INFORMATION HANDOUT

For Contract No. 04-4S2204
At 04-Mrn-1-PM 11.0

Identified by
Project ID 04000012171

PERMITS

California Coastal Commission, Coastal Development Permit dated 12/04/2014

Permit Application No. A-2-MAR-11-025

MATERIALS INFORMATION

Foundation Report for Storm Damage Repair dated 4/14/2011

Foundation Report Update dated 12/23/2013

Foundation Report Update dated 12/12/2014

Soil and Groundwater Sampling Report dated 04/2011

Temporary Crash Cushion (ABSORB 350)

Temporary Crash Cushion (ACZ 350)

Temporary Crash Cushion (ADIEM)

CALIFORNIA COASTAL COMMISSION
North Central Coast District Office
45 Fremont Street, Suite 2000
San Francisco, California 94105-2219
PH (415) 904-5260 or (415) 904-5200 FAX (415) 904-5400

Date: **December 4, 2014**
Permit Application No.: **A-2-MAR-11-025**

COASTAL DEVELOPMENT PERMIT

On **May 15, 2014**, the California Coastal Commission granted to **Caltrans** this permit subject to the attached Standard and Special conditions, for development consisting of **repair and maintenance activities on an approximately 650-foot long stretch of State Highway 1 including construction of a 230-foot long retaining wall, installation of a metal beam guard rail and cable railing, expansion of roadway width, and reduction in roadway curvature,** more specifically described in the application filed in the Commission offices.

The development is within the coastal zone at **State Highway 1 at Post Mile 10.95 in Stinson Beach, Marin County.**

Issued on behalf of the California Coastal Commission by

CHARLES LESTER,
Executive Director

for Nancy Cave

Jeannine Manna
North Central Coast District Supervisor

ACKNOWLEDGMENT:
The undersigned permittee acknowledges receipt of this permit and agrees to abide by all terms and conditions thereof.

The undersigned permittee acknowledges that Government Code Section 818.4 which states in pertinent part of that: "A Public entity is not liable for injury caused by the issuance… of any permit…" applies to the issuance of this permit.

COASTAL DEVELOPMENT PERMIT

IMPORTANT: THIS PERMIT IS NOT VALID UNLESS AND UNTIL A COPY OF THE PERMIT WITH THE SIGNED ACKNOWLEDGEMENT HAS BEEN RETURNED TO THE COMMISSION OFFICE. 14 Cal. Admin. Code Section 13158(a).

Date: 12-09-2014 Signature Jay Hashmat

COASTAL DEVELOPMENT PERMIT

STANDARD CONDITIONS:

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

SPECIAL CONDITIONS:

This permit is granted subject to the following special conditions:

1. **Revised Project Plans.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit two full size sets of Revised Project Plans to the Executive Director for review and approval. The Revised Project Plans shall be substantially in conformance with the revised project plans as shown in **Exhibit 3**. All special conditions and all requirements of the approved Revised Project Plans shall be enforceable components of this coastal development permit. The Permittee shall undertake development in accordance with the approved Revised Project Plans and the following required landscape and construction plans. Any substantial changes, such as addition of a guardrail in the future, shall require an amendment to this permit.

2. **Landscape Plan.** PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit two copies of a landscape plan to the Executive Director for review and approval. The landscape plan shall: (1) identify all plant materials (size, species, quantity, etc.), any irrigation

COASTAL DEVELOPMENT PERMIT

systems, success criteria and all proposed maintenance measures, including providing for replacement plants as necessary to achieve required revegetation; (2) require the removal of all nonnative invasive vegetation such as pampas grass, brooms, and thistles and planting only of native coastal scrub and shrub vegetation consistent with the vegetation currently at the project site and determined in consultation with the Department of Parks and Recreation; (3) require all plantings be maintained in good growing and coverage conditions, including replacement of plants as necessary, for a minimum of five years and consistent with established success criteria for each significant vegetation layer and any interagency agreement with State Parks; and (4) require submittal of a monitoring report annually for five years after completion of construction to describe the success of the plantings.

3. **Construction Plan**. PRIOR TO COMMENCEMENT OF CONSTRUCTION the Permittee shall submit two sets of a revised Construction Plan to the Executive Director for review and approval. The Construction Plan, at a minimum, shall include the following:

   A. **Construction Areas.** All areas within which construction activities and staging are to take place shall be minimized to the extent feasible in order to minimize construction encroachment on and along Highway 1, and to protect public access to Steep Ravine Campground and Mount Tamalpais State Park public trails, surrounding vegetation, and public views from Highway 1 and surrounding public trails.

   B. **Construction Methods and Timing.** All construction methods to be used, including all methods to keep the construction areas separate from public recreational use areas and to minimize public view impacts, shall be clearly identified. Construction shall be limited in duration as much as is feasible to limit overall construction impacts. The Plan shall ensure that all erosion control/water quality best management practices to be implemented during construction and their location are provided to the Executive Director prior to commencement of construction.

   C. **Construction Requirements.** The Plan shall include the following construction requirements specified via written notes on the Plan:
      i) Nighttime work and the use of lighting shall be minimized to the maximum extent feasible;
      ii) Equipment and materials shall be stored out of the ocean view as seen from Highway 1 if feasible;
      iii) Construction (including but not limited to construction activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas;
      iv) No work shall occur during weekends;
      v) Weekday construction shall allow for one-way traffic with proper traffic safety measures as outlined in traffic handling construction plans;

COASTAL DEVELOPMENT PERMIT

vi) The construction site shall maintain good construction site housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain, including covering exposed piles of soil and wastes; dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all debris from the site upon the completion of the project);

vii) All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each work day during construction;

viii) Where topsoil is removed by grading operations, it shall be stockpiled for reuse and shall be protected from compaction and wind or erosion during stockpiling;

ix) During all construction, copies of the signed coastal development permit and the approved construction plan shall be maintained in a conspicuous location at the construction job site at all times, and such copies shall be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of the coastal development permit as conditionally approved and the construction plan prior to commencement of construction;

x) A construction coordinator shall be made available by telephone 24 hours a day during construction. A notice with the coordinator's phone number, address, and other contact information shall be posted on the site and , where feasible, the notice shall be viewable from public viewing areas. The construction coordinator shall record the name, phone number, and nature of all complaints received regarding the construction, and shall investigate complaints and take remedial action, if necessary, within 24 hours of receipt of the complaint or inquiry.

D. The Permittee shall notify planning staff of the Coastal Commission's North Central Coast District Office at least 3 working days in advance of commencement of construction, and immediately upon completion of construction. The Permittee shall report any proposed changes to the approved Plan. Minor adjustments to the above construction requirements may be allowed by the Executive Director in the approved Construction Plan if such adjustments: (1) are deemed reasonable and necessary; and (2) do not adversely impact coastal resources. No other changes to the approved plan shall occur without a Commission amendment to the permit unless the Executive Director determines no amendment is legally required.

State of California | Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MS. OFELIA ALCANTARA
Supervising Bridge Engineer
Office of Bridge Design - West

Date: April 14, 2011

Attention: Gordon Danke/Phil Lutz

File: 04-MRN-1 PM 10.95
04-4S2201
Tieback Soldier Pile Wall

From: EDUARDO ORTEGA
Associate Materials and Research Engineer
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

MAHMOOD MOMENZADEH
Chief, Branch C
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

Subject: Foundation Report for Storm Damage Repair

This memorandum supersedes our previous Foundation Report dated August 6, 2010 and presents our final geotechnical recommendations for the revised wall alignment to mitigate the above storm damage site. The project is located on Route 1 at PM 10.95, in the vicinity of Stinson Beach, in Marin County, California (See Vicinity Map in Appendix A). The recommendations contained in this memorandum are based on the results of our subsurface explorations performed at the site, site observations, and engineering analyses and judgment.

1. BACKGROUND AND SITE DESCRIPTION

A slipout occurred at this site during the Winter of 2005/2006. The slipout is located on southbound Route 1 on the downhill side 20 feet from the fog line. The total width of the slipout is approximately 200 feet. The slipout is approximately 20 feet below the road grade and it remains relatively flat within the downhill slope. The failure resulted in a sheer drop to the fog line on southbound Route 1.

2. SCOPE OF WORK

Work performed for this investigation includes the following:

- Visual reconnaissance of the project
- Review of the available information on the site geology and seismicity.
- Subsurface investigation consisting of one rotary wash power borings (B1) in the vicinity of the subject landslide to determine the subsurface conditions at the site
- Engineering analysis and development of the repair recommendations.

3. PHYSICAL SETTING

3.1 Climate

The project lies in coastal Marin County, between Muir Beach and Stinson Beach. The climate is moderate, with cool, rainy winters and mild, dry summers. Heavy fog is common. Most rain falls in the winter months, with the peak rainfall typically in January or February.

3.2 Topography and Drainage

Highway 1 at this location traverses a steep hillside.

4. GEOLOGY

4.1 Regional

Marin County lies in the California Coast Ranges, a northwest-trending band of folded and faulted mountains that roughly parallel the San Andreas fault zone. The steep hills at the site are made up of Cretaceous Franciscan Complex.

The region is highly seismically active, with numerous active and potentially active faults. The San Andreas fault lies 1.5 miles (2.4 km) from the site.

4.2 Site

Highway 1 at this location most likely built on fill overlaying ancient landslide debris. This slide is a small slide located at the northern border of an ancient larger landslide scar.

Borings records show the site is underlain by fat clay overlying the Franciscan Complex mélange from 10-15 feet below ground surface. Slope inclinometer installed at the site shows ground movement of 15 ft and creep at 20 ft depth below ground surface. There is no evidence of movement within the Franciscan mélange.

4.3 Excavation and Drilling Characteristics

The site lies on the Cretaceous Franciscan Complex, mélange terrane[1] (see Geology Map in Appendix A). The mélange terrane is described as chaotic mixtures of fragmented rock masses in a sheared matrix, or block-in-matrix rock.

Franciscan bedrock is known as "block-in-matrix" rock. This means that resistant blocks of bedrock are randomly distributed in a highly sheared, weaker matrix. The blocks may be as small as fraction of an inch (centimeter) scale to tens of feet (meters) across. Normal stratigraphic relations (layer-cake geology) do not apply to block-in matrix rock, as blocks are random in size and in distribution.

Drilling and excavating conditions may be highly variable at the site, and because of the random distribution of blocks, test borings are not necessarily representative of whole subsurface condition at the site. Highly resistant blocks of unknown size may be encountered in excavation.

From the records of boring log, it appears that most of the material below the fat clay (about 80%) will be pervasively sheared shale, with rare larger hard blocks of up to several feet (meters) in diameter. The contractor should adjust drilling and excavation plans accordingly.

4.4 Seismicity

Table 1 below lists the major faults in the region, their distance from the project site, maximum credible earthquake magnitudes, and peak bedrock accelerations anticipated at the site obtained with Caltrans ARS Online v1.0.4 (Tools to Establish Design Seismic Hazard).

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[1] Wagner, D.L., Bortugno, E.J., and McJunkin, R.D., 1990, Geologic Map of the San Francisco Quadrangle, California Division of Mines and Geology, 1990, scale 1:250,000.

TABLE 1 Faults, Maximum Credible Earthquake Magnitudes, and Peak Bedrock Accelerations

FAULT	Distance (mi)*	Peak Bedrock Acceleration
San Andreas	1.5 mi (2.41 km)	0.510 g
San Gregorio	2.6 mi (4.16 km)	0.435 g
Hayward	15.1 mi (24.32 km)	0.140 g

**Closest portion of the fault, measured in kilometers.*

The seismic hazard at this site is controlled by the San Andreas fault.

5. EXPLORATION

One borehole (B1) was drilled in the vicinity of the subject landslides during December 2008 utilizing the rotatory wash drilling method to the depth of 65 ft below the roadway elevation. The location of the boring is shown on the Layout Map in Appendix A.

Boring has been renamed R-08-1 to comply with the requirements of the Soil and Rock Logging, Classification and Presentation Manual dated 2010. The boring was drilled on the southbound lane immediately behind the slipout headscarp. Soil/rock samples were collected from these borings for observation and for laboratory testing, if needed. The rock cores retrieved from the borings are in the storage in the District 4 Lab in San Francisco and they can be made available for review upon request. No laboratory testing was conducted.

6. SUBSURFACE CONDITIONS

The subsurface conditions encountered in the boring R-08-1 are briefly described below:
The site is underlain by about 2 ft of AC (Asphalt Cement) and 8 ft of silty gravel (base material) overlying a sandy fat clay to about 15 feet depth where the Franciscan Formation (Franciscan Mélange) was encountered. The Franciscan Formation encountered in this borehole consisted of a intensely weathered, soft, very intensely fractured sandstone changing to shale at about 18 ft depth below the existing road surface. The shale was intensely weathered, very soft, and intensely

to moderately fractured to the maximum depth of about 65 ft below the existing road surface. The thickness of the sandy clayey, sandstone and shale could vary along the proposed wall alignment from those indicated in the above.

The Franciscan Formation (Franciscan Mélange) present at this site is a heterogeneous mixture of disrupted rock masses in a sheared and crushed matrix material. The rock masses are generally variable size boulders which could vary in hardness from very soft to hard rock and the matrix generally is made up of soft to firm clay or intensely weathered and weak shale. The Franciscan Formation is often associated with large, deep-seated landslides. Many active and dormant landslides of all dimensions have been mapped in the vicinity of the subject site.

6.1 SLOPE INCLINOMETER (SI) MONITORING

A slope inclinometer was installed at the site within the subject landslide to determine the depth(s) of the slip-plane(s) and the rate of movement of the subject landslide. The slope inclinometer data is included in Appendix C.

The readings to date indicate that there is an ongoing ground movement at about 15 ft below the roadway elevation (bottom of fill) in SI-1 during the winter months, but there are indication of creep at 20 ft depth.

7. SLIDING MASS STRENGTH PARAMETERS

Soil/rock strength parameters of the sliding mass were determined using back-analysis of the landslide. This is necessary because it is very difficult to estimate the residual shear strength of the soil/rock at the slip-plane by conventional methods. The size of the sliding mass was estimated using slip-plane location, headscarp location, and other geologic features. In dry condition the slope has a Safety Factor (SF) of 1.3. Since the landslide is creeping at very slow rate, we believe that the landslide currently has a Safety Factor (SF) of slightly less than 1.0. Our back analysis show that slide soil material has an effective friction angle of 24° and cohesion of 0 psf (along the slip-plane) for an assumed SF of slightly less than 1.0. To simulate the faster landslide movement during the wet periods, we add pore water pressure in the sliding mass to reduce the SF to 0.95. The soil strength and pore water pressure parameters determined by back-analysis are summarized in Table 2.

The back analysis was performed using computer programs "SLOPE/W" and "XSTABL". The graphical outputs (generated by the computer program) are shown in Appendix B.

Table 2. Back Calculated Soil/Rock Strength and Pore Water Pressure

Soil/Rock Type	Unit Weight Psf	Internal Friction Angle ϕ Degrees	Cohesion C Psf	Pore Water Pressure Parameter r_u	Safety Factor (SF)
Sandy fat clay /Franciscan Melange	130	24	0	0	~ 1.30
Sandy fat clay /Franciscan Melange	130	24	0	0.20	~ 1.0
Sandy fat clay /Franciscan Melange	130	24	0	0.23	~ 0.95

8. GEOTECHNICAL RECOMMENDATIONS

The most viable repair strategy for this location is to construct a soldier pile tieback retaining system. The wall is located on the downhill slope and require placement of backfill. Below are our recommendations for the Backfill and Wall Structure:

8.1 Wall Backfill

The wall will extend approximately from LOL Sta. 20+05 to LOL Sta. 22+05, based on the current survey stakes observed on August 5, 2010. Since the wall alignment is offset from 8 to 17 ft from the existing edge of travel way, the wall construction will be in bottom-up fashion contrary to the top-down normally used for tieback walls. This requires developing a bench of at least 8 ft wide at the location of piles on the downhill slope to accommodate the construction equipments. The portion of the bench in front of the wall can be also served for maintenance services after completion of the construction. The cut and fill temporary cuts for the bench shall be no steeper than 1V:1H. The fill, where required, shall have sufficient interlocking into the existing slope and compacted in accordance with Caltrans standard specifications for earthworks. Other safety measures, as needed, shall be implemented for safe operation of the equipments working on the bench.

Since the wall is offset from the existing slope face, backfill of the wall to the finished grade is required as shown on the Typical Section in appendix A. The backfill shall be placed and compacted in accordance to Caltrans specification for embankment using lightweight equipment. The top raw of the tieback shall be installed from the road level after completion of backfill using the drilling equipment capable of this method since construction of the working earthfill berm in front of the wall is not acceptable due to geotechnical and environment constraints. See additional earthwork recommendations in Section 8.3.

8.2 Wall Structure

We recommend the following requirements/criteria for the proposed soldier beam pile tieback retaining system design:

8.3 Tieback Anchor

We performed additional slope stability analyses for the design of the tieback anchor repair system using the specified slip-plane and back calculated soil/rock parameters, and pore water pressure condition. Based on the results of these analyses, the minimum tieback anchor load should be 10 kips/ft for a single tie back and 6.5 kips/ft for each row of two tiebacks alternatives. The minimum

unbonded length of the tieback anchor should be 32 ft. The tieback anchor is inclined 15° below the horizontal.

Below are the detailed results of our analyses for one and two rows of the tieback alternatives and suggested notes on backfill placement and tieback stressing for each of the options.

Table 3. Tie back load (One row of tieback) and safety factors

Soil/Rock Type	Unit Weight (Pcf)	Internal Friction Angle (degrees)	Cohesion c (Psf)	Pore water pressure Parameter, r_u	Tieback Load (Kips/ft)	Safety Factor (SF)	Case
Sandy fat Clay/ Franciscan Melange	130	24	0	0.23	10.0	~1.3	Static
Sandy fat Clay/ Franciscan Melange	130	24	0	0.23	15	~1.1	Seismic*

* *A horizontal seismic coefficient of 0.17 g was used in the seismic stability analysis.*

This option may be used for a beam size, beam spacing and backfill height when wall can support the static earth pressure for short period of time until tieback is installed and stressed to design load. To reduce the earth pressure the backfill may be placed to about 3 ft above the tieback before and to full height after tieback is stressed.

