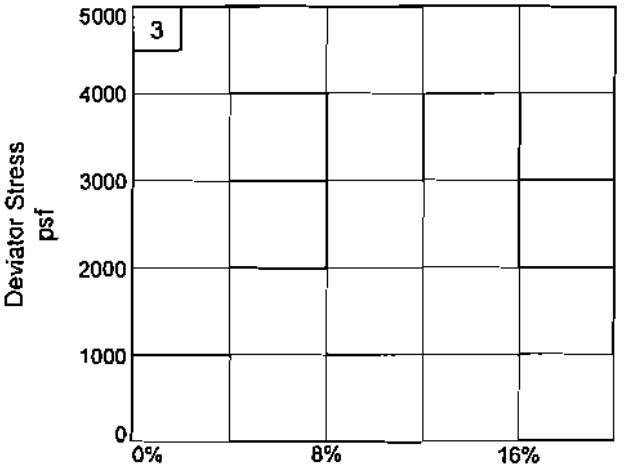
RGH CONSULTANTS, INC.

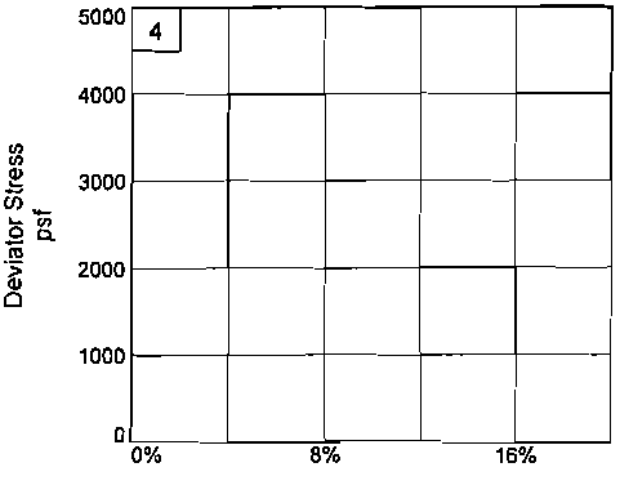
Plate _____

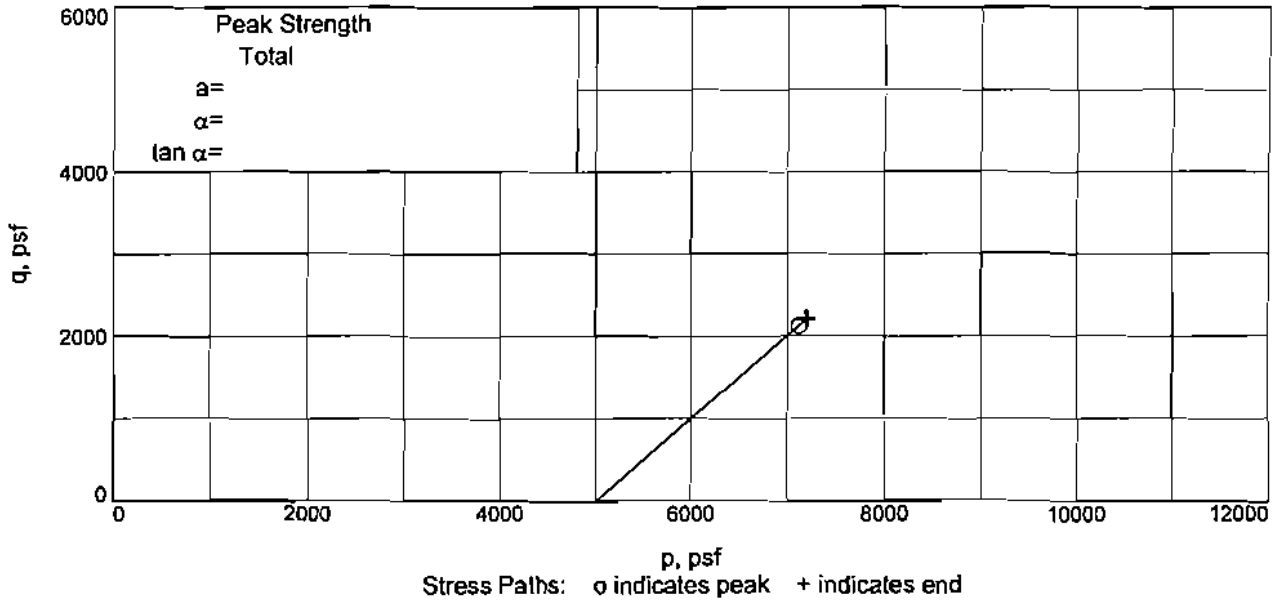
Tested By: SW _____ **Checked By:** TMc _____











Client: CH2M HILL
Project: Bay Trail Reach 9B
Source of Sample: B-3 **Depth:** 88.0-90.5' **Sample Number:** ST-15
Project No.: 351143.T1.02 **Plate** _____

RGH CONSULTANTS, INC.

Tested By: SW **Checked By:** TMc

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

5/11/2007
9:50 AM

Date:	5-3-07		
Client:	CH2M HILL		
Project:	Bay Trail Reach 9B Alviso Bike Bridge Investigation		
Project No.:	351143.T1.02		
Location:	B-3		
Depth:	88.0-90.5'	**Sample Number:**	ST-15
Description:	Brown Fat Clay (CH)		
Remarks:			
Type of Sample:	Undisturbed		
Assumed Specific Gravity=2.70	**LL=**	**PL=**	**PI=**
Test Method:	ASTM D 2850		

Parameters for Specimen No. 1

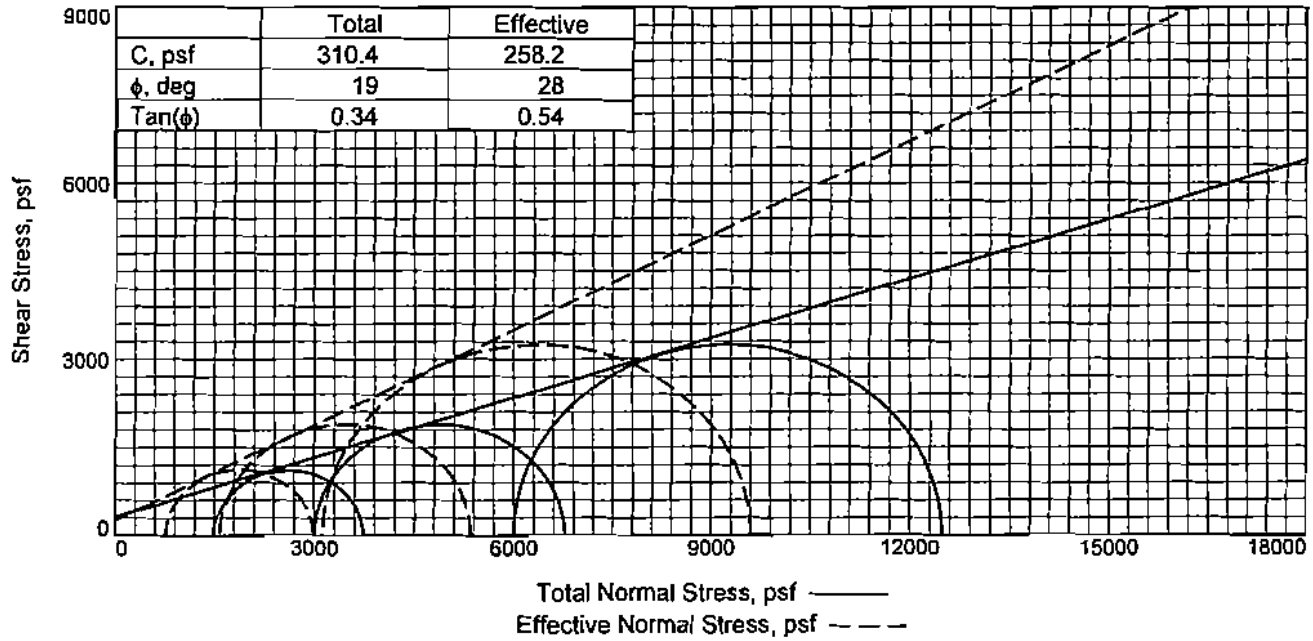
Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	276.800	276.800
Moisture content: Dry soil+tare, gms.	233.200	233.200
Moisture content: Tare, gms.	49.800	49.800
Moisture, %	23.8	23.8
Moist specimen weight, gms.	1304.4	
Diameter, in.	2.87	
Area, in.²	6.47	
Height, in.	6.05	
Wet Density, pcf	127.0	
Dry density, pcf	102.6	
Void ratio	0.6432	
Saturation, %	99.8	