Table 3a. Tie back loads (two-tie-back) and safety factors

Soil/Rock Type	Unit Weight (Pcf)	Internal Friction Angle (degrees)	Cohesion c (Psf)	Pore water pressure Parameter r_u	Two Tieback Load (Kips/ft)	Safety Factor (SF)	Case
Sandy fat Clay/ Franciscan Melange	130	24	0	0.23	6.5 ea	~1.3	Static
Sandy fat Clay/ Franciscan Melange	130	24	0	0.23	10 ea	~1.1	Seismic*

* *A horizontal seismic coefficient of 0.17g was used in the seismic stability analysis.*

This option may be used when the lower tieback is needed to support the wall for static earth pressure. The lower tieback can be installed and stressed after backfill is placed and compacted to about 4 ft above the lower tieback level. Subsequently, fill is raised to full height and the upper row of tieback is installed and stressed to design load.

8.4 Lateral Earth Pressures for Anchor Wall

For active earth pressure against the wall/piles, use the following:

- For an anchored wall constructed from the bottom up and restrained by ground anchors (tieback anchors) the lateral earth pressure acting on the wall height H, may be determined using the above calculated tieback load in accordance with Bridge Design Specifications dated August 2004 (BDS) Article 5.5.5.7.1, Figure 5.5.5.7.1-1.a, shown on Appendix A. See typical section in Appendix A for definition of the wall height (H). The wall height near the ends is the height above a line drawn along the wall with a slope 1V:1H from the wall ends to full wall height H.

For passive earth pressure against the soldier piles, use the following:

- Use passive earth coefficient (Kp) of 3.0. The Kp value was computed using engineering properties of Franciscan Melange (internal friction angle ϕ =30°, cohesion c = 0 psf, and total unit weight of soil/rock γ = 135 pcf)

For Friction Factor use δ = 17°
For seismic earth pressure increment against the wall/piles, use a linearly distributed load over the height equal to 15H psf using seismic earth pressure coefficient of 0.17, where H is the full wall design height. This increment load shall be applied at 0.5H of wall height.

For traffic loading use a constant pressure of 80 psf (rectangular pressure diagram) to a maximum depth of 10 ft below the top of the wall. This pressure is equivalent to a 2 ft of surcharge immediately behind the wall.

8.5 Vertical Capacity of Soldier Piles

Soldier piles should be embedded a minimum of 15 ft below slip-plane as shown on a Typical Section in Appendix A and the pile spacing should not exceed 3 times the pile diameter. The ultimate vertical compression and tension capacities of the piles are summarized in Table 4.

TABLE 4. Pile Friction and Tip Compression Capacities

	Ultimate ksf	**Allowable Ksf**
Unit pile shaft friction per unit surface area of the pile length below the full design wall height	1.75	0.85 (SF=2)
Pile tip compression bearing pressure per unit tip area of the CIDH piles	13.5	4.5 (SF=3)

Use 60% of the compression shaft resistance values to calculate the ultimate tension (uplift) resistance of the pile.

9. DRAINAGE

Consult District 4 Hydraulics Branch for the recommendation to construct a gutter above the wall and any other site drainages needed. Since there is no wall facing other than the pressure treated lagging, no horizontal drains are required.

10. CORROSION

No corrosion testing was performed. Based our experience of the similar projects constructed near this site we recommend the use of Marine Atmosphere protection measures for this project in accordance with Section 8-38, Table 8.22.1 (Minimum Concrete Cover for 75-year Design Life) of the September 2003 Caltrans Bridge Design Specifications.

11. CONSTRUCTION CONSIDERATIONS AND REQUIREMENTS

The following construction considerations and requirements should be included in the design and construction specifications for the proposed wall:

- The contractor may encounter difficulties during drilling for the soldier beam pile and tieback anchor holes. This is likely due to the presence of large blocks of hard rock in a soft clay matrix, loose/soft slide mass, and presence of high groundwater. Temporary casing of the drill hole and dewatering may be needed.

- During drilling operation for the proposed soldier beam piles, we believe that some caving of the drilled holes will likely occur. Thus, use of casing combined with dewatering is required.

- Water that has infiltrated the hole shall be removed before placing concrete therein. Fluvial or drainage water shall not be permitted to enter the hole.

- Backfill of a portion of the wall might be required. For this portion embankment fill shall be compacted in lifts not thicker than one foot to 95% relative compaction before placement of tieback. Light compaction equipment shall be used near the wall face.

- Installation of the CIDH piles should be performed in accordance with Section 49-4 of the May 2006 Caltrans Standard Specifications.

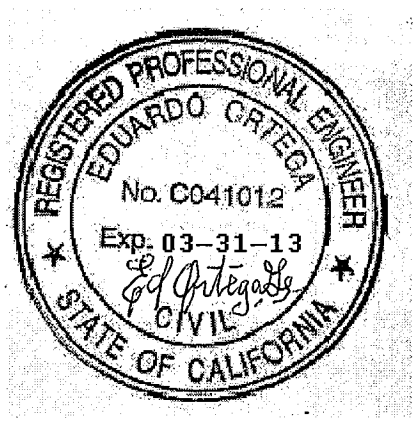
- The drilling and concrete placement for CIDH pile construction shall be staggered. No open holes shall be adjacent.

- Temporary construction road (working bench) shall comply with chapter 19 of the May 2006 Caltrans Standard Specifications and CalOSHA requirements.

- See sections 8.1 through 8.3 for earth works and tieback stressing suggestion notes.

* * * * *

Should you have any questions call me at (510) 286-4821.



Attachments: Appendices A, B and C.

c: TPokrywka, LWang, MMomenzadeh, EAraim(P/D Distr 06), KLe(Maint.Services), SKakihara(Maint. Services), JStayton, Structures RE Pending File, MWillian, DManlulu, BKearney, GWilcox, ASojourner, RNashed, E☺rtega, Daily File, Route File, Translab File

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Appendix A

Location Map

Layout Map

Layout Photo Map

Site photo 1

Site photo 2

Geology Map

Fault Map

Tie-Back Wall Typical X Section

Lateral Earth Pressures – Bridge Design Specifications

INDEX OF PLANS

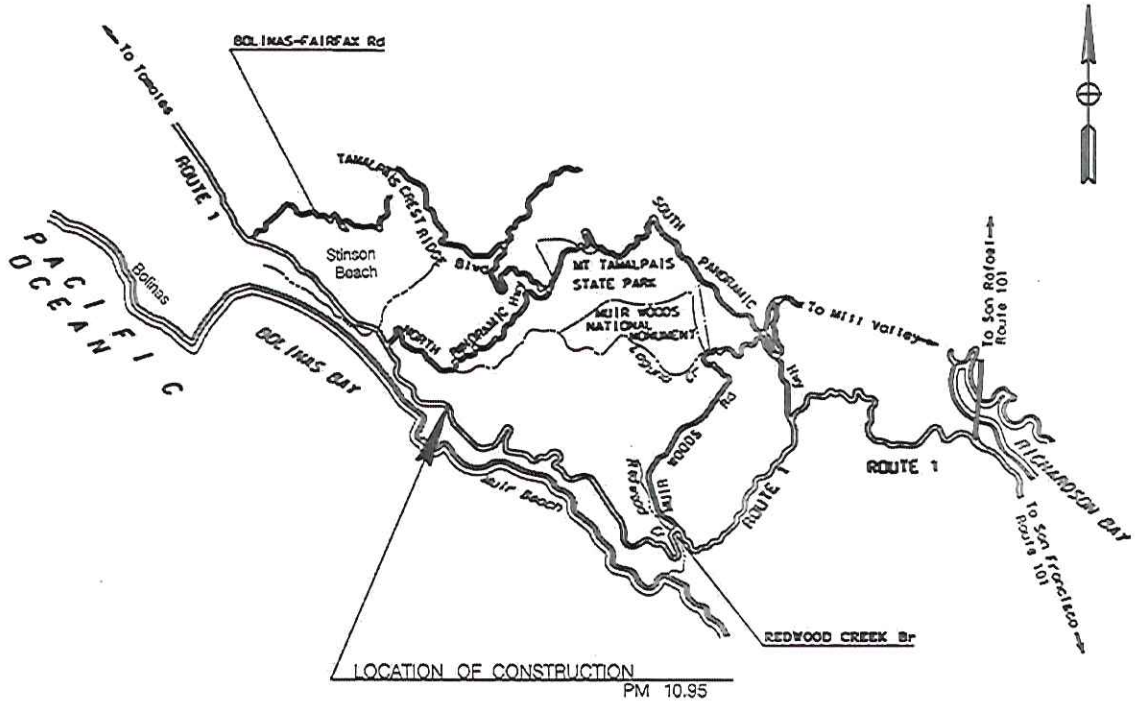
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY

IN MARIN COUNTY
NEAR STINSON BEACH
AT 0.3 MILE NORTH OF DIPSEA TRAIL

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

DIST	COUNTY	ROUTE	POST MILEAGE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
4	Mrn	1	10.95		



PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

CONTRACT No. 04-4S2204

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO CONTRACTORS."

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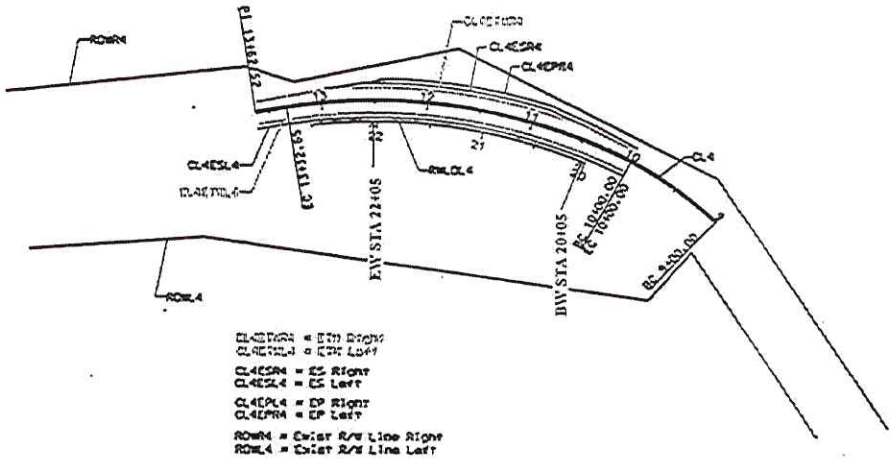

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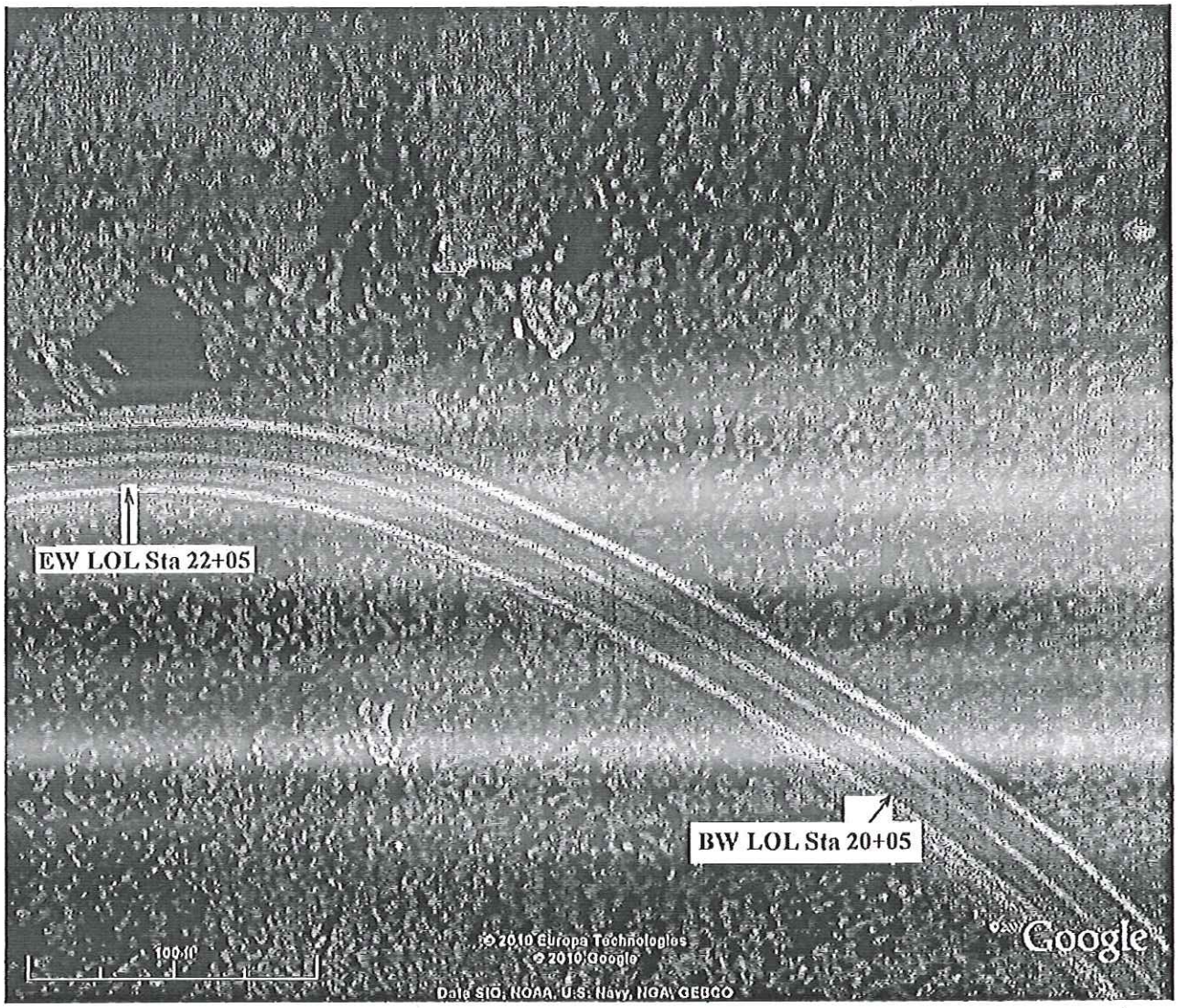
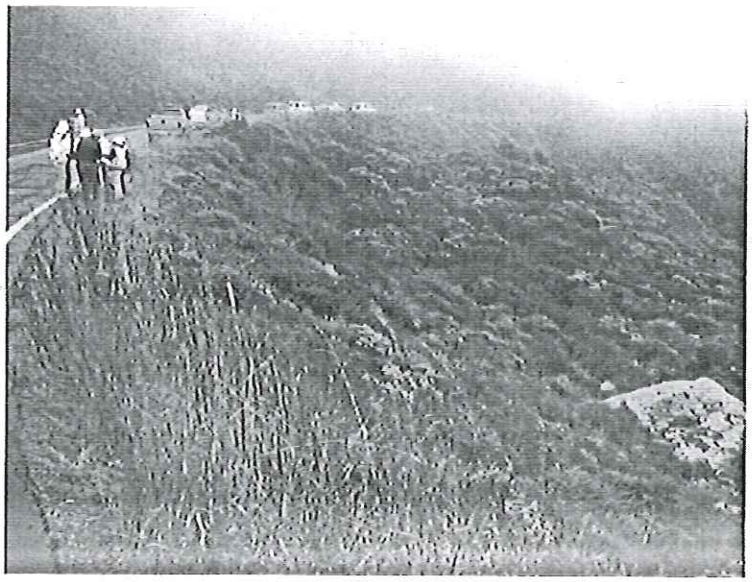
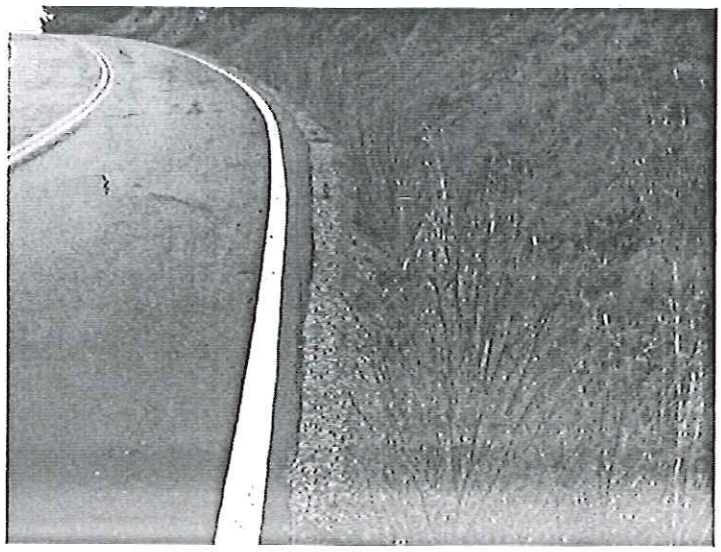
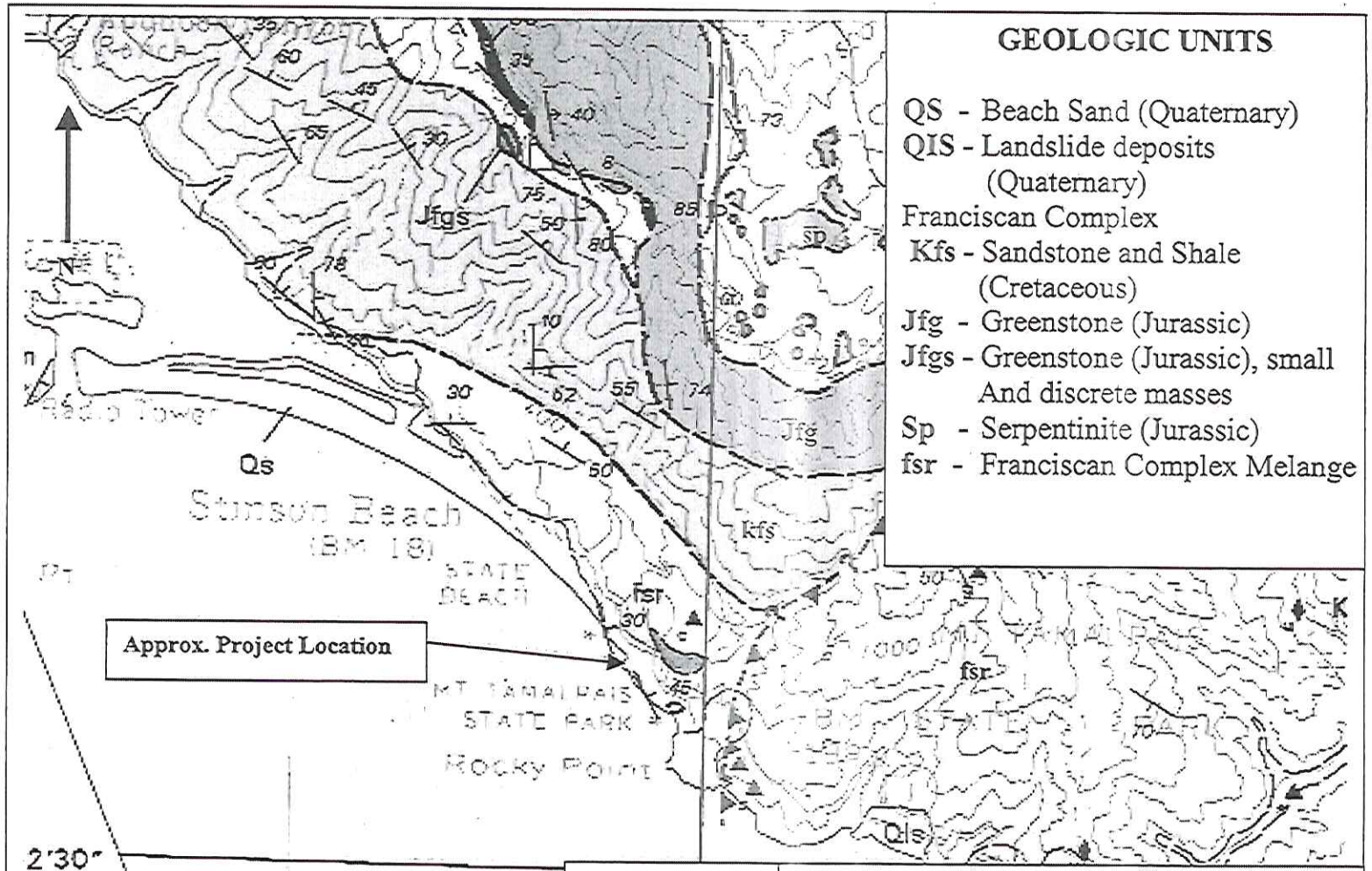