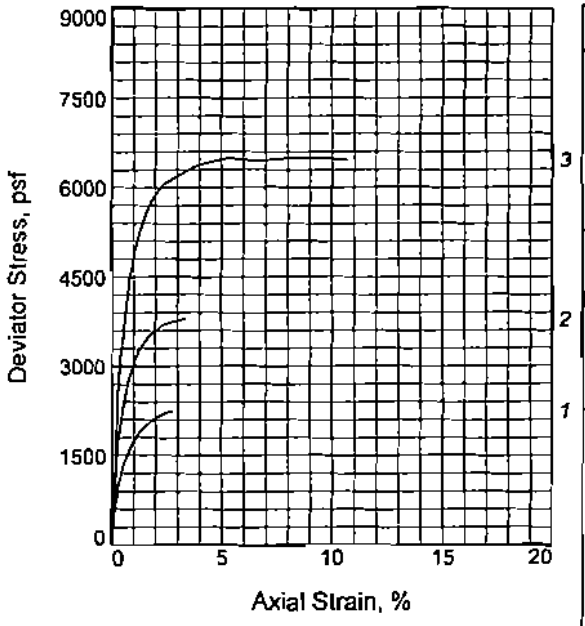
Test Readings for Specimen No. 1

Load ring constant = .458 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 34.720 psi (4999.7 psf)
Back pressure = 0.000 psi (0.0 psf)
Strain rate, in./min. = 0.08
Fail. Stress = 4242.1 psf **at reading no.** 24
Ult. Stress = 4445.8 psf **at reading no.** 41

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Princ. Stress psf	Major Princ. Stress psf	1:3 Ratio	P psf	Q psf
0	0.0000	0.00	0.0	0.0	0.0	4999.7	4999.7	1.00	4999.7	0.0
1	0.0100	22.00	10.1	0.2	223.9	4999.7	5223.6	1.04	5111.6	112.0
2	0.0200	83.00	38.0	0.3	843.4	4999.7	5843.0	1.17	5421.4	421.7
3	0.0300	126.00	57.7	0.5	1278.2	4999.7	6277.8	1.26	5638.8	639.1
4	0.0400	161.00	73.7	0.7	1630.5	4999.7	6630.2	1.33	5814.9	815.2
5	0.0500	194.00	88.9	0.8	1961.4	4999.7	6961.1	1.39	5980.4	980.7
6	0.0600	223.00	102.1	1.0	2250.9	4999.7	7250.6	1.45	6125.1	1125.4
7	0.0700	246.00	112.7	1.2	2478.9	4999.7	7478.6	1.50	6239.1	1239.4
8	0.0800	264.00	120.9	1.3	2655.8	4999.7	7655.5	1.53	6327.6	1327.9
9	0.0900	279.00	127.8	1.5	2802.0	4999.7	7801.7	1.56	6400.7	1401.0
10	0.1000	296.00	135.6	1.7	2967.8	4999.7	7967.4	1.59	6483.6	1483.9
11	0.1200	321.00	147.0	2.0	3207.6	4999.7	8207.3	1.64	6603.5	1603.8
12	0.1400	340.00	155.7	2.3	3386.0	4999.7	8385.7	1.68	6692.7	1693.0
13	0.1600	355.00	162.6	2.6	3523.4	4999.7	8523.1	1.70	6761.4	1761.7
14	0.1800	369.00	169.0	3.0	3649.9	4999.7	8649.6	1.73	6824.6	1825.0
15	0.2000	380.00	174.0	3.3	3745.9	4999.7	8745.6	1.75	6872.6	1873.0
16	0.2200	390.00	178.6	3.6	3831.4	4999.7	8831.0	1.77	6915.4	1915.7
17	0.2400	399.50	183.0	4.0	3911.2	4999.7	8910.9	1.78	6955.3	1955.6
18	0.2600	408.00	186.9	4.3	3980.7	4999.7	8980.4	1.80	6990.0	1990.3
19	0.2800	414.00	189.6	4.6	4025.3	4999.7	9025.0	1.81	7012.3	2012.6
20	0.3000	420.50	192.6	5.0	4074.3	4999.7	9074.0	1.81	7036.8	2037.1
21	0.3200	427.00	195.6	5.3	4122.9	4999.7	9122.6	1.82	7061.1	2061.4
22	0.3400	433.00	198.3	5.6	4166.2	4999.7	9165.9	1.83	7082.8	2083.1
23	0.3600	438.00	200.6	6.0	4199.6	4999.7	9199.3	1.84	7099.5	2099.8
24	0.3800	444.00	203.4	6.3	4242.1	4999.7	9241.8	1.85	7120.7	2121.1
25	0.4000	448.00	205.2	6.6	4265.3	4999.7	9264.9	1.85	7132.3	2132.6
26	0.4200	451.00	206.6	6.9	4278.6	4999.7	9278.3	1.86	7139.0	2139.3
27	0.4400	455.00	208.4	7.3	4301.2	4999.7	9300.9	1.86	7150.3	2150.6
28	0.4600	459.00	210.2	7.6	4323.6	4999.7	9323.3	1.86	7161.5	2161.8
29	0.4800	463.00	212.1	7.9	4345.7	4999.7	9345.3	1.87	7172.5	2172.8
30	0.5000	467.00	213.9	8.3	4367.5	4999.7	9367.1	1.87	7183.4	2183.7
31	0.5200	470.00	215.3	8.6	4379.7	4999.7	9379.4	1.88	7189.5	2189.8
32	0.5400	473.00	216.6	8.9	4391.7	4999.7	9391.4	1.88	7195.5	2195.8
33	0.5600	475.50	217.8	9.3	4398.9	4999.7	9398.6	1.88	7199.1	2199.4
34	0.5800	478.00	218.9	9.6	4405.9	4999.7	9405.6	1.88	7202.6	2202.9
35	0.6000	481.00	220.3	9.9	4417.3	4999.7	9417.0	1.88	7208.3	2208.7
36	0.6200	484.00	221.7	10.2	4428.6	4999.7	9428.3	1.89	7214.0	2214.3
37	0.6400	486.50	222.8	10.6	4435.1	4999.7	9434.7	1.89	7217.2	2217.5
38	0.6600	489.00	224.0	10.9	4441.4	4999.7	9441.0	1.89	7220.4	2220.7
39	0.6800	491.00	224.9	11.2	4443.0	4999.7	9442.7	1.89	7221.2	2221.5
40	0.7000	493.00	225.8	11.6	4444.5	4999.7	9444.1	1.89	7221.9	2222.2
41	0.7200	495.00	226.7	11.9	4445.8	4999.7	9445.5	1.89	7222.6	2222.9
42	0.7400	496.50	227.4	12.2	4442.6	4999.7	9442.2	1.89	7221.0	2221.3
43	0.7600	498.00	228.1	12.6	4439.2	4999.7	9438.9	1.89	7219.3	2219.6
44	0.7800	499.50	228.8	12.9	4435.7	4999.7	9435.4	1.89	7217.5	2217.9
45	0.8000	500.50	229.2	13.2	4427.7	4999.7	9427.4	1.89	7213.6	2213.9
46	0.8200	502.00	229.9	13.6	4424.1	4999.7	9423.8	1.88	7211.7	2212.0

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Princ. Stress psf	Major Princ. Stress psf	1:3 Ratio	P psf	Q psf
47	0.8400	504.00	230.8	13.9	4424.7	4999.7	9424.4	1.89	7212.0	2212.4
48	0.8600	504.50	231.1	14.2	4412.1	4999.7	9411.8	1.88	7205.7	2206.1
49	0.8800	505.50	231.5	14.5	4403.8	4999.7	9403.5	1.88	7201.6	2201.9
50	0.9000	506.50	232.0	14.9	4395.5	4999.7	9395.2	1.88	7197.4	2197.7





Sample No.		1	2	3
Initial	Water Content, %	24.1	24.1	24.1
	Dry Density, pcf	101.9	101.9	101.9
	Saturation, %	99.5	99.5	99.5
	Void Ratio	0.6546	0.6546	0.6546
	Diameter, in.	2.87	2.87	2.87
	Height, in.	6.02	6.02	6.02
At Test	Water Content, %	23.2	21.9	20.2
	Dry Density, pcf	103.6	106.0	109.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6269	0.5901	0.5445
	Diameter, in.	2.86	2.89	2.94
	Height, in.	5.98	5.69	5.36
Strain rate, in./min.		0.00	0.00	0.00
Eff. Cell Pressure, psf		1500.5	2999.5	6000.5
Fail. Stress, psf		2226.1	3767.2	6487.5
Total Pore Pr., psf		8222.4	8899.2	10368.0
Strain, %		2.5	3.1	5.3
Ult. Stress, psf				6494.0
Total Pore Pr., psf				10224.0
Strain, %				9.6
$\bar{\sigma}_1$ Failure, psf		2992.2	5355.6	9608.0
$\bar{\sigma}_3$ Failure, psf		766.1	1588.3	3120.5

Type of Test:
CU with Pore Pressures
Sample Type: Undisturbed
Description: Grey Elastic Silt (MH)

Assumed Specific Gravity= 2.70
Remarks:

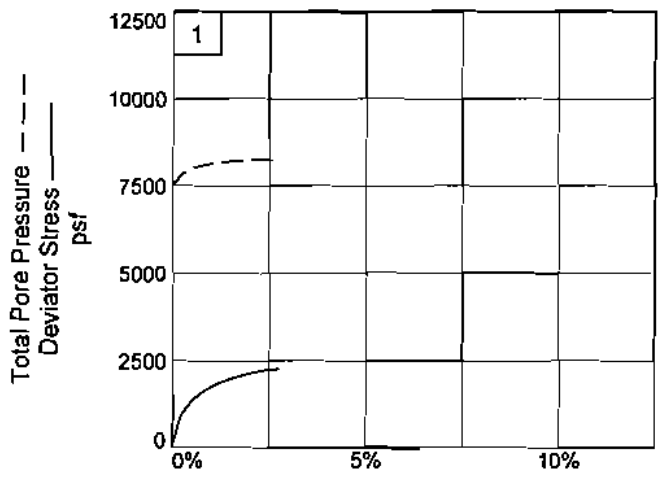
Client: CH2M HILL

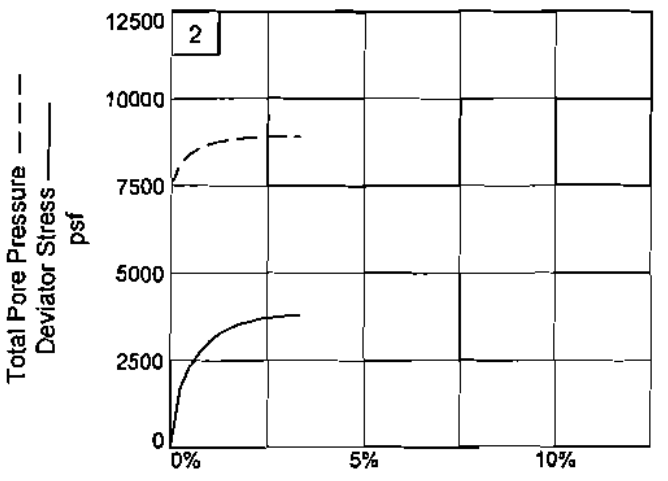
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Source of Sample: B-1 **Depth:** 30.0-32.5'
Sample Number: ST-6
Proj. No.: 351143.T1.02 **Date Sampled:** 4-20-07

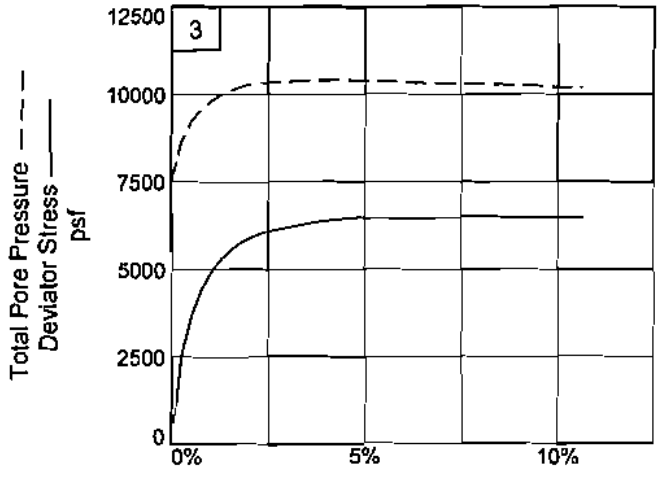
RGH CONSULTANTS, INC.