RETAINING WALL LIMITS







GEOLOGIC UNITS

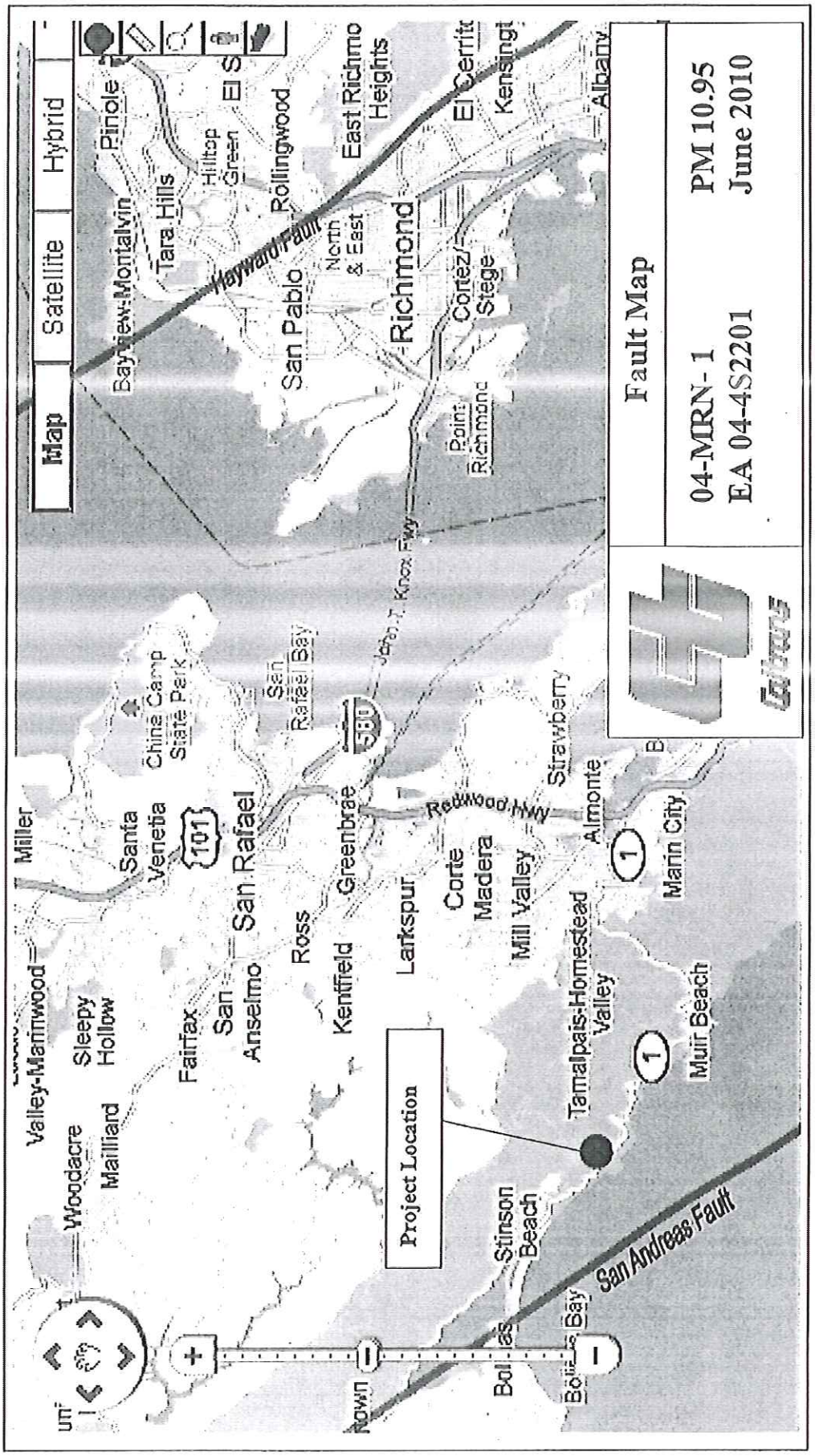
QS - Beach Sand (Quaternary)
QIS - Landslide deposits (Quaternary)
Franciscan Complex
Kfs - Sandstone and Shale (Cretaceous)
Jfg - Greenstone (Jurassic)
Jfgs - Greenstone (Jurassic), small And discrete masses
Sp - Serpentinite (Jurassic)
fsr - Franciscan Complex Melange

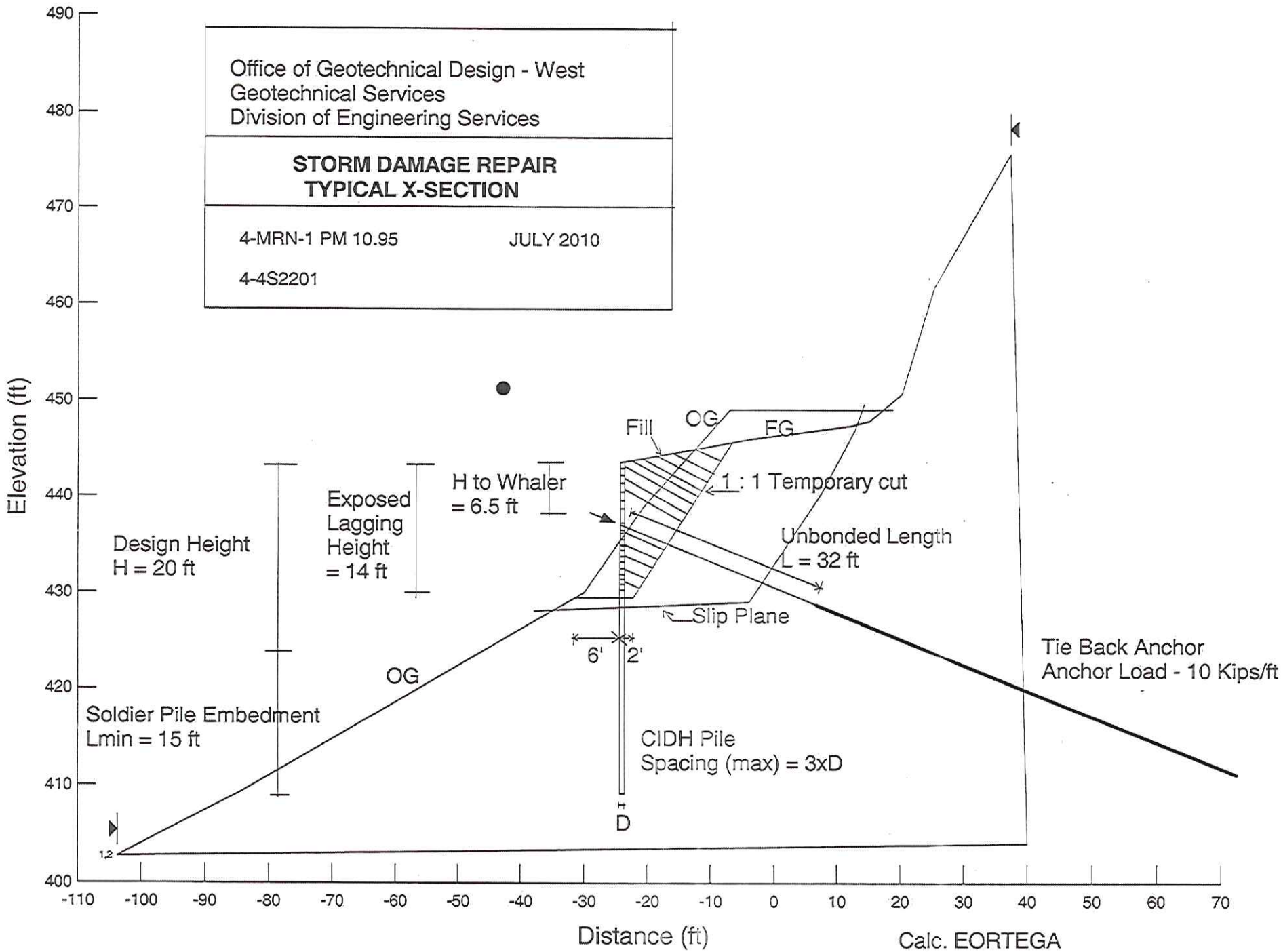
Reference: M.C. Blake, Jr., R.W. Graymer, and D.L.Jones. 2000, Geologic and map database of parts of Marine, San Francisco, Alameda, Contra Costa, and Sonoma Counties, California, USGS, MF-2337

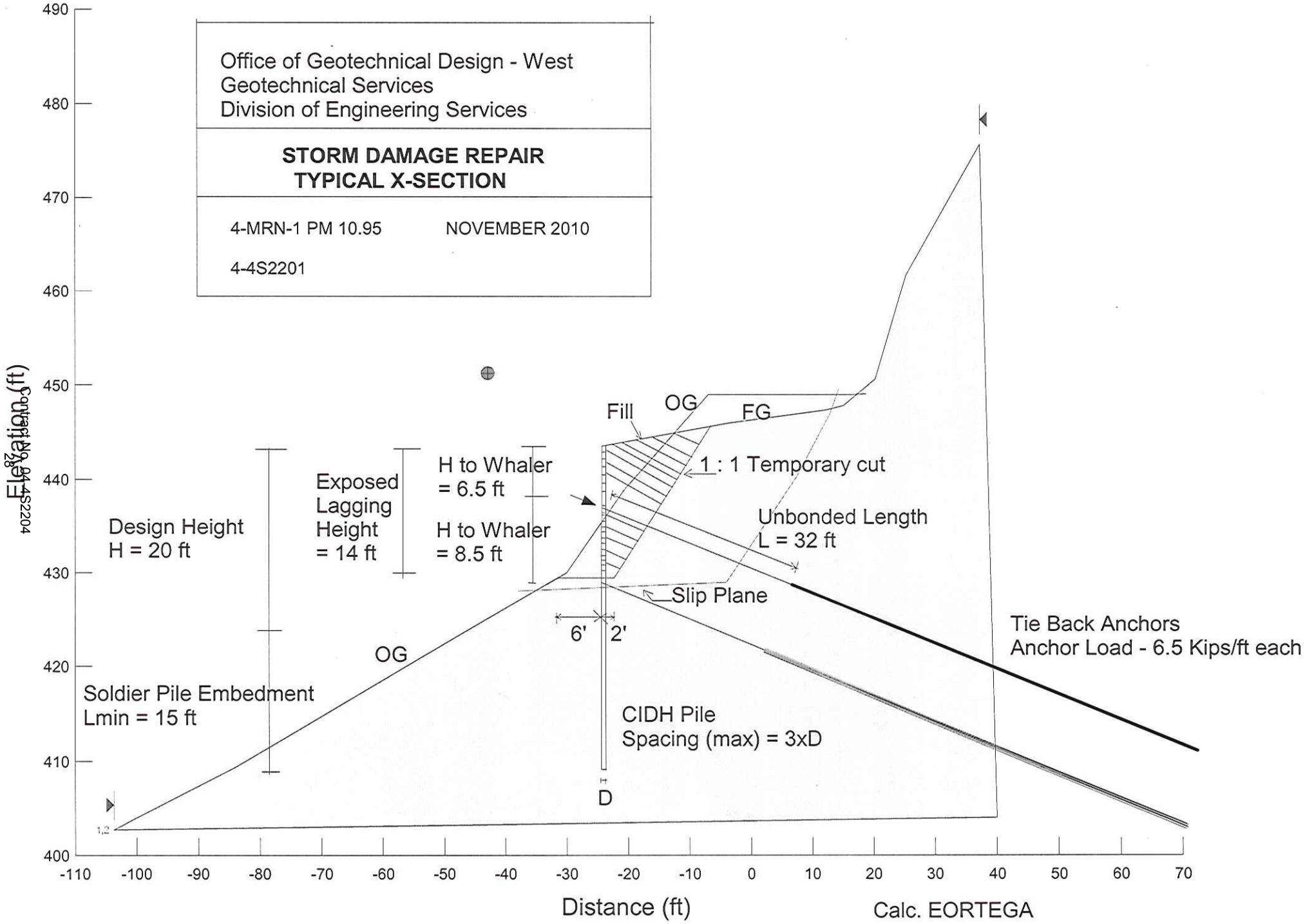
Caltrans

Geology Map

04-MRN- 1 PM 10.95
EA 04-4S2201 June 2010


Map
Satellite
Hybrid
Fault Map
04-MRN- 1
EA 04-4S2201
PM 10.95
June 2010
Project Location
Hayward Fault
San Andreas Fault
Bayview-Montalvin
Tara Hills
Hilltop
Green
Pinole
Rollingwood
East Richmo
Heights
El Cerrit
Kensingt
Albany
San Pablo
North
& East
Richmond
Cortez/
Stege
Point
Richmond
John T. Knox Fwy
China Camp
State Park
San
Rafael Bay
580
Strawberry
Almonte
Marin City
Redwood Hwy
Miller
Santa
Venetia
101
San Rafael
Greenbrae
Corte
Madera
Mill Valley
Larkspur
Ross
Kentfield
San
Anselmo
Fairfax
Sleepy
Hollow
Valley-Marinwood
Woodacre
Mailliard
Tamalpais-Homestead
Valley
Muir Beach
Stinson
Beach
Bolinas Bay


Office of Geotechnical Design - West
Geotechnical Services
Division of Engineering Services
STORM DAMAGE REPAIR
TYPICAL X-SECTION
4-MRN-1 PM 10.95
JULY 2010
4-4S2201
Elevation (ft)
Distance (ft)
Fill
OG
FG
1 : 1 Temporary cut
H to Whaler
= 6.5 ft
Exposed
Lagging
Height
= 14 ft
Design Height
H = 20 ft
Unbonded Length
L = 32 ft
Slip Plane
6'
2'
OG
Soldier Pile Embedment
Lmin = 15 ft
CIDH Pile
Spacing (max) = 3xD
D
Tie Back Anchor
Anchor Load - 10 Kips/ft
1,2
Calc. EORTEGA


Office of Geotechnical Design - West
Geotechnical Services
Division of Engineering Services
STORM DAMAGE REPAIR
TYPICAL X-SECTION
4-MRN-1 PM 10.95
NOVEMBER 2010
4-4S2201
Fill
OG
FG
1 : 1 Temporary cut
Exposed Lagging Height = 14 ft
H to Whaler = 6.5 ft
H to Whaler = 8.5 ft
Design Height H = 20 ft
Unbonded Length L = 32 ft
Slip Plane
6'
2'
OG
Soldier Pile Embedment Lmin = 15 ft
CIDH Pile Spacing (max) = 3xD
D
Tie Back Anchors
Anchor Load - 6.5 Kips/ft each
Elevation (ft)
Distance (ft)
Calc. EORTEGA

5.5.5.7 Lateral Earth Pressures for Anchored Walls

For anchored walls restrained by tie rods and structural anchors, the lateral earth pressure acting on the wall may be determined in accordance with Article 5.5.5.6.

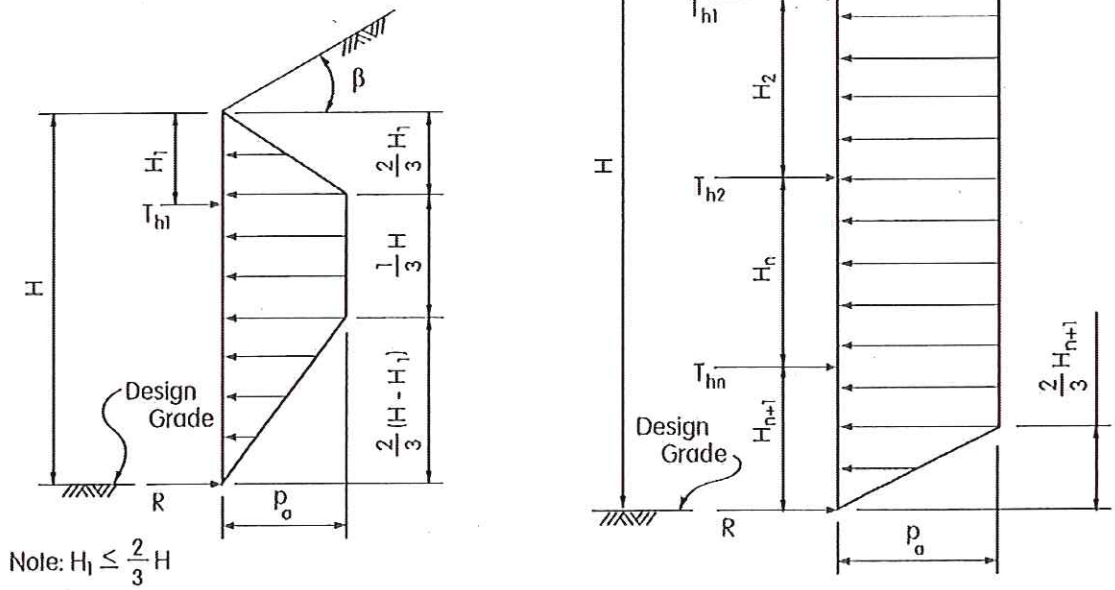
For anchored walls constructed from the top down and restrained by ground anchors (tieback anchors), the lateral earth pressure acting on the wall height, H, may be determined in accordance with Articles 5.5.5.7.1 and 5.5.5.7.2.