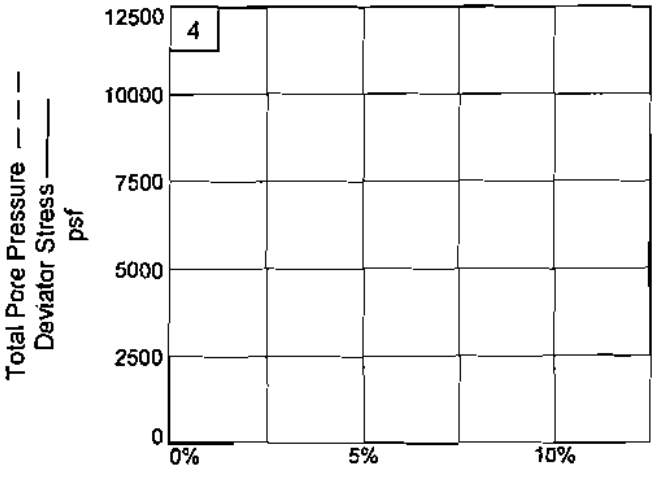
Plate _____

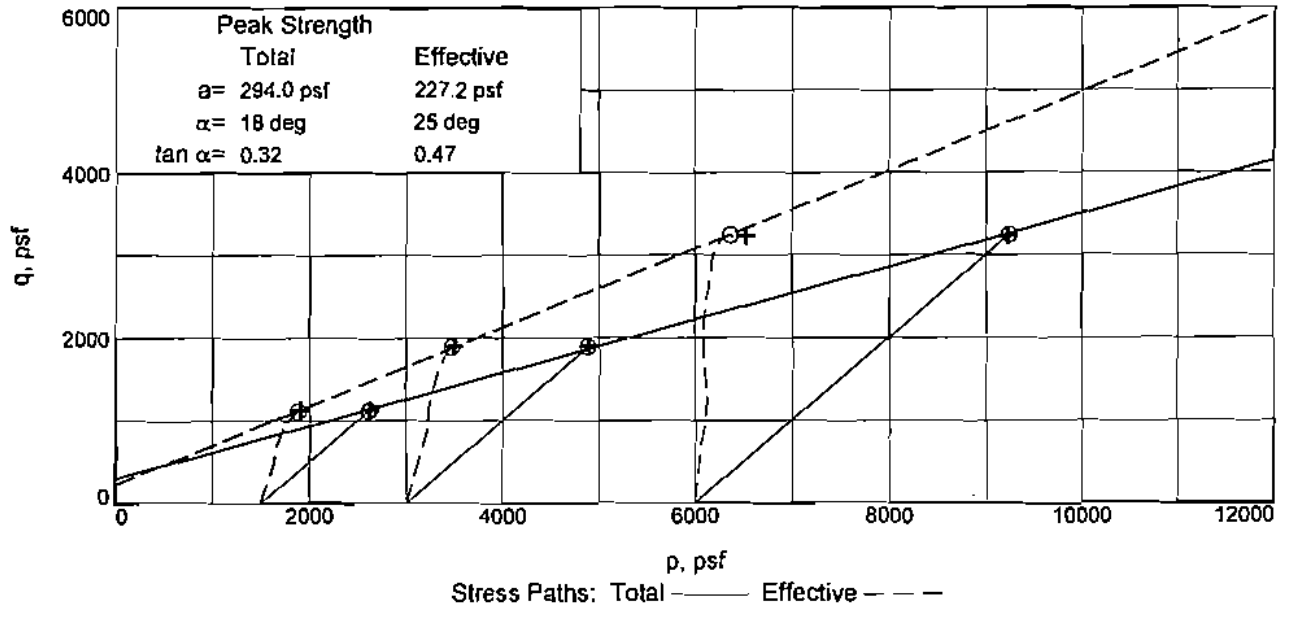
Tested By: GEF **Checked By:** TMc











Client: CH2M HILL
Project: Bay Trail Reach 9B
Source of Sample: B-1 **Depth:** 30.0-32.5' **Sample Number:** ST-6
Project No.: 351143.T1.02 **Plate** _____

RGH CONSULTANTS, INC.

Tested By: GEF **Checked By:** TMc

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

5/11/2007
9:51 AM

Date: 4-20-07
Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project No.: 351143.T1.02
Location: B-1
Depth: 30.0-32.5' **Sample Number:** ST-6
Description: Grey Elastic Silt (MH)
Remarks:
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=** **PL=** **PI=**
Test Method: ASTM D 4767 Method B w/ saturation est. (staged method triaxial test)

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	1292.500			1354.500
Moisture content: Dry soil+tare, gms.	1041.400			1144.500
Moisture content: Tare, gms.	0.000			103.100
Moisture, %	24.1		23.2	20.2
Moist specimen weight, gms.	1292.5			
Diameter, in.	2.87		2.86	
Area, in.²	6.47		6.40	
Height, in.	6.02		5.98	
Net decrease in height, in.		0.00	0.04	
Net decrease in water volume, cc.			15.20	
Wet Density, pcf	126.4		127.7	
Dry density, pcf	101.9		103.6	
Void ratio	0.6546		0.6269	
Saturation, %	99.5		100.0	

Test Results for Specimen No. 1

Load ring constant = .705 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 62.420 psi (8988.5 psf)
Consolidation back pressure = 52.000 psi (7488.0 psf)
Consolidation effective confining stress = 1500.5 psf
Strain rate, in./min. = 0.00
Fail. Stress = 2226.1 psf **at reading no.** 10

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
0	0.0000	0.000	0.0	0.0	0.0	1500.5	1500.5	1.00	52.000	1500.5	0.0
1	0.0149	62.000	43.7	0.2	980.5	1140.5	2121.0	1.86	54.500	1630.7	490.2
2	0.0298	85.000	59.9	0.5	1340.9	982.1	2323.0	2.37	55.600	1652.5	670.4
3	0.0447	99.000	69.8	0.7	1557.8	910.1	2467.9	2.71	56.100	1689.0	778.9
4	0.0596	111.000	78.3	1.0	1742.3	852.5	2594.7	3.04	56.500	1723.6	871.1
5	0.0745	120.000	84.6	1.2	1878.8	809.3	2688.1	3.32	56.800	1748.7	939.4
6	0.0894	126.000	88.8	1.5	1967.7	794.9	2762.6	3.48	56.900	1778.7	983.9
7	0.1043	132.000	93.1	1.7	2056.2	780.5	2836.7	3.63	57.000	1808.6	1028.1
8	0.1192	137.000	96.6	2.0	2128.7	766.1	2894.8	3.78	57.100	1830.4	1064.3
9	0.1341	141.000	99.4	2.2	2185.3	766.1	2951.4	3.85	57.100	1858.7	1092.6
10	0.1490	144.000	101.5	2.5	2226.1	766.1	2992.2	3.91	57.100	1879.1	1113.0
11	0.1639	146.000	102.9	2.7	2251.2	780.5	3031.7	3.88	57.000	1906.1	1125.6

Parameters for Specimen No. 2

Specimen Parameter	Initial	Cum. for Test	Consolidated	Final
Moisture content: Moist soil+tare, gms.	1292.500			1354.500
Moisture content: Dry soil+tare, gms.	1041.400			1144.500
Moisture content: Tare, gms.	0.000			103.100
Moisture, %	24.1		21.9	20.2
Moist specimen weight, gms.	1292.5			
Diameter, in.	2.87		2.89	
Area, in.²	6.47		6.58	
Height, in.	6.02		5.69	
Net decrease in height, in.		0.20	0.13	
Net decrease in water volume, cc.			14.20	
Wet Density, pcf	126.4		129.2	
Dry density, pcf	101.9		106.0	
Void ratio	0.6546		0.5901	
Saturation, %	99.5		100.0	