For anchored walls constructed from the bottom up and restrained by a single level of ground anchors located not more than one third of the wall height, H, above the bottom of the wall, the total lateral earth pressure, P_{Total}, acting on the wall height, H, may be determined in accordance with Article 5.5.5.7.1 with distribution assumed to be linearly proportional to depth and a maximum pressure equal to, $\frac{2P_{Total}}{H}$. For anchored walls constructed from the bottom up and restrained by multiple levels of ground anchors, the lateral earth pressure acting on the wall height, H, may be determined in accordance with Article 5.5.5.7.1.

In developing the lateral earth pressure for design of an anchored wall, consideration shall be given to wall displacements that may affect adjacent structures and/or underground utilities.

C5.5.5.7

In the development of lateral earth pressures, the method and sequence of wall construction, the rigidity of the wall/anchor system, the physical characteristics and stability of the ground mass to be supported/retained, allowable wall deflections, anchor spacing and prestress and the potential for anchor yield should be considered.



a) Wall with a single level of anchors

b) Wall with multiple levels of anchors

Figure 5.5.5.7.1-1 Lateral Earth Pressure Distributions for Anchored Walls Constructed from the Top Down in Cohesionless Soils

5.5.5.7.1 Cohesionless Soils

The lateral earth pressure distribution for the design of temporary or permanent anchored walls constructed in cohesionless soils may be determined using Figure 5.5.5.7.1-1, for which the maximum ordinate, p_a, of the pressure diagram is determined as follows:

For walls with a single level of anchors :

$$p_a = \frac{P_{Total}}{\frac{2}{3}H} \qquad (5.5.5.7.1\text{-}1)$$

For walls with multiple levels of anchors:

$$p_a = \frac{P_{Total}}{\left(H - \frac{1}{3}H_1 - \frac{1}{3}H_{n+1}\right)} \qquad (5.5.5.7.1\text{-}2)$$

where:

p_a = maximum ordinate of pressure dia gram (KSF)

P_{Total} = total lateral load required to be ap plied to the wall face to provide a factor of safety equal to 1.3 for the retained soil mass when stability is analyzed using an appropriate limiting equilibrium method of analysis. Except that P_{Total}, shall not be less than 1.44 P_a. (KIP)

P_a = active lateral earth pressure resultant acting on the wall height, H, and determined using Coulomb's theory with a wall friction angle, δ, equal to zero. (KIP)

H = wall design height (FT)

H_1 = distance from ground surface at top of wall to uppermost level of anchors. (FT)

H_{n+1} = distance from design grade at bottom of a wall to lowermost level of anchors (FT)

T_{hi} = horizontal component of design force in anchor at level i (KIP/FT)

R = design reaction force at design grade at bottom of wall to be resisted by embedded portion of wall (KIP/FT)

5.5.5.7.2 Cohesive Soils

The lateral earth pressure distribution for cohesive soils is related to the stability number, N_S, which is defined as:

$$N_s = \frac{\gamma_s H}{S_u}$$

where:

γ_s = total unit weight of soil (KCF)

H = wall design height (FT)

S_u = average undrained shear strength of soil (KSF)

5.5.5.7.2a Stiff to Hard

For temporary anchored walls in stiff to hard cohesive soils ($N_s \leq 4$), and β= zero, the lateral earth pressure may be determined using Figure 5.5.5.7.1-1, with the maximum ordinate, p_a, of the pressure diagram determined as:

$$p_a = 0.2\gamma_s H \text{ to } 0.4\gamma_s H \qquad (5.5.5.7.2a-1)$$

where:

p_a = maximum ordinate of pressure diagram (KSF)

γ_s = total unit weight of soil (KCF)

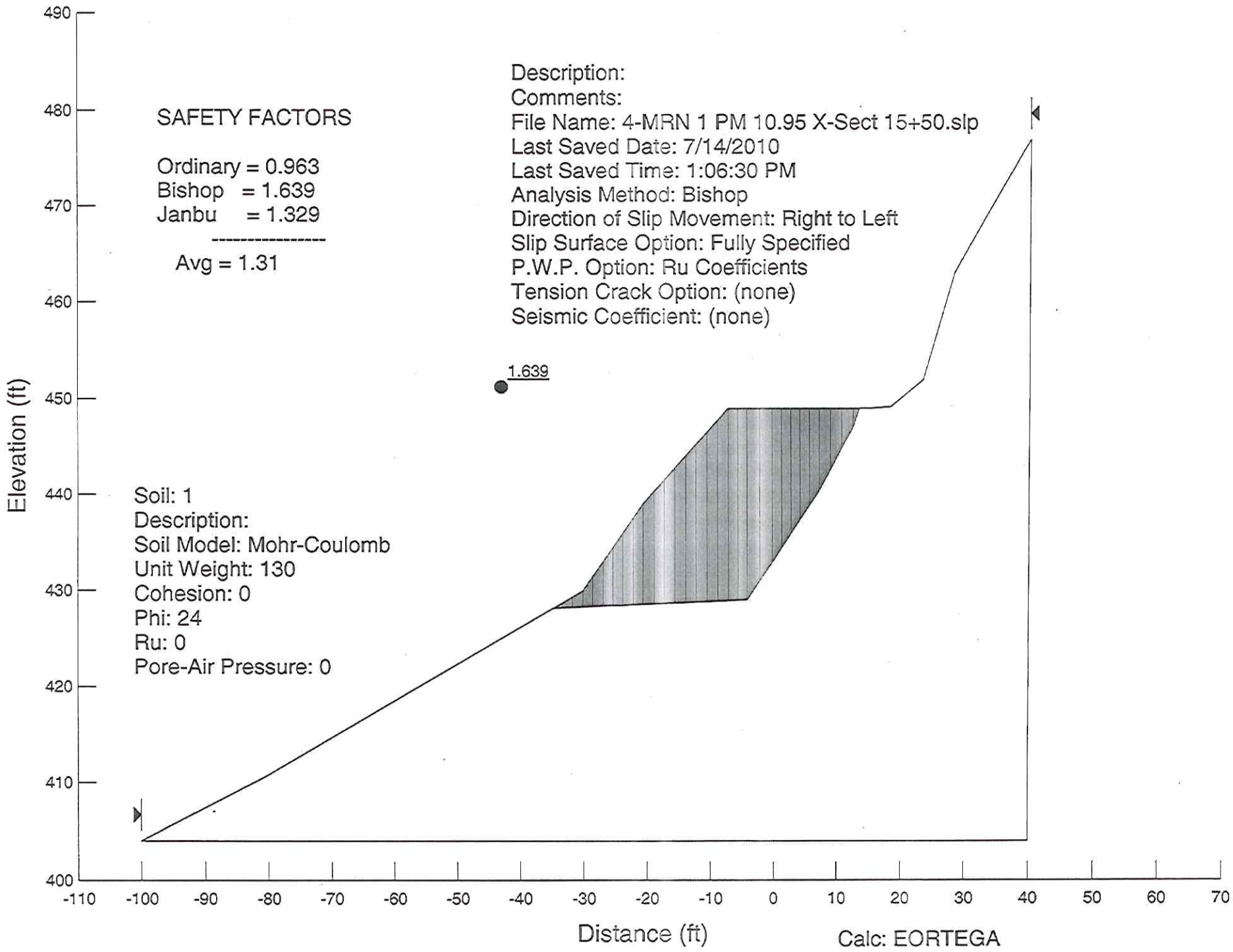
H = wall design height (FT)

For permanent anchored walls in stiff to hard cohesive soils, the lateral earth pressure distributions described in Article 5.5.5.7.1 may be used with, P_{Total}, based on the drained friction angle of the cohesive soil. For permanent walls, the distribution (permanent or temporary) resulting in the maximum total force shall be used for design.

Appendix B

Back Analysis

Slope Stability


SAFETY FACTORS
Ordinary = 0.963
Bishop = 1.639
Janbu = 1.329

Avg = 1.31
Description:
Comments:
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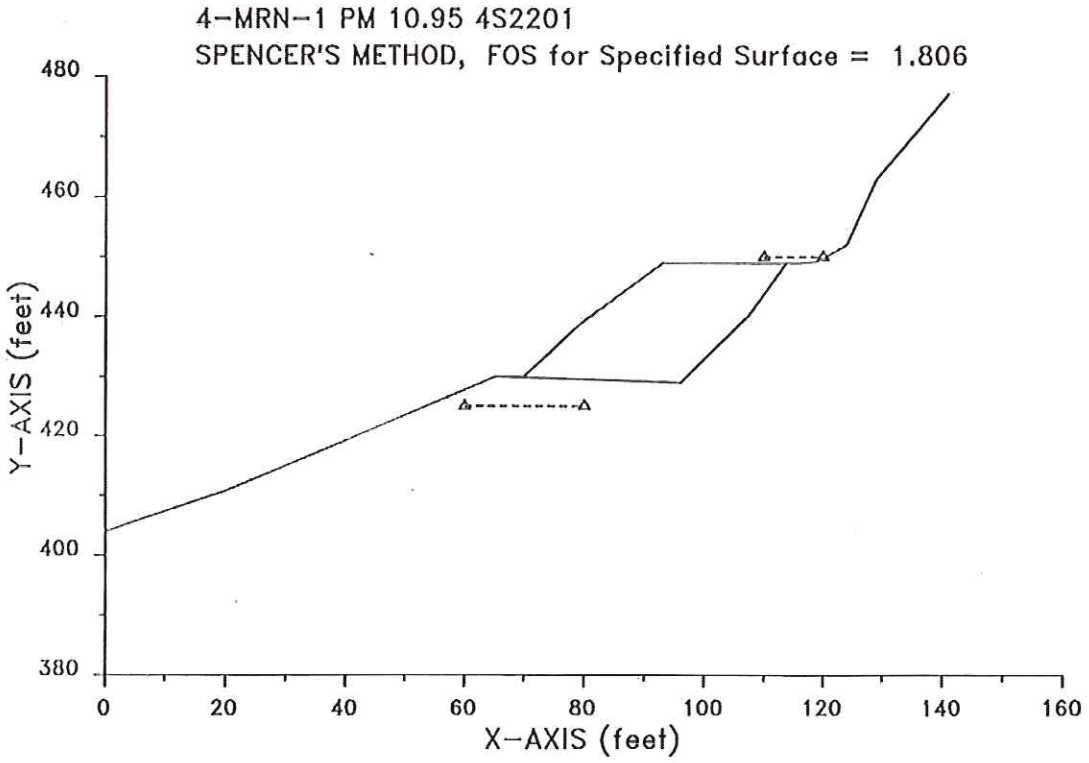
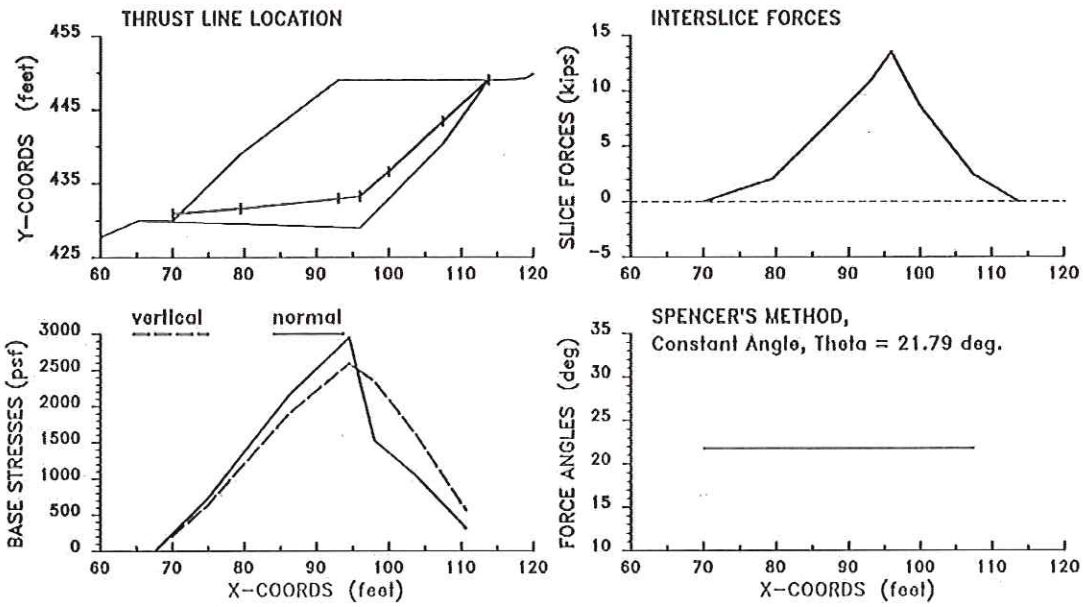
Last Saved Date: 7/14/2010
Last Saved Time: 1:06:30 PM
Analysis Method: Bishop
Direction of Slip Movement: Right to Left
Slip Surface Option: Fully Specified
P.W.P. Option: Ru Coefficients
Tension Crack Option: (none)
Seismic Coefficient: (none)
1.639
Soil: 1
Description:
Soil Model: Mohr-Coulomb
Unit Weight: 130
Cohesion: 0
Phi: 24
Ru: 0
Pore-Air Pressure: 0
Elevation (ft)
490
480
470
460
450
440
430
420
410
400
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
Distance (ft)
Calc: EORTEGA

MRN1_109 7-16-•• 11:51



BACK ANALYSIS CHECK

DRY CONDITION

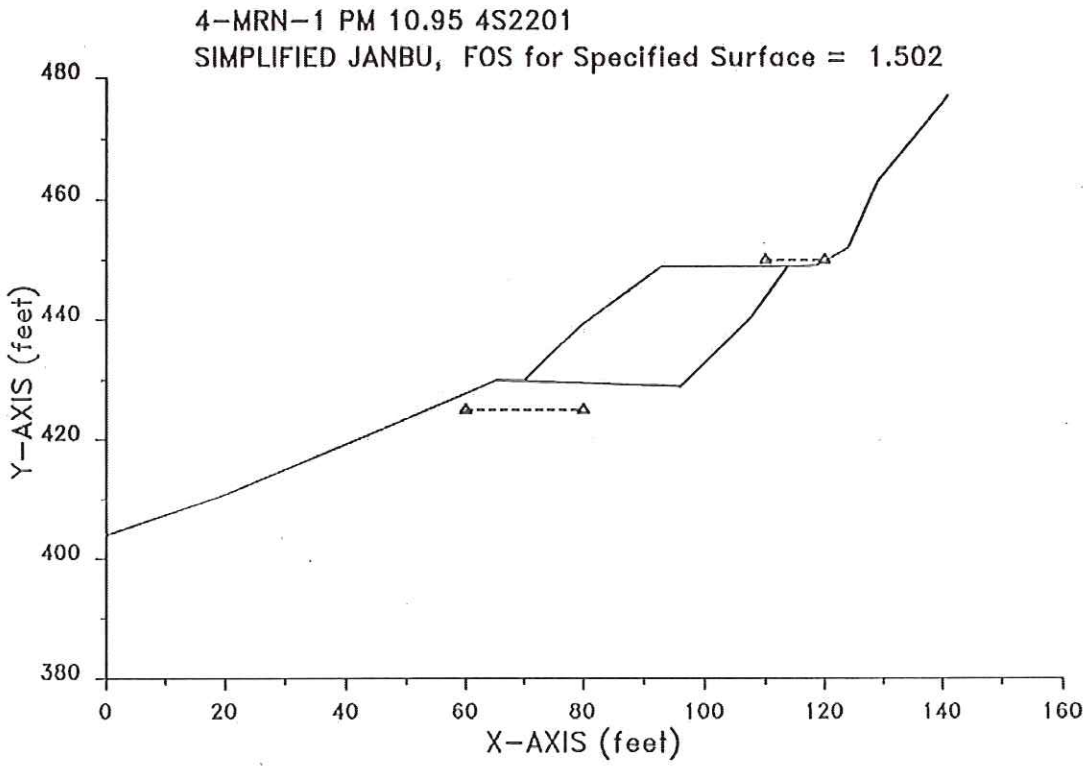


4-MRN-1 PM 10.95 4S2201
SPENCER'S METHOD, FOS for Specified Surface = 1.806

BACK ANALYSIS CHECK

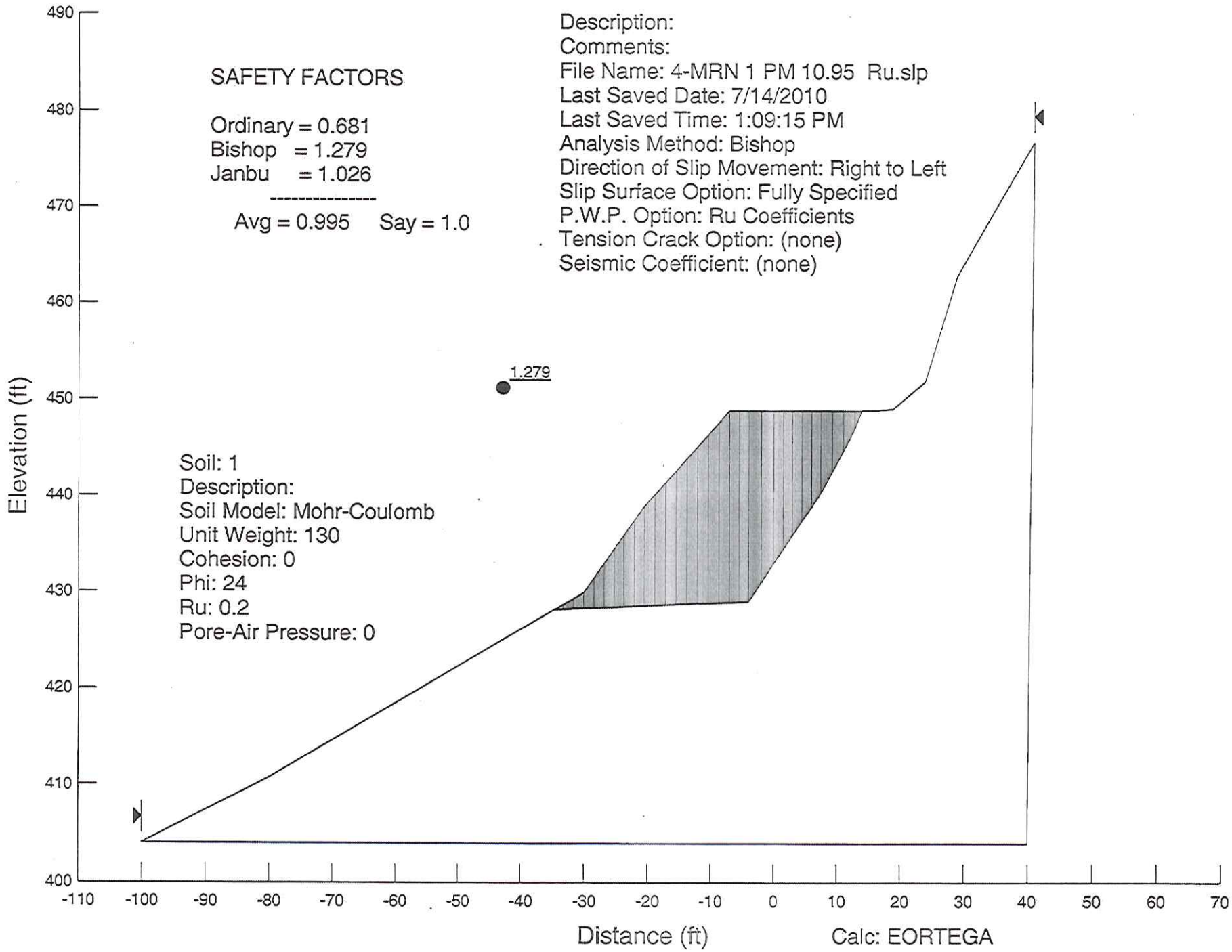
DRY CONDITION

MRN1_10B 7-16-** 11:53



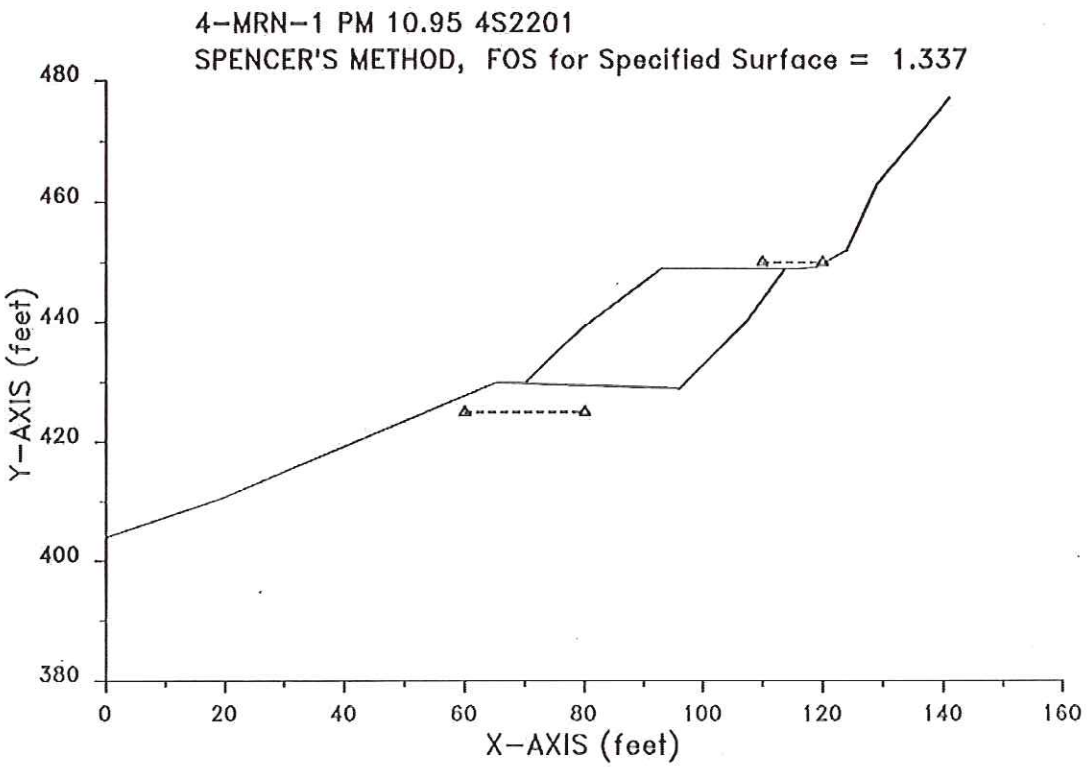
BACK ANALYSIS CHECK

DRY CONDITION


SAFETY FACTORS
Ordinary = 0.681
Bishop = 1.279
Janbu = 1.026

Avg = 0.995 Say = 1.0
Description:
Comments:
File Name: 4-MRN 1 PM 10.95 Ru.slp
Last Saved Date: 7/14/2010
Last Saved Time: 1:09:15 PM
Analysis Method: Bishop
Direction of Slip Movement: Right to Left
Slip Surface Option: Fully Specified
P.W.P. Option: Ru Coefficients
Tension Crack Option: (none)
Seismic Coefficient: (none)
1.279
Soil: 1
Description:
Soil Model: Mohr-Coulomb
Unit Weight: 130
Cohesion: 0
Phi: 24
Ru: 0.2
Pore-Air Pressure: 0
Elevation (ft)
490
480
470
460
450
440
430
420
410
400
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
Distance (ft)
Calc: EORTEGA

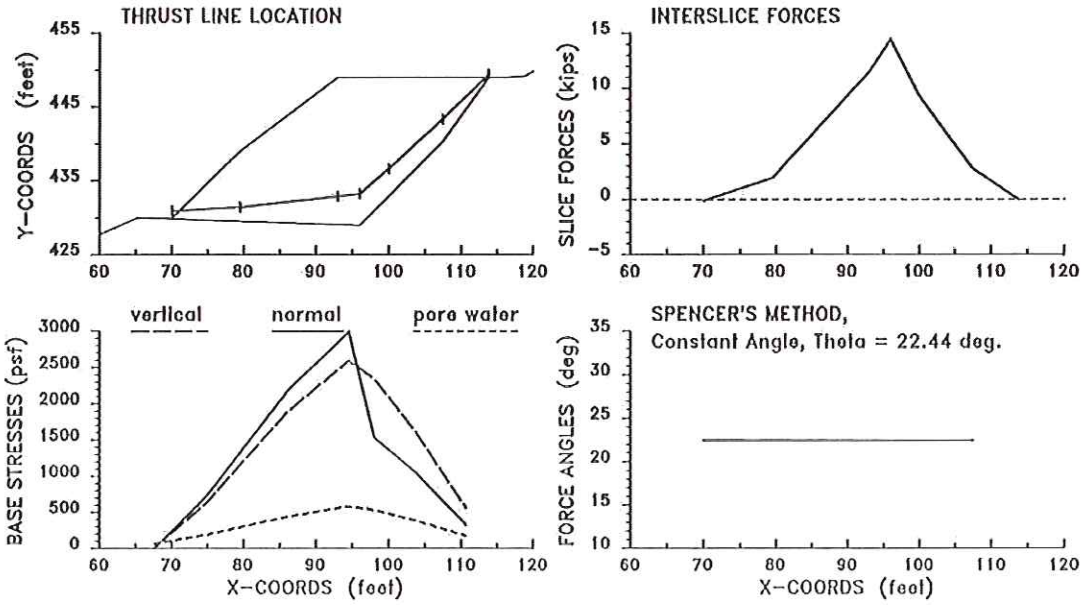
MRN1_10C 7-16-** 13:11



BACK ANALYSIS CHECK

WET CONDITION

Ru = 0.20



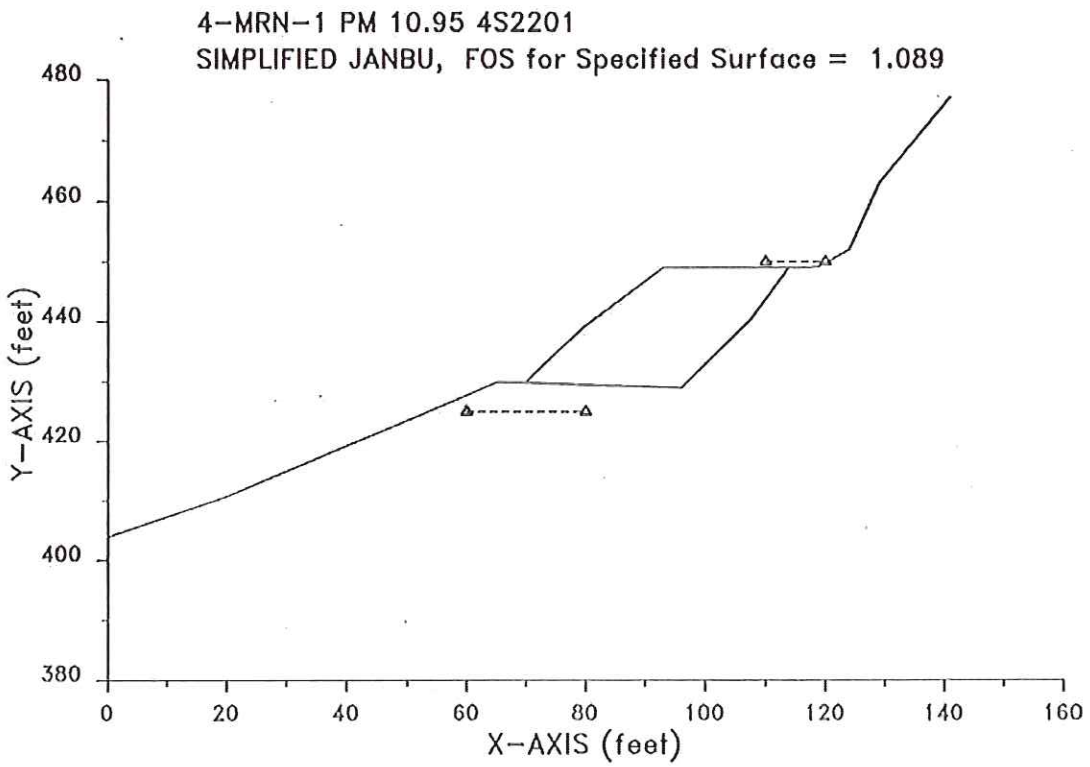
4-MRN-1 PM 10.95 4S2201
SPENCER'S METHOD, FOS for Specified Surface = 1.337

BACK ANALYSIS CHECK

WET CONDITION

Ru = 0.20

MRN1_10C 7-16-** 13:19

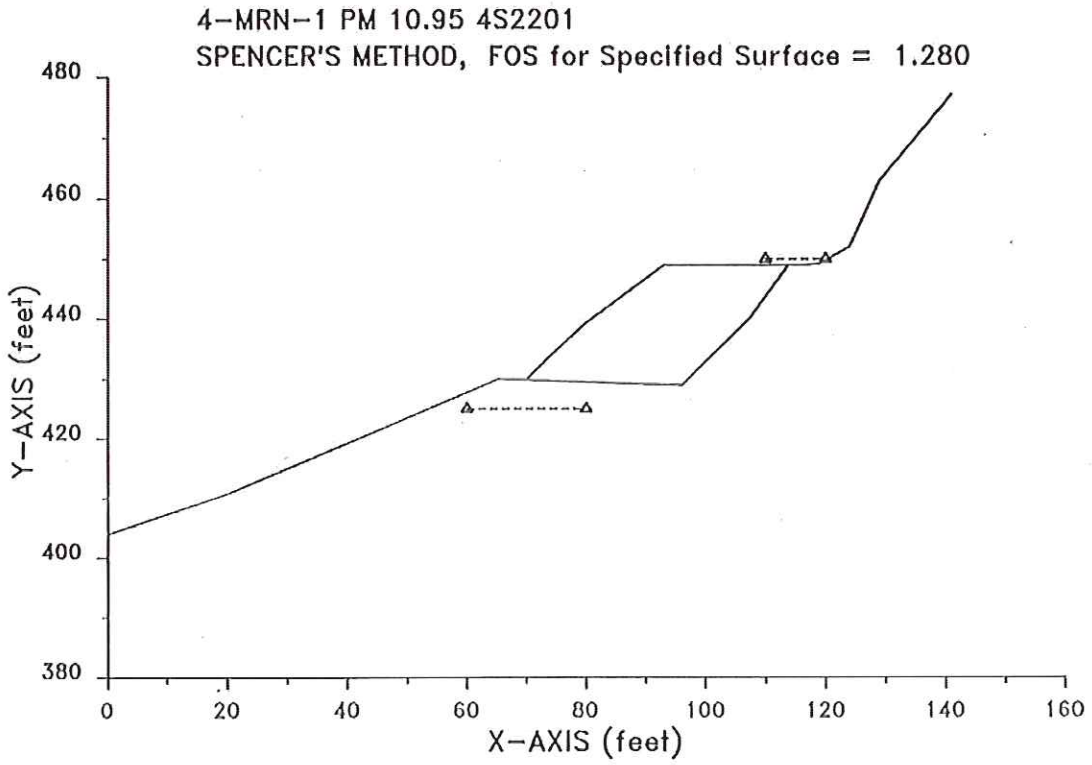


BACK ANALYSIS CHECK

WET CONDITION

Ru = 0.20

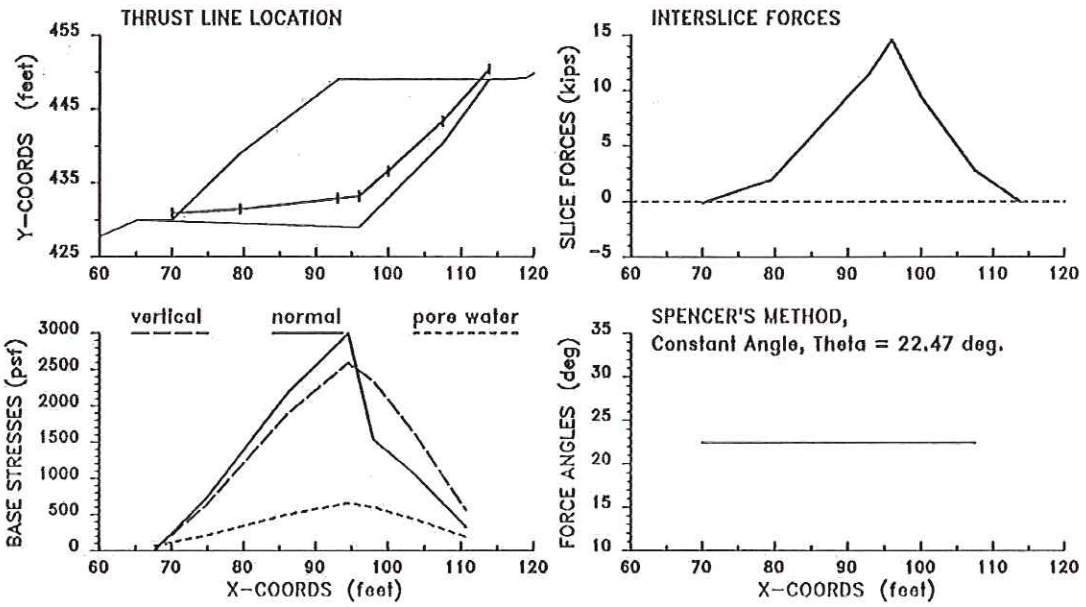
MRN1_10D 7-16-** 13:23



BACK ANALYSIS CHECK

WET CONDITION

Ru = 0.23



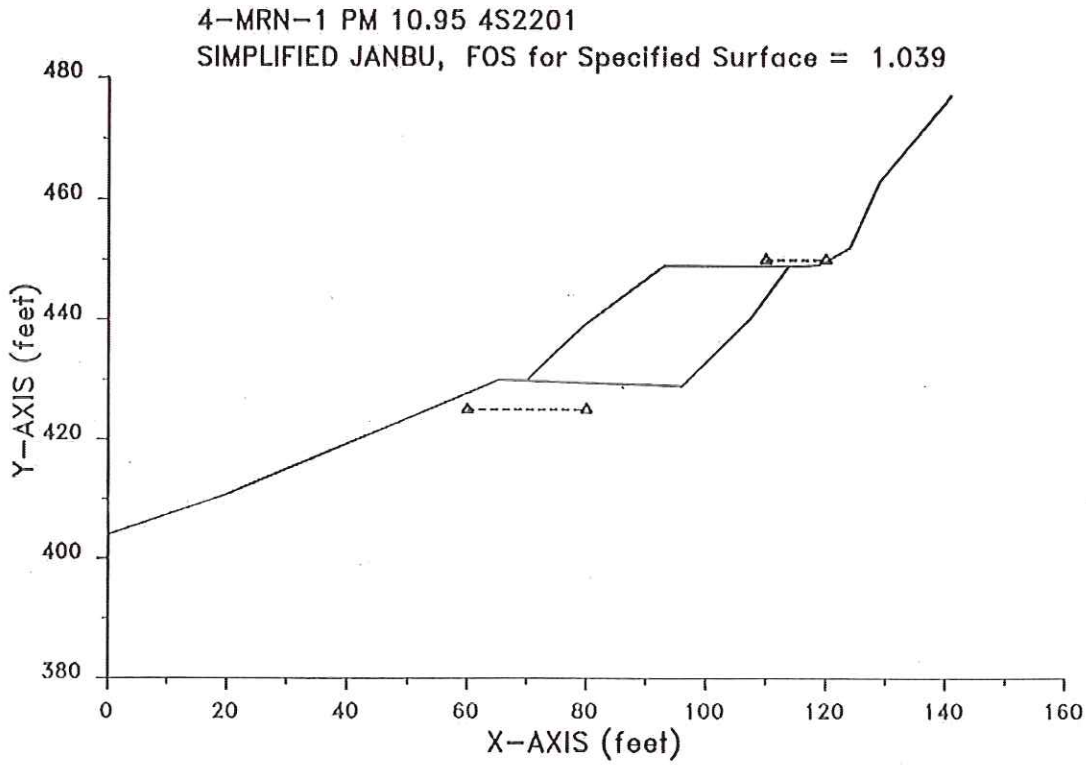
4-MRN-1 PM 10.95 4S2201
SPENCER'S METHOD, FOS for Specified Surface = 1.280