Test Readings for Specimen No. 2

Load ring constant = .705 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 72.830 psi (10487.5 psf)
Consolidation back pressure = 52.000 psi (7488.0 psf)
Consolidation effective confining stress = 2999.5 psf
Strain rate, in./min. = 0.00
Fail. Stress = 3767.2 psf at reading no. 12

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
0	0.0000	0.000	0.0	0.0	0.0	2999.5	2999.5	1.00	52.000	2999.5	0.0
1	0.0146	110.000	77.5	0.3	1692.3	2365.9	4058.2	1.72	56.400	3212.1	846.1
2	0.0292	151.000	106.5	0.5	2317.0	2077.9	4395.0	2.12	58.400	3236.4	1158.5
3	0.0437	180.000	126.9	0.8	2754.9	1905.1	4660.1	2.45	59.600	3282.6	1377.5
4	0.0583	200.000	141.0	1.0	3053.1	1789.9	4843.1	2.71	60.400	3316.5	1526.6
5	0.0729	215.000	151.6	1.3	3273.6	1717.9	4991.5	2.91	60.900	3354.7	1636.8
6	0.0875	225.000	158.6	1.5	3417.0	1674.7	5091.7	3.04	61.200	3383.2	1708.5

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
7	0.1020	233.000	164.3	1.8	3529.3	1631.5	5160.8	3.16	61.500	3396.2	1764.6
8	0.1166	238.000	167.8	2.1	3595.6	1617.1	5212.7	3.22	61.600	3414.9	1797.8
9	0.1312	244.000	172.0	2.3	3676.6	1602.7	5279.3	3.29	61.700	3441.0	1838.3
10	0.1458	247.000	174.1	2.6	3712.0	1588.3	5300.3	3.34	61.800	3444.3	1856.0
11	0.1603	250.000	176.3	2.8	3747.2	1588.3	5335.6	3.36	61.800	3461.9	1873.6
12	0.1749	252.000	177.7	3.1	3767.2	1588.3	5355.6	3.37	61.800	3471.9	1883.6
13	0.1895	254.000	179.1	3.3	3787.1	1602.7	5389.8	3.36	61.700	3496.3	1893.5

Parameters of Specimen No. 2

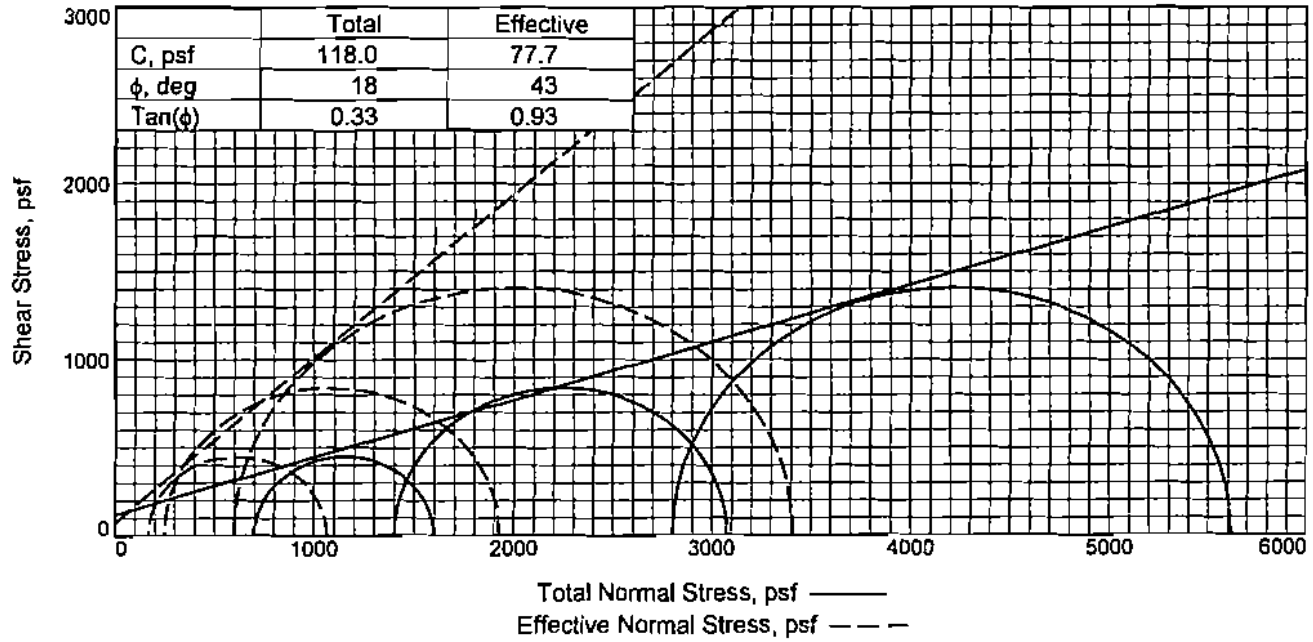
Specimen Parameter	Initial	Cum. for Test	Consolidated	Final
Moisture content: Moist soil+tare, gms.	1292.500			1354.500
Moisture content: Dry soil+tare, gms.	1041.400			1144.500
Moisture content: Tare, gms.	0.000			103.100
Moisture, %	24.1		20.2	20.2
Moist specimen weight, gms.	1292.5			
Diameter, in.	2.87		2.94	
Area, in.²	6.47		6.79	
Height, in.	6.02		5.36	
Net decrease in height, in.		0.52	0.14	
Net decrease in water volume, cc.			17.60	
Wet Density, pcf	126.4		131.1	
Dry density, pcf	101.9		109.1	
Void ratio	0.6546		0.5445	
Saturation, %	99.5		100.0	

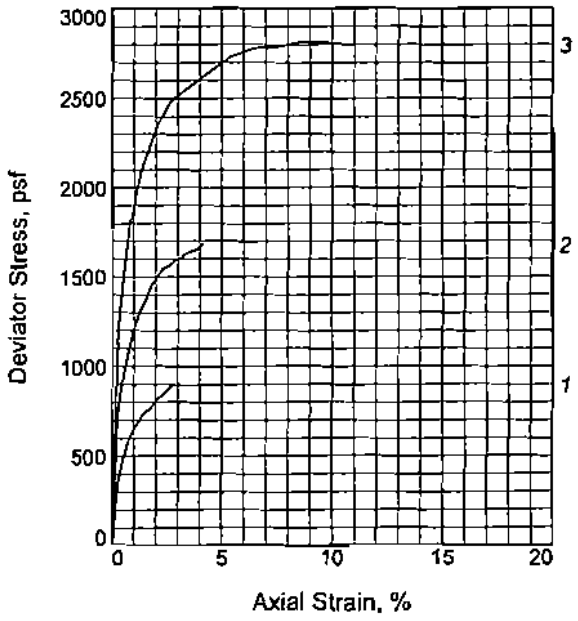
Test Results for Specimen No. 2

Load ring constant = .705 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 93.670 psi (13488.5 psf)
Consolidation back pressure = 52.000 psi (7488.0 psf)
Consolidation effective confining stress = 6000.5 psf
Strain rate, in./min. = 0.00
Fail. Stress = 6487.5 psf at reading no. 15
Ult. Stress = 6494.0 psf at reading no. 19