BACK ANALYSIS CHECK

WET CONDITION

Ru = 0.23

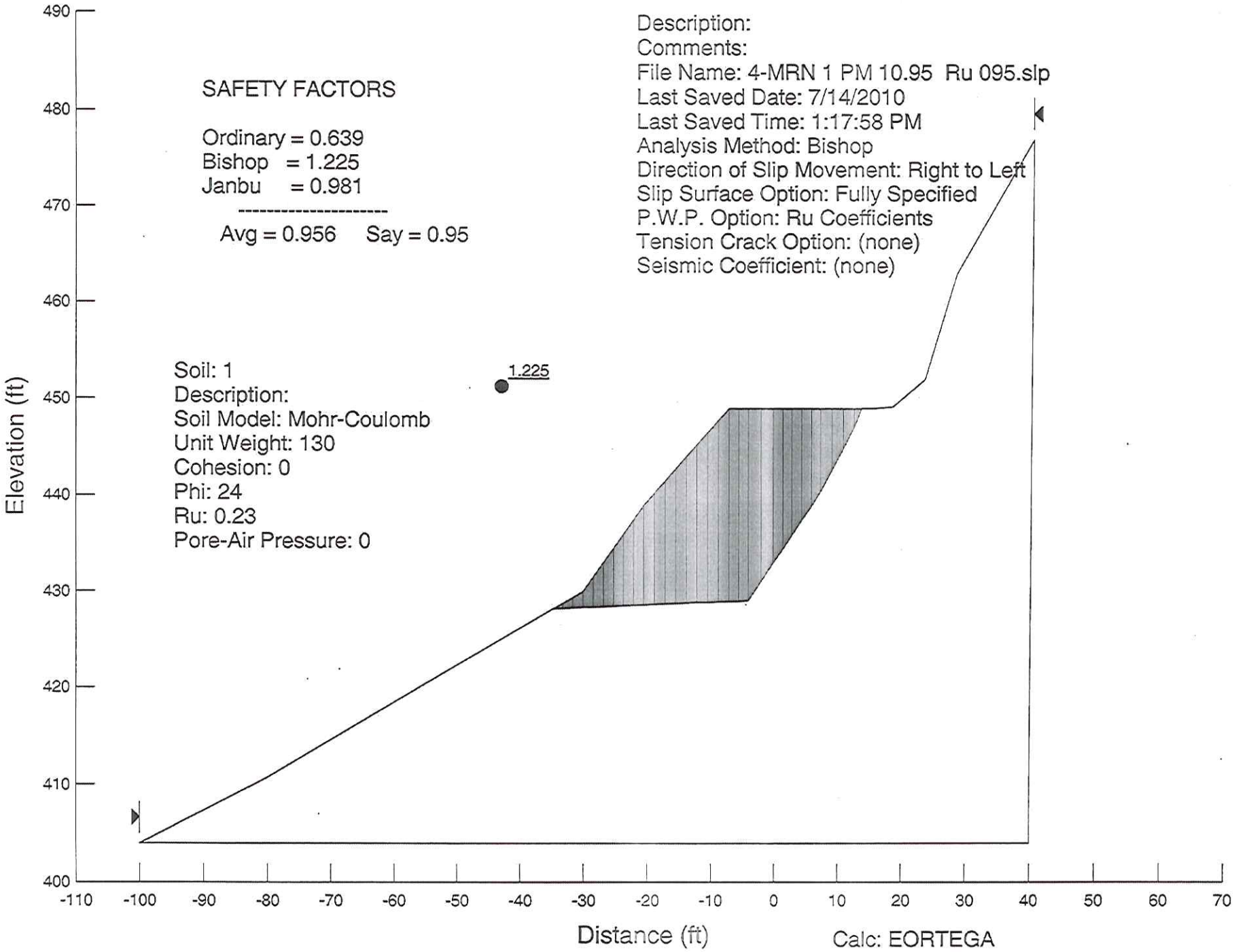
MRN1_10D 7-16-** 13:26



BACK ANALYSIS CHECK

WET CONDITION

Ru = 0.23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Ordinary = 0.639
Bishop = 1.225
Janbu = 0.981
Avg = 0.956 Say = 0.95
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Comments:
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Last Saved Time: 1:17:58 PM
Analysis Method: Bishop
Direction of Slip Movement: Right to Left
Slip Surface Option: Fully Specified
P.W.P. Option: Ru Coefficients
Tension Crack Option: (none)
Seismic Coefficient: (none)
Soil: 1
Description:
Soil Model: Mohr-Coulomb
Unit Weight: 130
Cohesion: 0
Phi: 24
Ru: 0.23
Pore-Air Pressure: 0
1.225
Elevation (ft)
Distance (ft)
Calc: EORTEGA

BACK ANALYSIS TABLE

Program Slope/w Method	PARAMETERS $\Phi = 24^{O}$ Ru = 0 γ = 130 psf	PARAMETERS $\Phi = 24^{O}$ Ru = 0.20 γ = 130 psf	PARAMETERS $\Phi = 24^{O}$ Ru = 0.23 γ = 130 psf
Ordinary	0.963	0.681	0.639
Bishop	1.639	1.279	1.225
Janbu	1.329	1.026	0.981
Average	1.31	0.995 Say 1.0	0.956 Say 0.95

BACK ANALYSIS CHECK TABLE

Program Xstabl 5.201a Method:	PARAMETERS $\Phi = 24^{O}$ Ru = 0 γ = 130 psf	PARAMETERS $\Phi = 24^{O}$ Ru = 0.20 γ = 130 psf	PARAMETERS $\Phi = 24^{O}$ Ru = 0.23 γ = 130 psf
Spencer	1.806	1.337	1.28
Simplify Janbu	1.5	1.089	1.039

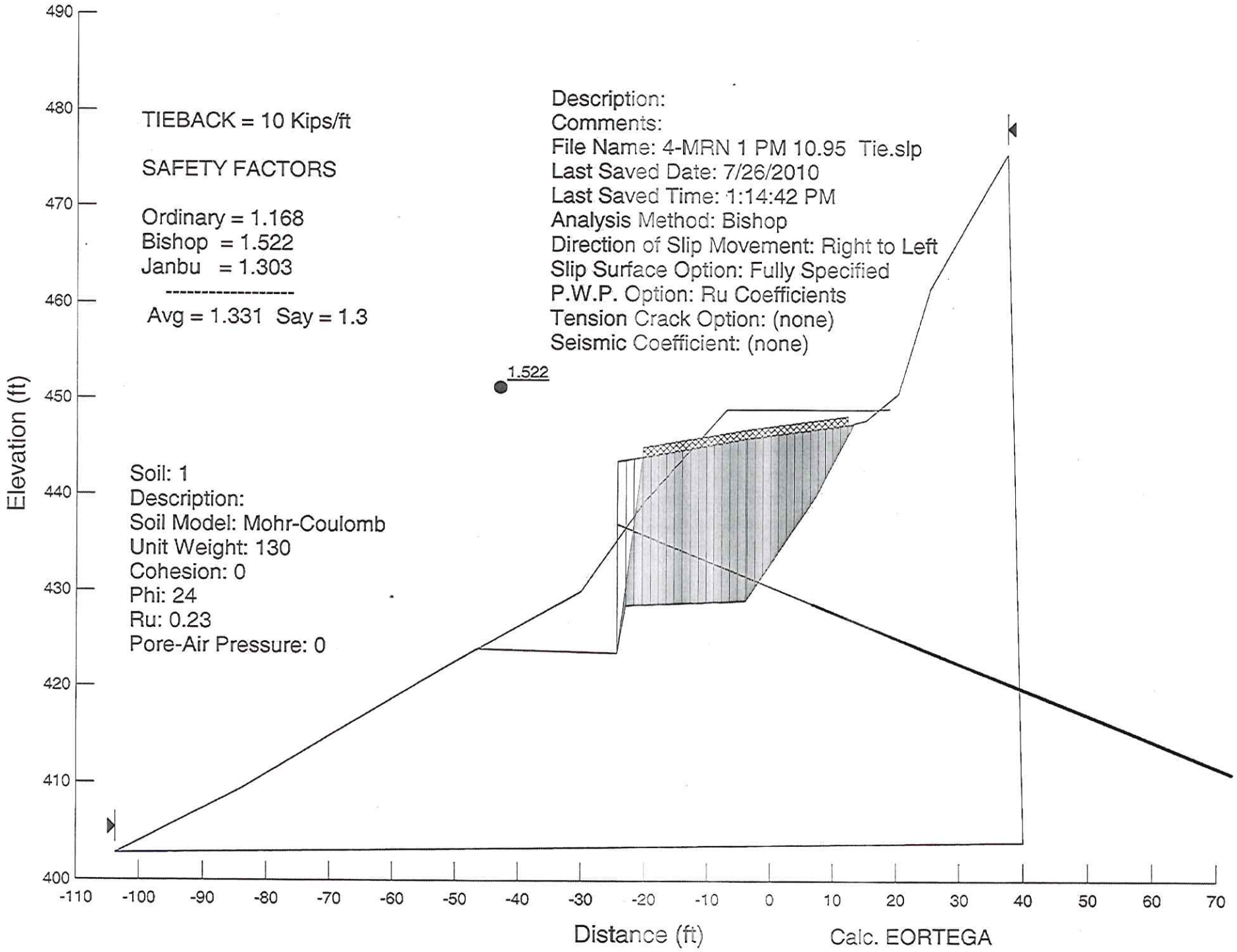
Φ = Internal Friction Angle (Degrees)

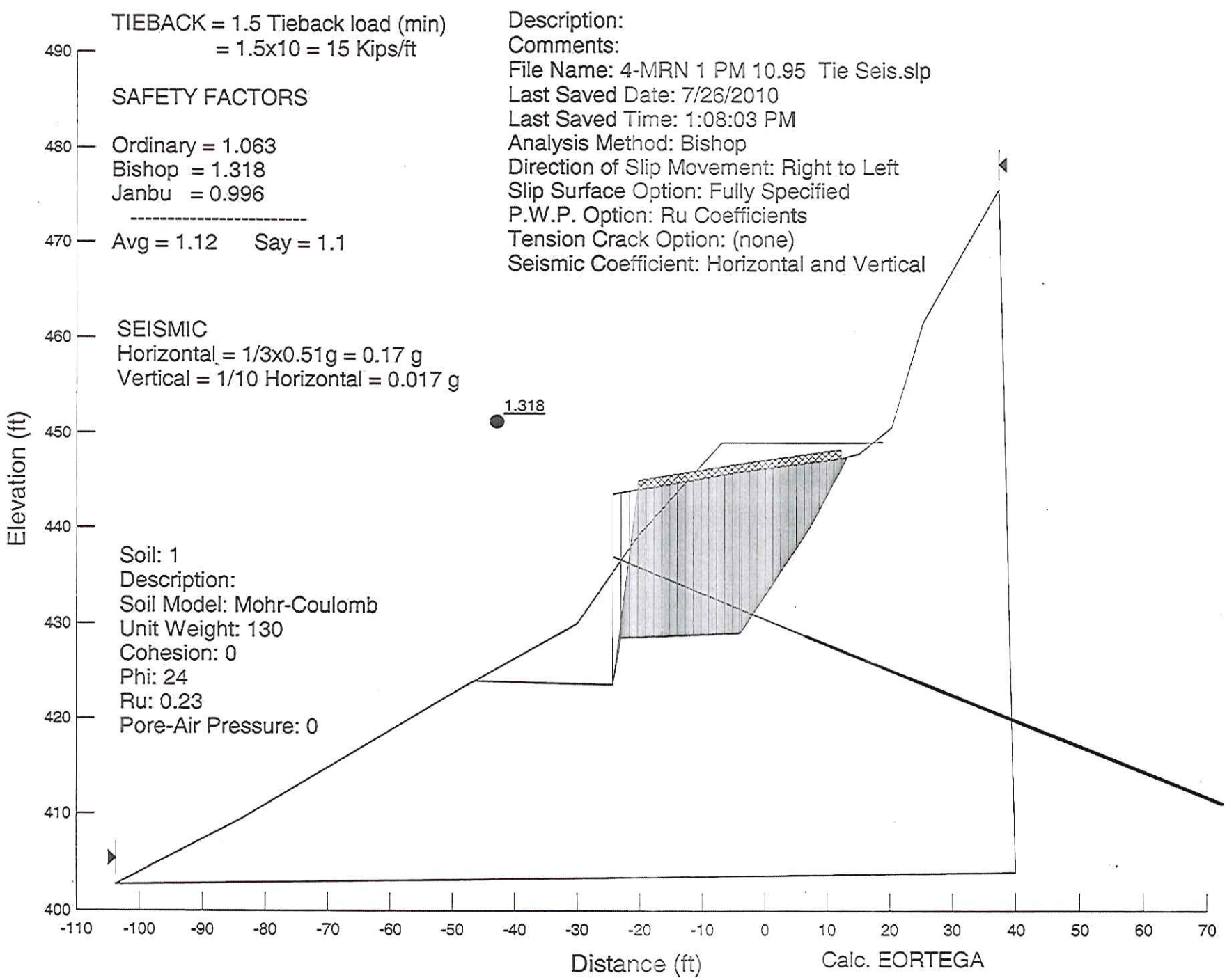
Ru = Pore Water Pressure Parameter

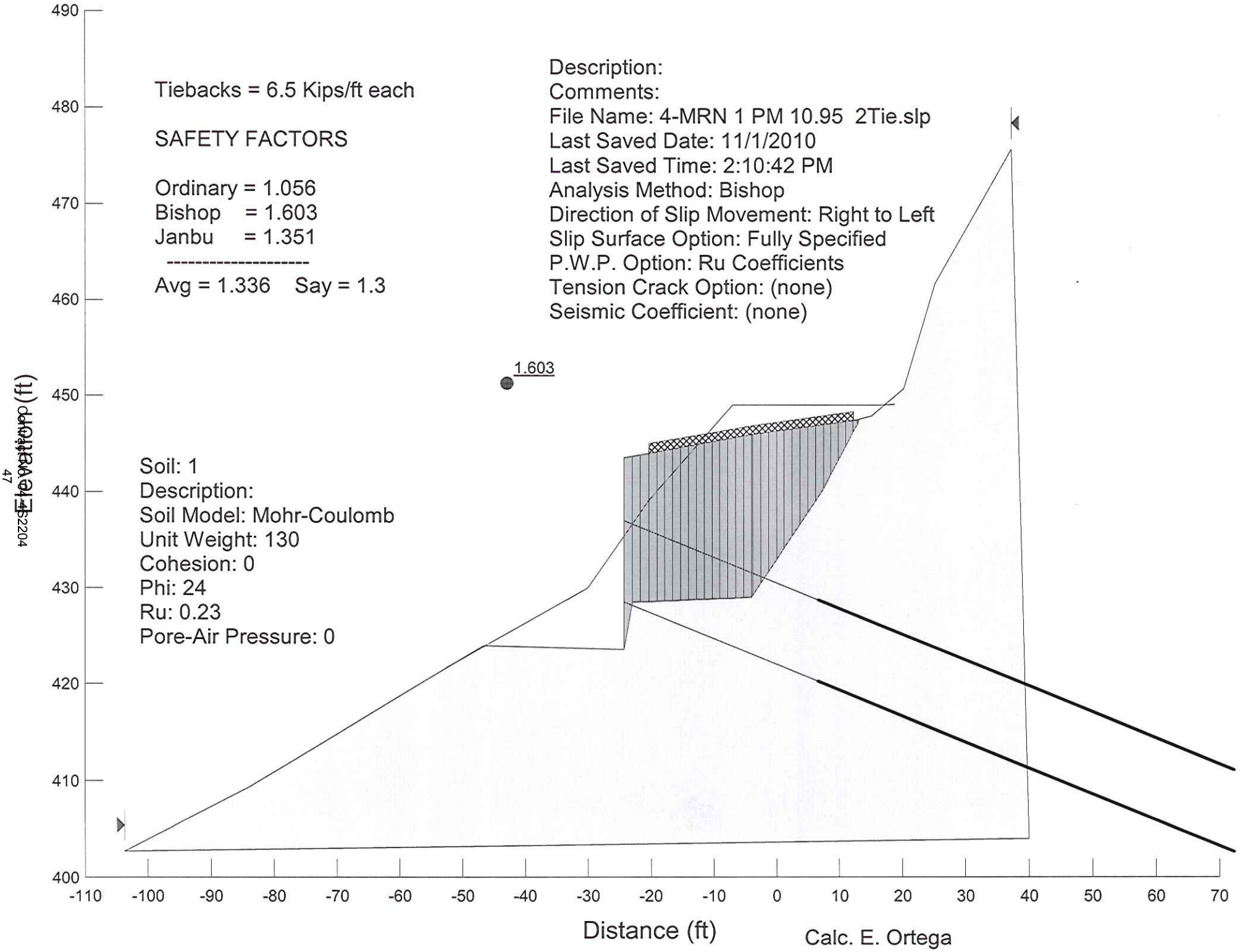
γ = Unit Weight

Bishop (Back Analysis) compares with Spencer (Back Analysis Check)

Average of methods (Back Analysis) compares with Simplify Janbu (Back Analysis Check)


TIEBACK = 10 Kips/ft
SAFETY FACTORS
Ordinary = 1.168
Bishop = 1.522
Janbu = 1.303
Avg = 1.331 Say = 1.3
Description:
Comments:
File Name: 4-MRN 1 PM 10.95 Tie.slp
Last Saved Date: 7/26/2010
Last Saved Time: 1:14:42 PM
Analysis Method: Bishop
Direction of Slip Movement: Right to Left
Slip Surface Option: Fully Specified
P.W.P. Option: Ru Coefficients
Tension Crack Option: (none)
Seismic Coefficient: (none)
1.522
Soil: 1
Description:
Soil Model: Mohr-Coulomb
Unit Weight: 130
Cohesion: 0
Phi: 24
Ru: 0.23
Pore-Air Pressure: 0
Elevation (ft)
490
480
470
460
450
440
430
420
410
400
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
Distance (ft)
Calc. EORTEGA


TIEBACK = 1.5 Tieback load (min)
= 1.5x10 = 15 Kips/ft
SAFETY FACTORS
Ordinary = 1.063
Bishop = 1.318
Janbu = 0.996
Avg = 1.12 Say = 1.1
SEISMIC
Horizontal = 1/3x0.51g = 0.17 g
Vertical = 1/10 Horizontal = 0.017 g
Description:
Comments:
File Name: 4-MRN 1 PM 10.95 Tie Seis.slp
Last Saved Date: 7/26/2010
Last Saved Time: 1:08:03 PM
Analysis Method: Bishop
Direction of Slip Movement: Right to Left
Slip Surface Option: Fully Specified
P.W.P. Option: Ru Coefficients
Tension Crack Option: (none)
Seismic Coefficient: Horizontal and Vertical
1.318
Soil: 1
Description:
Soil Model: Mohr-Coulomb
Unit Weight: 130
Cohesion: 0
Phi: 24
Ru: 0.23
Pore-Air Pressure: 0
Elevation (ft)
490
480
470
460
450
440
430
420
410
400
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
Distance (ft)
Calc. EORTEGA


Tiebacks = 6.5 Kips/ft each
SAFETY FACTORS
Ordinary = 1.056
Bishop = 1.603
Janbu = 1.351

Avg = 1.336 Say = 1.3
Description:
Comments:
File Name: 4-MRN 1 PM 10.95 2Tie.slp
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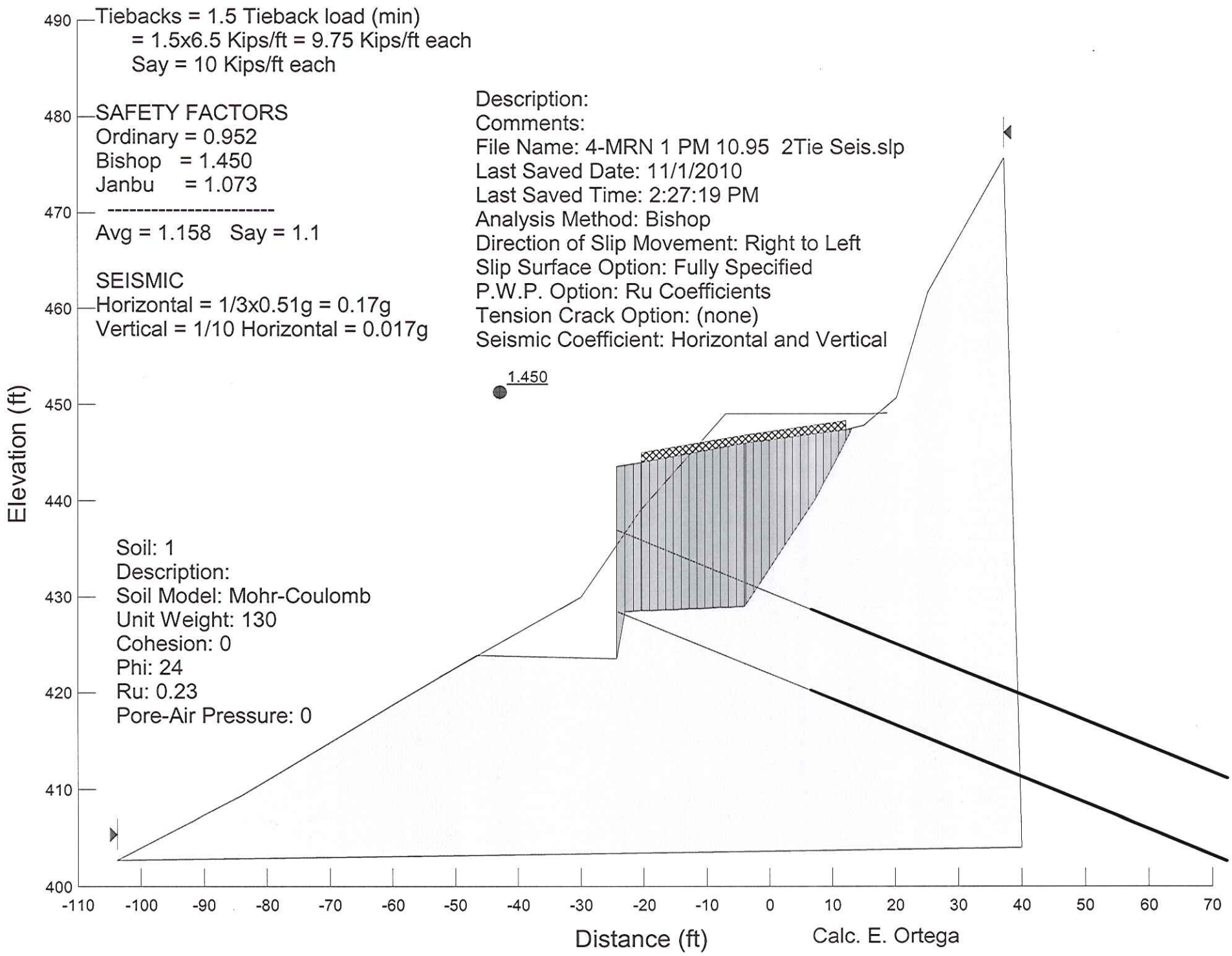
Direction of Slip Movement: Right to Left
Slip Surface Option: Fully Specified
P.W.P. Option: Ru Coefficients
Tension Crack Option: (none)
Seismic Coefficient: (none)
1.603
Soil: 1
Description:
Soil Model: Mohr-Coulomb
Unit Weight: 130
Cohesion: 0
Phi: 24
Ru: 0.23
Pore-Air Pressure: 0
Elevation (ft)
Distance (ft)
Calc. E. Ortega


Tiebacks = 1.5 Tieback load (min)
= 1.5x6.5 Kips/ft = 9.75 Kips/ft each
Say = 10 Kips/ft each
SAFETY FACTORS
Ordinary = 0.952
Bishop = 1.450
Janbu = 1.073

Avg = 1.158 Say = 1.1
SEISMIC
Horizontal = 1/3x0.51g = 0.17g
Vertical = 1/10 Horizontal = 0.017g
Description:
Comments:
File Name: 4-MRN 1 PM 10.95 2Tie Seis.slp
Last Saved Date: 11/1/2010
Last Saved Time: 2:27:19 PM
Analysis Method: Bishop
Direction of Slip Movement: Right to Left
Slip Surface Option: Fully Specified
P.W.P. Option: Ru Coefficients
Tension Crack Option: (none)
Seismic Coefficient: Horizontal and Vertical
1.450
Soil: 1
Description:
Soil Model: Mohr-Coulomb
Unit Weight: 130
Cohesion: 0
Phi: 24
Ru: 0.23
Pore-Air Pressure: 0
Elevation (ft)
490
480
470
460
450
440
430
420
410
400
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
Distance (ft)
Calc. E. Ortega

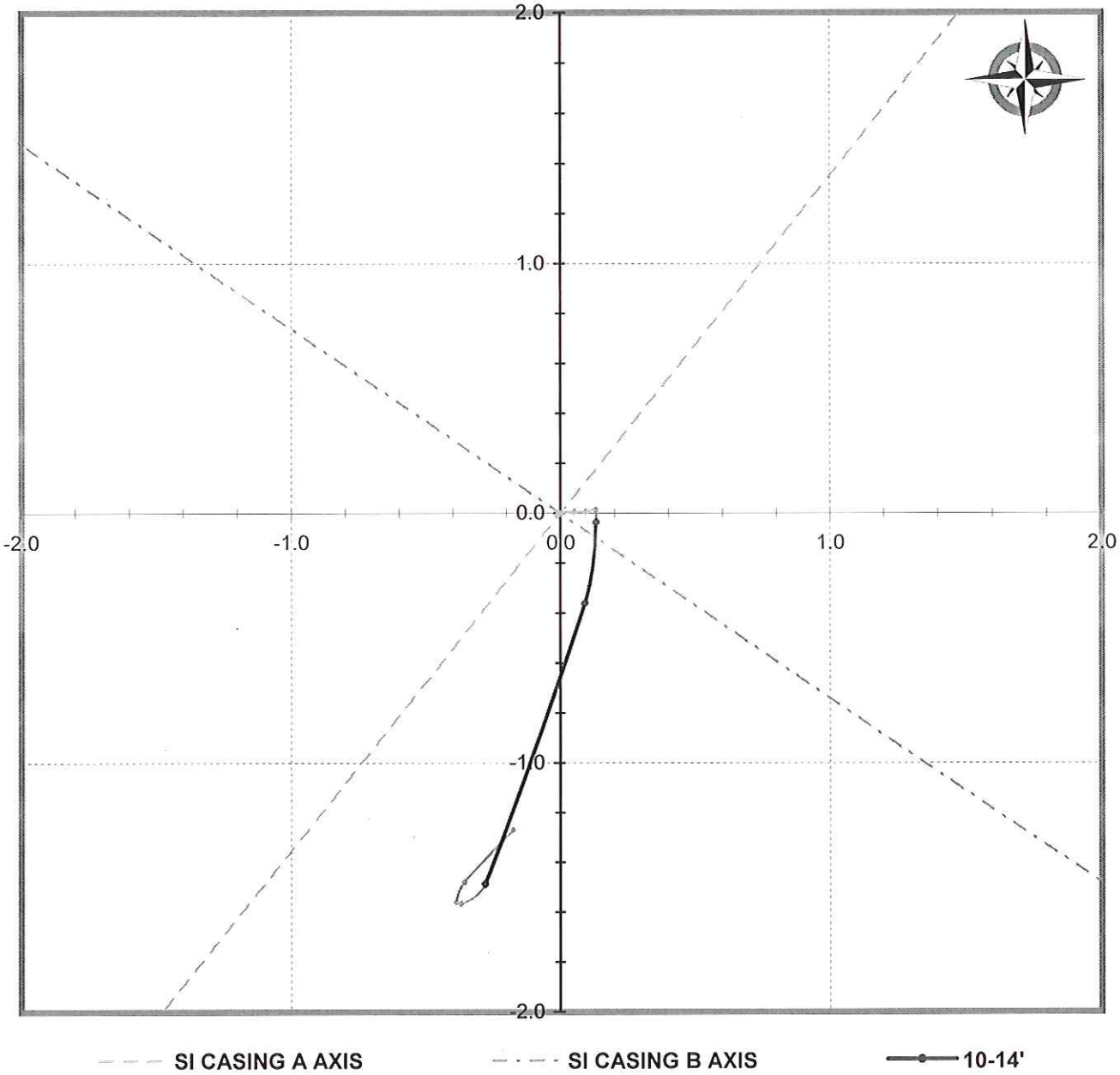
Appendix C

Slope Inclinometer (SI))

A Axis vs. B Axis Cumulative Displacement

Entire SI Casing Plotted Against True North

(bias shift applied)



SI-11
MARIN 1 SLIDES
04-MRN-1-PM 10.95
November 2, 2010

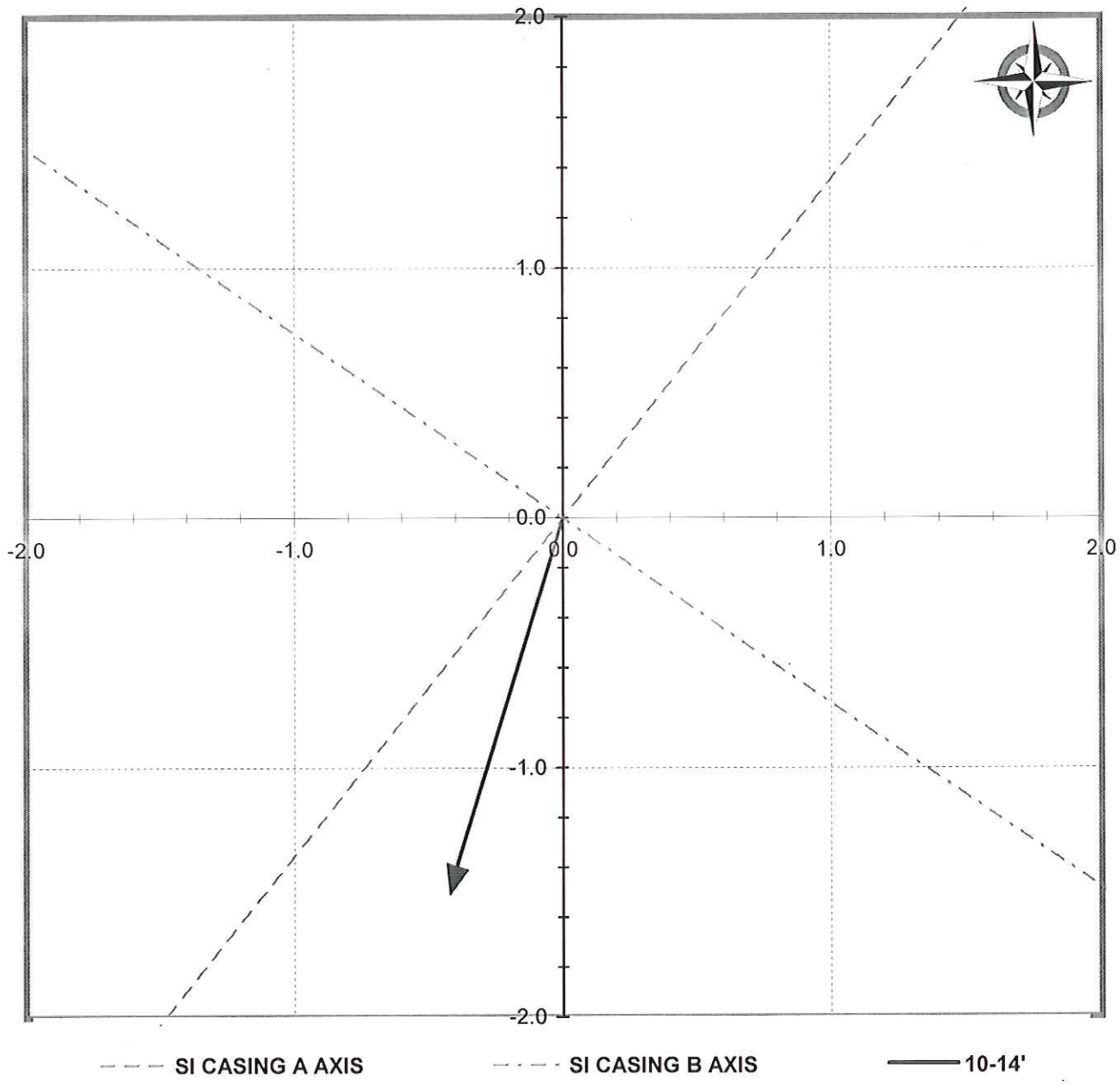
CA-Department of Transportation
DES-OGDW Orinda Field Station
15 Camino Pablo (925) 254-6504

LATITUDE: 37° 53' 12.3" N LONGITUDE: 122° 37' 25.8" W SI-11 AZIMUTH ON 3/11/09 OF 202° (MN) YIELDS A DECLINATION OF 14° 30' E

A Axis vs. B Axis Cumulative Displacement

Slide Plane Vector Plotted Against True North

(bias shift applied)

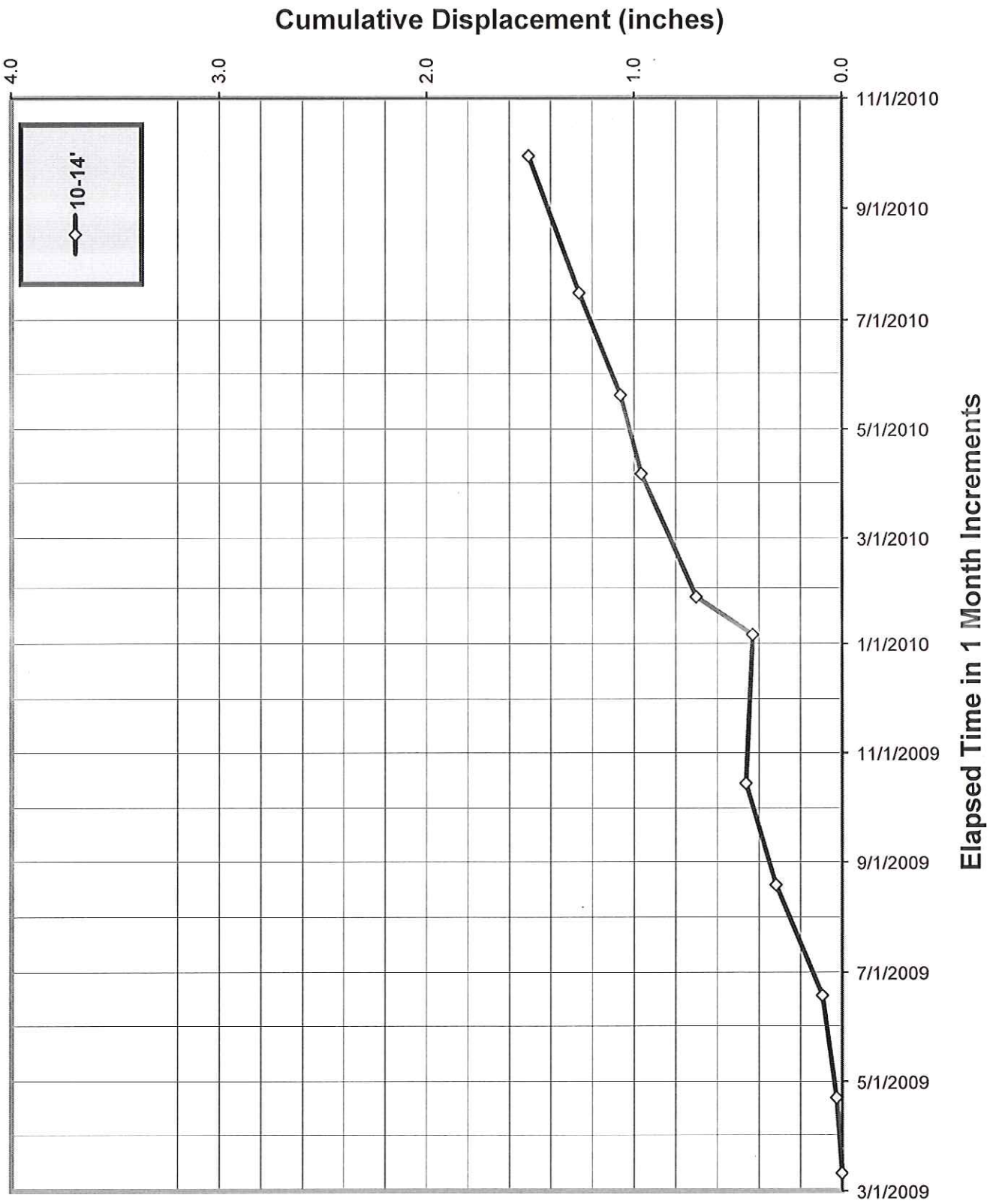


SI-11
MARIN 1 SLIDES
04-MRN-1-PM 10.95
November 2, 2010

CA-Department of Transportation
DES-OGDW Orinda Field Station
15 Camino Pablo (925) 254-6504