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
0	0.0000	0.000	0.0	0.0	0.0	6000.5	6000.5	1.00	52.000	6000.5	0.0
1	0.0142	167.000	117.7	0.3	2491.6	4877.3	7368.9	1.51	59.800	6123.1	1245.8
2	0.0285	246.000	173.4	0.5	3660.4	4258.1	7918.5	1.86	64.100	6088.3	1830.2
3	0.0427	298.000	210.1	0.8	4422.3	3883.7	8306.0	2.14	66.700	6094.8	2211.2
4	0.0569	333.000	234.8	1.1	4928.5	3653.3	8581.8	2.35	68.300	6117.5	2464.3
5	0.0711	360.000	253.8	1.3	5313.9	3480.5	8794.4	2.53	69.500	6137.4	2656.9
6	0.0854	380.000	267.9	1.6	5593.9	3365.3	8959.2	2.66	70.300	6162.2	2797.0
7	0.0996	395.000	278.5	1.9	5799.1	3264.5	9063.5	2.78	71.000	6164.0	2899.5
8	0.1138	406.000	286.2	2.1	5944.5	3206.9	9151.3	2.85	71.400	6179.1	2972.2
9	0.1280	415.000	292.6	2.4	6059.8	3163.7	9223.4	2.92	71.700	6193.6	3029.9
10	0.1423	420.000	296.1	2.7	6116.0	3134.9	9250.9	2.95	71.900	6192.9	3058.0

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
11	0.1565	425.000	299.6	2.9	6172.0	3120.5	9292.4	2.98	72.000	6206.5	3086.0
12	0.1707	430.000	303.1	3.2	6227.5	3106.1	9333.6	3.00	72.100	6219.8	3113.8
13	0.1992	440.000	310.2	3.7	6337.3	3091.7	9429.0	3.05	72.200	6260.3	3168.7
14	0.2276	447.000	315.1	4.2	6402.7	3091.7	9494.4	3.07	72.200	6293.0	3201.3
15	0.2845	458.000	322.9	5.3	6487.5	3120.5	9608.0	3.08	72.000	6364.2	3243.7
16	0.3419	460.000	324.3	6.4	6442.1	3149.3	9591.3	3.05	71.800	6370.3	3221.0
17	0.3983	468.000	329.9	7.4	6480.4	3192.5	9672.9	3.03	71.500	6432.7	3240.2
18	0.4552	475.000	334.9	8.5	6501.8	3221.3	9723.1	3.02	71.300	6472.2	3250.9
19	0.5121	480.000	338.4	9.6	6494.0	3264.5	9758.5	2.99	71.000	6511.5	3247.0
20	0.5690	483.000	340.5	10.6	6457.8	3293.3	9751.1	2.96	70.800	6522.2	3228.9





Sample No.		1	2	3
Initial	Water Content, %	58.5	58.5	58.5
	Dry Density, pcf	64.5	64.5	64.5
	Saturation, %	97.9	97.9	97.9
	Void Ratio	1.6132	1.6132	1.6132
	Diameter, in.	2.87	2.87	2.87
	Height, in.	6.00	6.00	6.00
At Test	Water Content, %	52.7	47.6	42.9
	Dry Density, pcf	69.6	73.7	78.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.4231	1.2859	1.1586
	Diameter, in.	2.78	2.77	2.81
	Height, in.	5.95	5.63	5.18
Strain rate, in./min.		0.00	0.00	0.00
Eff. Cell Pressure, psf		699.8	1399.7	2799.4
Fail. Stress, psf		897.7	1678.9	2816.8
Total Pore Pr., psf		8020.8	8640.0	9691.2
Strain, %		2.7	4.1	8.6
Ult. Stress, psf				2776.0
Total Pore Pr., psf				9633.6
Strain, %				6.5
$\bar{\sigma}_1$ Failure, psf		1064.7	1926.5	3412.9
$\bar{\sigma}_3$ Failure, psf		167.0	247.7	596.2

Type of Test:
CU with Pore Pressures
Sample Type: Undisturbed
Description: Grey Fat Clay (CH)

LL= 73 **PL=** 31 **PI=** 42
Assumed Specific Gravity= 2.70
Remarks:

Client: CH2M HILL

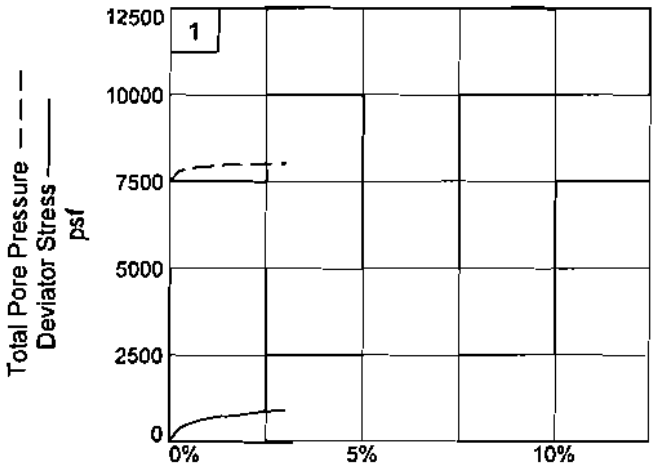
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Source of Sample: B-3 **Depth:** 13.0-14.5'
Sample Number: ST-3

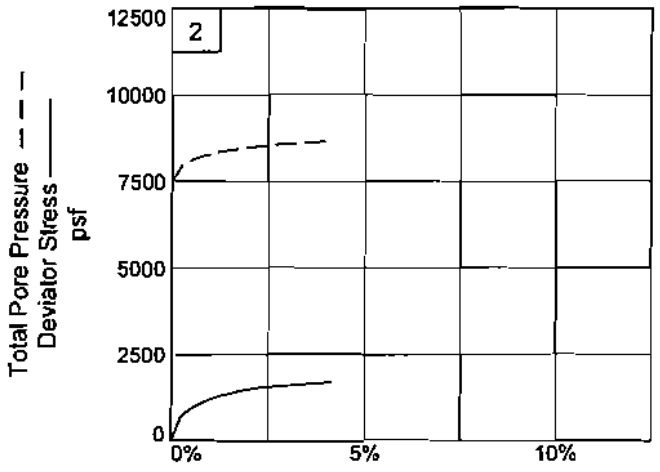
Proj. No.: 351143.T1 02 **Date Sampled:** 4-20-07

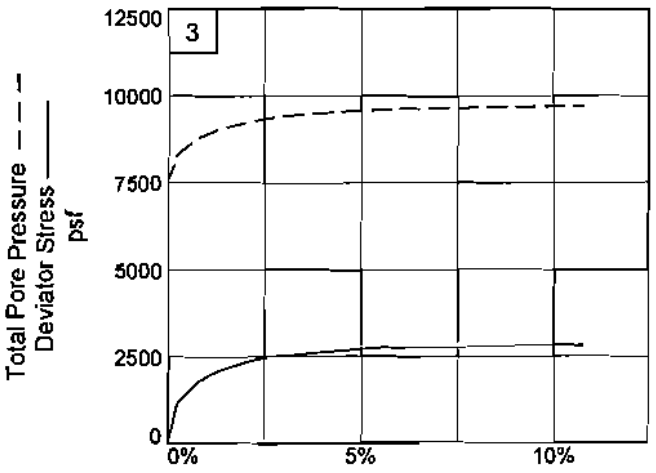
RGH CONSULTANTS, INC.

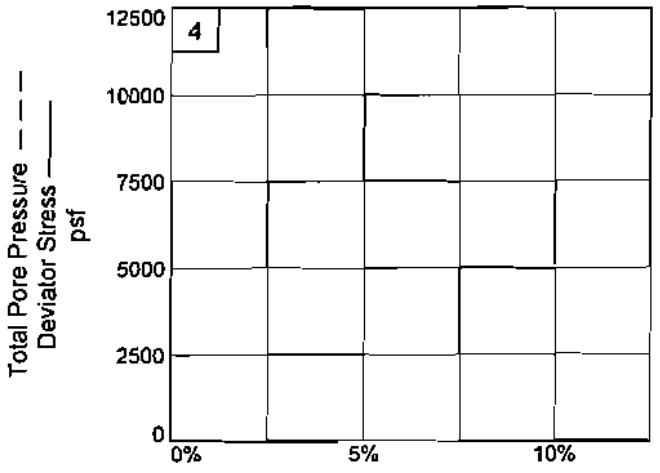
Plate _____

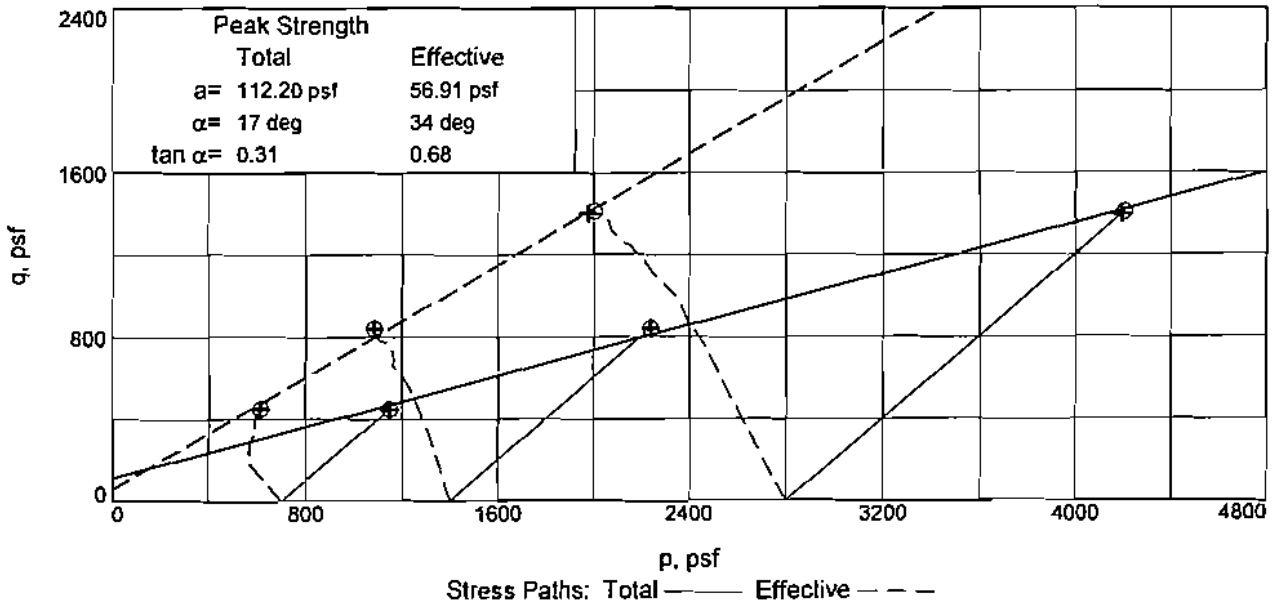
Tested By: GEF **Checked By:** TMc











Client: CH2M HILL
Project: Bay Trail Reach 9B
Source of Sample: B-3 **Depth:** 13.0-14.5' **Sample Number:** ST-3
Project No.: 351143.T1.02 **Plate** _____

RGH CONSULTANTS, INC.

Tested By: GEF _____ **Checked By:** TMc _____

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

5/11/2007
9:51 AM

Date: 4-20-07
Client: CH2M HILL
Project: Bay Trail Reach 9B
Alviso Bike Bridge Investigation
Project No.: 351143.T1.02
Location: B-3
Depth: 13.0-14.5' **Sample Number:** ST-3
Description: Grey Fat Clay (CH)
Remarks:
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=73** **PL=31** **PI=42**
Test Method: ASTM D 4767 Method B w/ saturation est. (staged method triaxial test)

[redacted]

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	1041.500			1041.600
Moisture content: Dry soil+tare, gms.	657.200			759.600
Moisture content: Tare, gms.	0.000			102.400
Moisture, %	58.5		52.7	42.9
Moist specimen weight, gms.	1041.5			
Diameter, in.	2.87		2.78	
Area, in.^{2}	6.47		6.05	
Height, in.	6.00		5.95	
Net decrease in height, in.		0.00	0.05	
Net decrease in water volume, cc.			18.50	
Wet Density, pcf	102.2		106.2	
Dry density, pcf	64.5		69.6	
Void ratio	1.6132		1.4231	
Saturation, %	97.9		100.0	

[redacted]

Load ring constant = .705 lbs. per input unit
Membrane modulus = 0.124105 kN/cm^2
Membrane thickness = 0.02 cm
Consolidation cell pressure = 56.860 psi (8187.8 psf)
Consolidation back pressure = 52.000 psi (7488.0 psf)
Consolidation effective confining stress = 699.8 psf
Strain rate, in./min. = 0.00
Fail. Stress = 897.7 psf **at reading no.** 11

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
0	0.0000	0.000	0.0	0.0	0.0	699.8	699.8	1.00	52.000	699.8	0.0
1	0.0149	21.000	14.8	0.3	351.6	397.4	749.0	1.88	54.100	573.2	175.8
2	0.0298	29.000	20.4	0.5	484.3	325.4	809.7	2.49	54.600	567.6	242.1
3	0.0446	35.000	24.7	0.7	583.0	282.2	865.2	3.07	54.900	573.7	291.5
4	0.0595	39.000	27.5	1.0	648.0	267.8	915.8	3.42	55.000	591.8	324.0
5	0.0744	42.000	29.6	1.3	696.1	239.0	935.1	3.91	55.200	587.1	348.0
6	0.0893	45.000	31.7	1.5	743.9	224.6	968.5	4.31	55.300	596.6	371.9
7	0.1041	46.000	32.4	1.7	758.5	210.2	968.7	4.61	55.400	589.5	379.2
8	0.1190	49.000	34.5	2.0	805.9	195.8	1001.7	5.12	55.500	598.8	403.0
9	0.1339	51.000	36.0	2.3	836.7	181.4	1018.1	5.61	55.600	599.8	418.3
10	0.1488	53.000	37.4	2.5	867.2	181.4	1048.7	5.78	55.600	615.1	433.6
11	0.1636	55.000	38.8	2.7	897.7	167.0	1064.7	6.37	55.700	615.9	448.8
12	0.1785	55.000	38.8	3.0	895.4	167.0	1062.4	6.36	55.700	614.7	447.7

Parameters for Specimen No. 1

Specimen Parameter	Initial	Cum. for Test	Consolidated	Final
Moisture content: Moist soil+tare, gms.	1041.500			1041.600
Moisture content: Dry soil+tare, gms.	657.200			759.600
Moisture content: Tare, gms.	0.000			102.400
Moisture, %	58.5		47.6	42.9
Moist specimen weight, gms.	1041.5			
Diameter, in.	2.87		2.77	
Area, in.²	6.47		6.03	
Height, in.	6.00		5.63	
Net decrease in height, in.		0.23	0.14	
Net decrease in water volume, cc.			33.40	
Wet Density, pcf	102.2		108.9	
Dry density, pcf	64.5		73.7	
Void ratio	1.6132		1.2859	
Saturation, %	97.9		100.0	

Test Readings for Specimen No. 2

Load ring constant = .705 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 61.720 psi (8887.7 psf)

Consolidation back pressure = 52.000 psi (7488.0 psf)

Consolidation effective confining stress = 1399.7 psf

Strain rate, in./min. = 0.00

Fail. Stress = 1678.9 psf at reading no. 16

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
0	0.0000	0.000	0.0	0.0	0.0	1399.7	1399.7	1.00	52.000	1399.7	0.0
1	0.0145	43.000	30.3	0.3	722.2	938.9	1661.0	1.77	55.200	1300.0	361.1
2	0.0291	57.000	40.2	0.5	954.8	780.5	1735.3	2.22	56.300	1257.9	477.4
3	0.0436	66.000	46.5	0.8	1102.7	679.7	1782.4	2.62	57.000	1231.0	551.3
4	0.0581	73.000	51.5	1.0	1216.5	593.3	1809.8	3.05	57.600	1201.5	608.2
5	0.0726	79.000	55.7	1.3	1313.0	506.9	1819.9	3.59	58.200	1163.4	656.5

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
6	0.0872	83.000	58.5	1.5	1375.9	478.1	1854.0	3.88	58.400	1166.0	687.9
7	0.1017	88.000	62.0	1.8	1455.0	434.9	1889.8	4.35	58.700	1162.4	727.5
8	0.1162	91.000	64.2	2.1	1500.6	391.7	1892.3	4.83	59.000	1142.0	750.3
9	0.1307	94.000	66.3	2.3	1546.0	362.9	1908.9	5.26	59.200	1135.9	773.0
10	0.1453	95.000	67.0	2.6	1558.3	334.1	1892.4	5.66	59.400	1113.2	779.2
11	0.1598	97.000	68.4	2.8	1586.9	305.3	1892.2	6.20	59.600	1098.7	793.5
12	0.1743	98.000	69.1	3.1	1599.0	290.9	1889.9	6.50	59.700	1090.4	799.5
13	0.1888	100.000	70.5	3.4	1627.3	276.5	1903.8	6.89	59.800	1090.1	813.7
14	0.2034	101.000	71.2	3.6	1639.2	262.1	1901.3	7.25	59.900	1081.7	819.6
15	0.2179	102.000	71.9	3.9	1651.0	247.7	1898.7	7.67	60.000	1073.2	825.5
16	0.2324	104.000	73.3	4.1	1678.9	247.7	1926.5	7.78	60.000	1087.1	839.4

Specimen Parameter	Initial	Cum. for Test	Consolidated	Final
Moisture content: Moist soil+tare, gms.	1041.500			1041.600
Moisture content: Dry soil+tare, gms.	657.200			759.600
Moisture content: Tare, gms.	0.000			102.400
Moisture, %	58.5		42.9	42.9
Moist specimen weight, gms.	1041.5			
Diameter, in.	2.87		2.81	
Area, in.²	6.47		6.19	
Height, in.	6.00		5.18	
Net decrease in height, in.		0.60	0.22	
Net decrease in water volume, cc.			31.00	
Wet Density, pcf	102.2		111.6	
Dry density, pcf	64.5		78.1	
Void ratio	1.6132		1.1586	
Saturation, %	97.9		100.0	

Load ring constant = .705 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 71.440 psi (10287.4 psf)
Consolidation back pressure = 52.000 psi (7488.0 psf)
Consolidation effective confining stress = 2799.4 psf
Strain rate, in./min. = 0.00
Fail. Stress = 2816.8 psf at reading no. 18
Ult. Stress = 2776.0 psf at reading no. 16

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
0	0.0000	0.000	0.0	0.0	0.0	2799.4	2799.4	1.00	52.000	2799.4	0.0
1	0.0140	73.000	51.5	0.3	1193.9	1935.4	3129.2	1.62	58.000	2532.3	596.9
2	0.0280	93.000	65.6	0.5	1516.8	1705.0	3221.8	1.89	59.600	2463.4	758.4
3	0.0419	109.000	76.8	0.8	1773.0	1503.4	3276.4	2.18	61.000	2389.9	886.5
4	0.0559	121.000	85.3	1.1	1962.8	1373.8	3336.6	2.43	61.900	2355.2	981.4
5	0.0699	130.000	91.6	1.3	2103.1	1244.2	3347.2	2.69	62.800	2295.7	1051.5
6	0.0839	136.000	95.9	1.6	2194.1	1157.8	3351.9	2.90	63.400	2254.8	1097.1

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress psf	Minor Eff. Stress psf	Major Eff. Stress psf	1:3 Ratio	Pore Press. psi	P psf	Q psf
7	0.0978	142.000	100.1	1.9	2284.7	1085.8	3370.4	3.10	63.900	2228.1	1142.3
8	0.1118	148.000	104.3	2.2	2374.6	1013.8	3388.4	3.34	64.400	2201.1	1187.3
9	0.1258	152.000	107.2	2.4	2432.1	956.2	3388.2	3.54	64.800	2172.2	1216.0
10	0.1398	156.000	110.0	2.7	2489.2	913.0	3402.1	3.73	65.100	2157.5	1244.6
11	0.1537	158.000	111.4	3.0	2514.1	869.8	3383.9	3.89	65.400	2126.8	1257.1
12	0.1677	160.000	112.8	3.2	2538.8	841.0	3379.8	4.02	65.600	2110.4	1269.4
13	0.1957	164.000	115.6	3.8	2587.8	797.8	3385.5	4.24	65.900	2091.6	1293.9
14	0.2236	168.000	118.4	4.3	2636.0	754.6	3390.6	4.49	66.200	2072.6	1318.0
15	0.2795	176.000	124.1	5.4	2730.4	697.0	3427.4	4.92	66.600	2062.2	1365.2
16	0.3354	181.000	127.6	6.5	2776.0	653.8	3429.7	5.25	66.900	2041.7	1388.0
17	0.3913	184.000	129.7	7.6	2789.4	625.0	3414.4	5.46	67.100	2019.7	1394.7
18	0.4472	188.000	132.5	8.6	2816.8	596.2	3412.9	5.72	67.300	2004.5	1408.4
19	0.5031	190.000	133.9	9.7	2813.1	596.2	3409.3	5.72	67.300	2002.7	1406.5
20	0.5590	191.000	134.7	10.8	2794.1	581.8	3375.9	5.80	67.400	1978.8	1397.0