LATITUDE: 37° 53' 12.3" N LONGITUDE: 122° 37' 25.8" W SI-11 AZIMUTH ON 3/11/09 OF 202° (MN) YIELDS A DECLINATION OF 14° 30' I

Cumulative Vector Displacement Over Time



SI-11
MARIN 1 SLIDES
04-MRN-1-PM 10.95
November 2, 2010

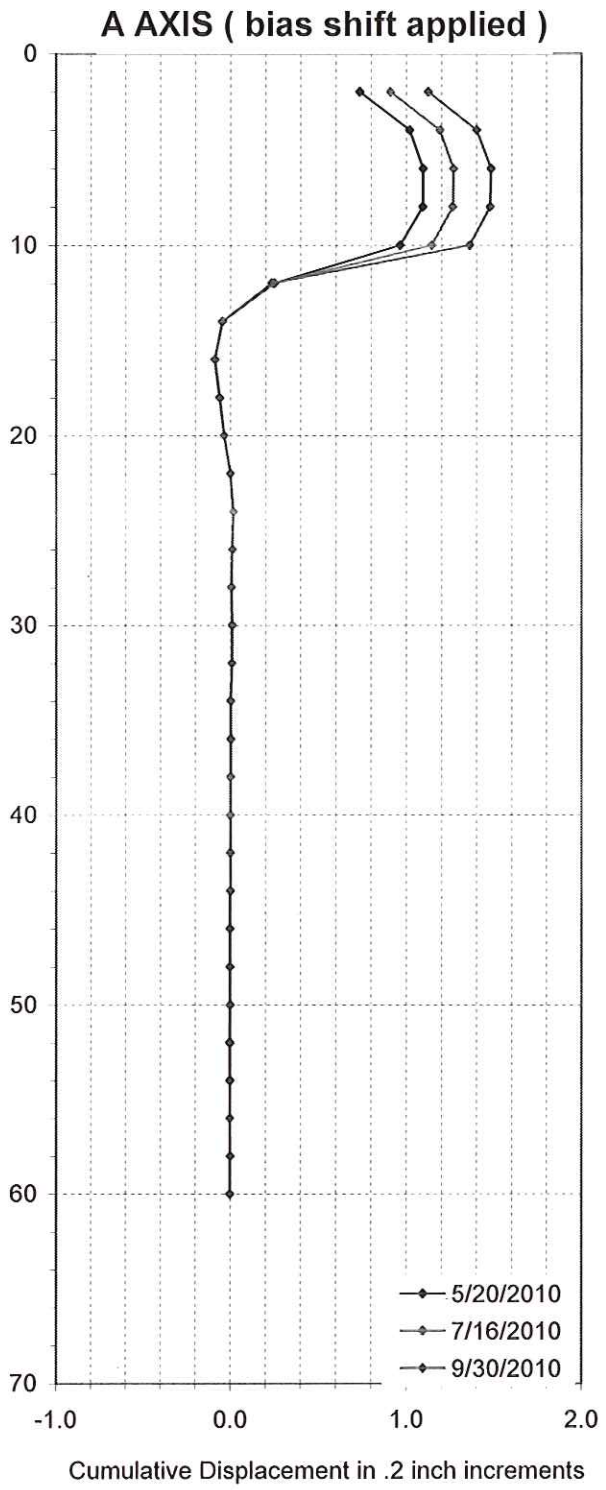
CA-Department of Transportation
DES-OGDW Orinda Field Station
15 Camino Pablo (925) 254-6504

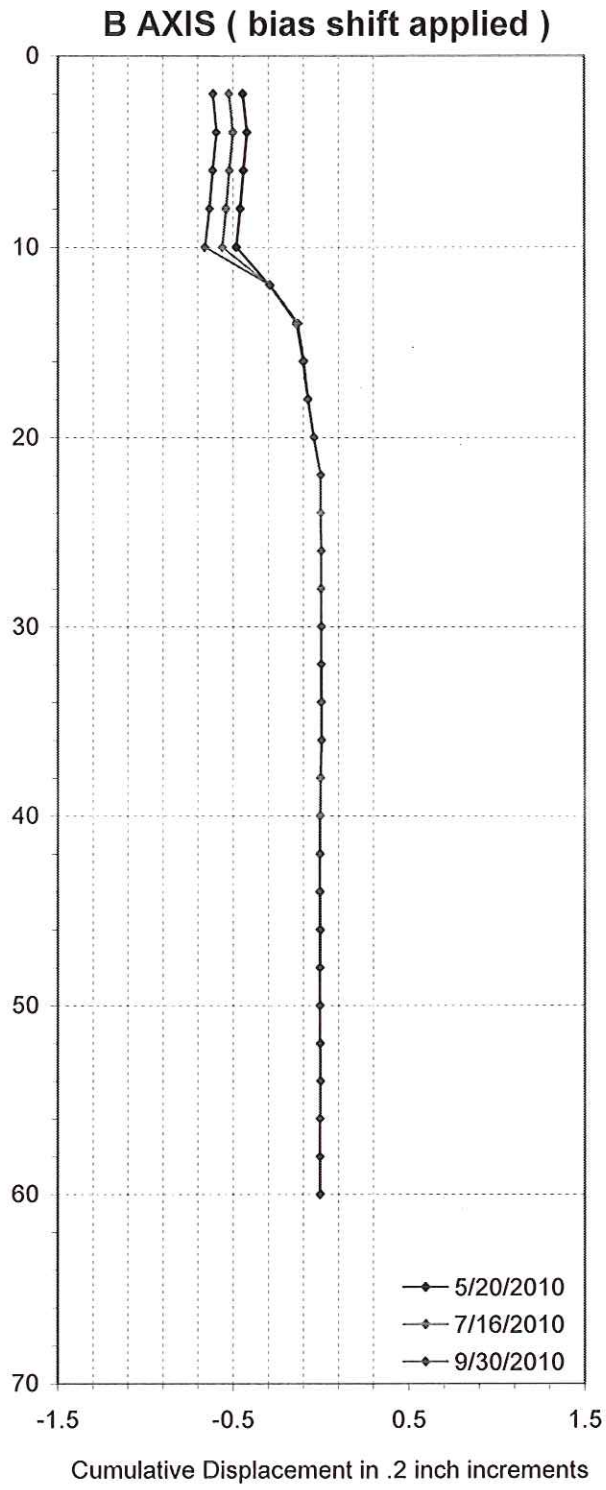
SI-11
MARIN 1 SLIDES
04-MRN-1-PM 10.95

10-14'

PERIOD	PERIOD LENGTH (DAYS)	PERIOD VECTOR DISP (IN)	PERIOD AVG DISP PER DAY(IN)	PERIOD RATE (IN/YEAR)	LIFETIME VECTOR DISP (IN)	VECTOR DIRECTION (° TN)
7/16/10 - 9/30/10	76	0.2430	0.0032	1.17	1.5073	195.85°
5/20/10 - 7/16/10	57	0.1998	0.0035	1.28	1.2642	196.82°
4/6/10 - 5/20/10	44	0.0991	0.0023	0.82	1.0644	197.90°
1/27/10 - 4/6/10	69	0.2629	0.0038	1.39	0.9654	197.49°
1/6/10 - 1/27/10	21	0.2723	0.0130	4.73	0.7024	200.40°
10/15/09 - 1/6/10	83	-0.0317	-0.0004	-0.14	0.4301	207.37°
8/19/09 - 10/15/09	57	0.1441	0.0025	0.92	0.4619	194.59°
6/18/09 - 8/19/09	62	0.2225	0.0036	1.31	0.3178	193.47°
4/22/09 - 6/18/09	57	0.0685	0.0012	0.44	0.0953	191.71°
3/11/09 - 4/22/09	42	0.0268	0.0006	0.23	0.0268	186.15°

Cumulative Displacement (inches) since 3/11/2009





SI-11
MARIN 1 SLIDES
04-MRN-1-PM 10.95
November 2, 2010

CA-Department of Transportation
DES-OGDW Orinda Field Station
15 Camino Pablo (925) 254-6504

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MR. JAY HAGHPARAST
PROJECT MANAGER

Date: December 23, 2013

Attention: Ahmad Ahmad

File: 04-MRN-1 PM 10.95
04-4S2201
EFIS# 0400001217-1
Tieback Soldier Pile Wall

From: EDUARDO ORTEGA
Assoc Materials & Research Engineer
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

MAHMOOD MOMENZADEH for
Chief, Branch C
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

Subject: Foundation Report Update

This memorandum updates our recommendations for the work at the front of the proposed retaining wall. The original recommendations have a bench in front of the retaining wall. Now due to new Coastal Commission requirements the wall has to be buried and the down slope at the front changes to 2H:1V. Previous Foundation Report dated April 14, 2011 is still valid to mitigate the above storm damage site. The project is located on Route 1 at PM 10.95, in the vicinity of Stinson Beach, in Marin County, California. The recommendations contained in this memorandum are based on the results of our subsurface explorations performed

RECOMMENDATIONS

I. - Embankment

The proposed wall will extend approximately from LOL Sta. 20+00 to LOL Sta. 22+20.29, based on the current plans. Since the wall alignment is offset from 8 to 17 ft from the existing edge of travel way, the wall construction will be in bottom-up fashion contrary to the top-down normally used for tieback walls. This requires developing a bench of at least 8 ft wide at the location of piles on the downhill slope to accommodate the construction equipments.

The downhill from the bench the slope of the fill will be built 2H:1V until intersect the original ground.

The entire area of slope in contact with the proposed fill extending at least 5 ft on the side need to be cleared from all vegetation and loose soils and be developed in multiple benches and steps to provide sufficient interlocking with the fill.

The temporary cuts for the bench shall be no steeper than 1V:1H The width and height of benches and steps shall not be shorter than 2 ft each.

The fill material shall be compacted in lifts no thicker than 8 inches to a relative compaction not less than 90% maximum density.

Due to potential slide, we recommend that the fill material be structural fill to prevent build up of ground water.

Slope face with Erosion Control Netting

The proposed embankment shall comply with chapter 19 of the 2010 Caltrans Standard Specifications and CalOSHA requirements.

Other safety measures, as needed, shall be implemented for safe operation of the equipments working on the bench.

II. - Buried wall (Fill on top of bench)

After completion of the wall the top of bench will be filled until the wall is buried.
We didn't design the wall for water pressure, so if an aesthetic face will be constructed we should do the following:

1.- Install Horizontal Drains in the back of both walls. Horizontal Drains will be installed @ 30 feet with a length of 30 feet at angle approx 5 degrees.

2.- A Geocomposite Drain System will be installed on the back of the walls.

3.- A collector pipe will be installed at the front of the walls to collect the water from Horizontal Drains and Geocomposite Drains.

4.- The collector pipe will be outlet at the end of the pipe with a 3 in diam. Drain pipe.

5.- Before the placement of the fill angular with pins that will hold geogrid will be installed every 2 vertical feet of wall. Ask Structure Design for the deatail.

6.- Geogrid (1200 lbs/ft) will be placed every 2 vertical feet of fill and will be holded by angular with pins.

7.- The fill material shall be compacted in lifts no thicker than 8 inches to a relative compaction not less than 90% maximum density.

8.- Due to potential slide, we recommend that the fill material be structural fill to prevent build up of ground water.

9.- Slope face with Erosion Control Netting

10.- See attached X Section and Erosion Control Netting

* * * * *

Should you have any questions, please call me at (510) 286-4821.

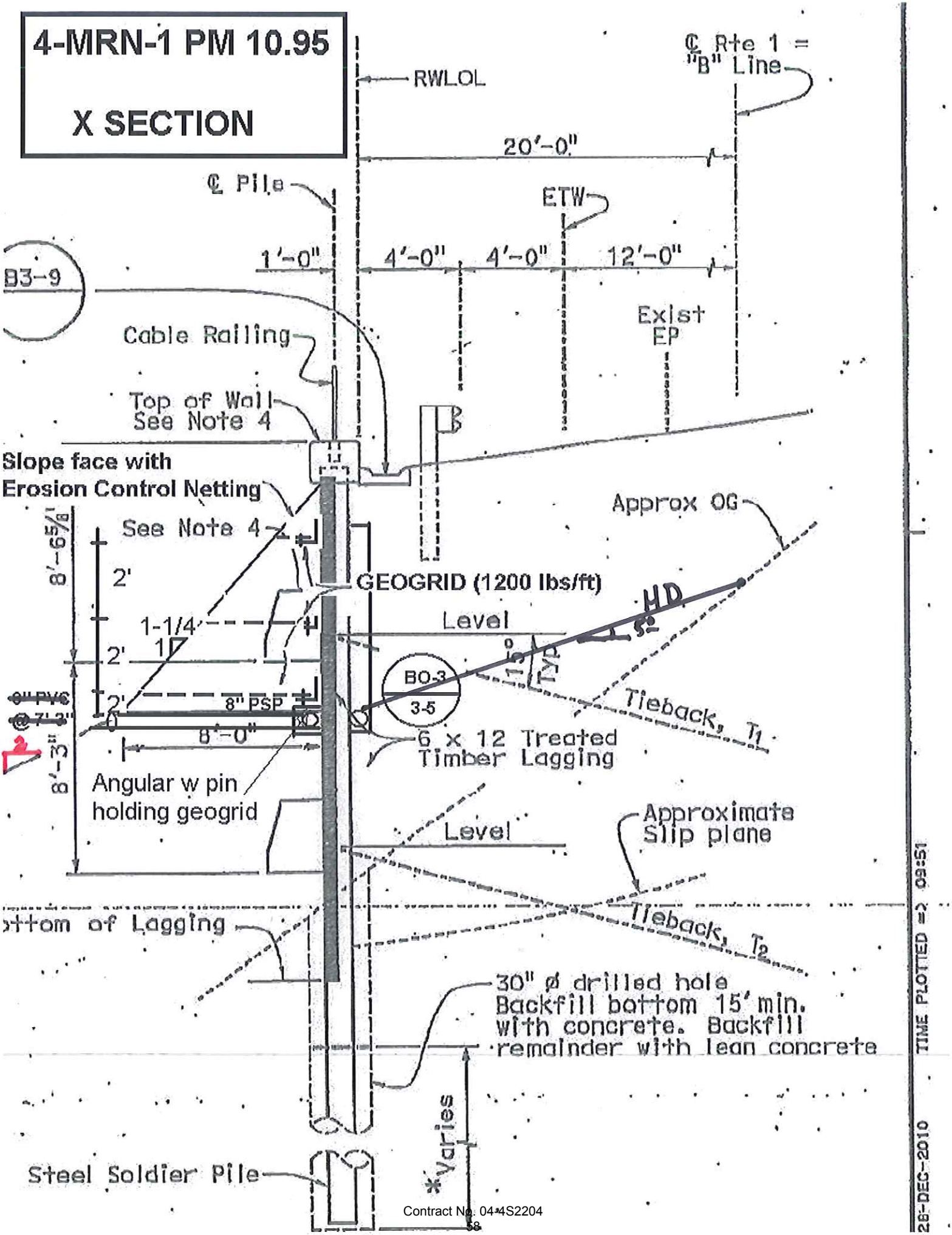
Attachments:

c: TPokrywka, MMomenzadeh, E☺rtega, Dwight_Manlulu, Shira_Rajendra, Melanie_Brent, RE_Pending_File@dot.ca.gov, John_Stayton. Tinu_Mishra

Eduardo ☺rtega/eo/4S2201 FR Update.docx

4-MRN-1 PM 10.95

X SECTION



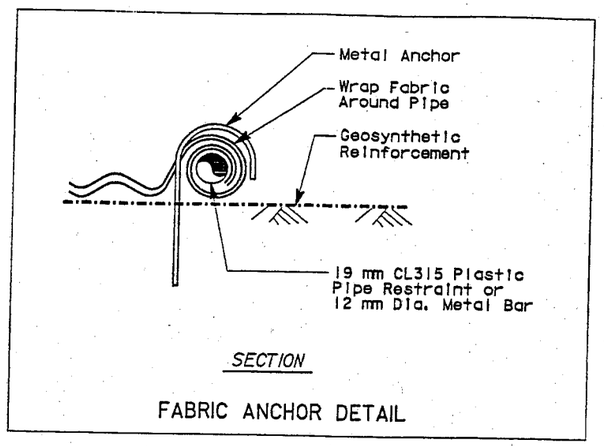
DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Sol	80	30.6		

Robert B. Schott
LICENSED LANDSCAPE ARCHITECT

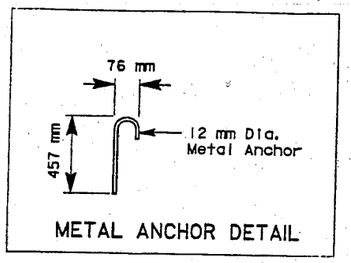
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

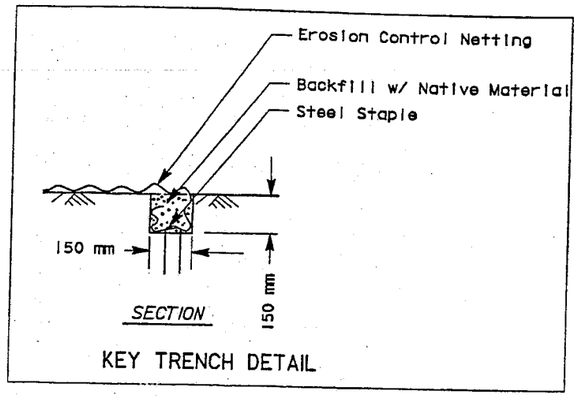
LICENSED LANDSCAPE ARCHITECT ROBERT B. SCHOTT No. 2522 — 11-30-02 — 12-06-00 — STATE OF CALIFORNIA



FABRIC ANCHOR DETAIL



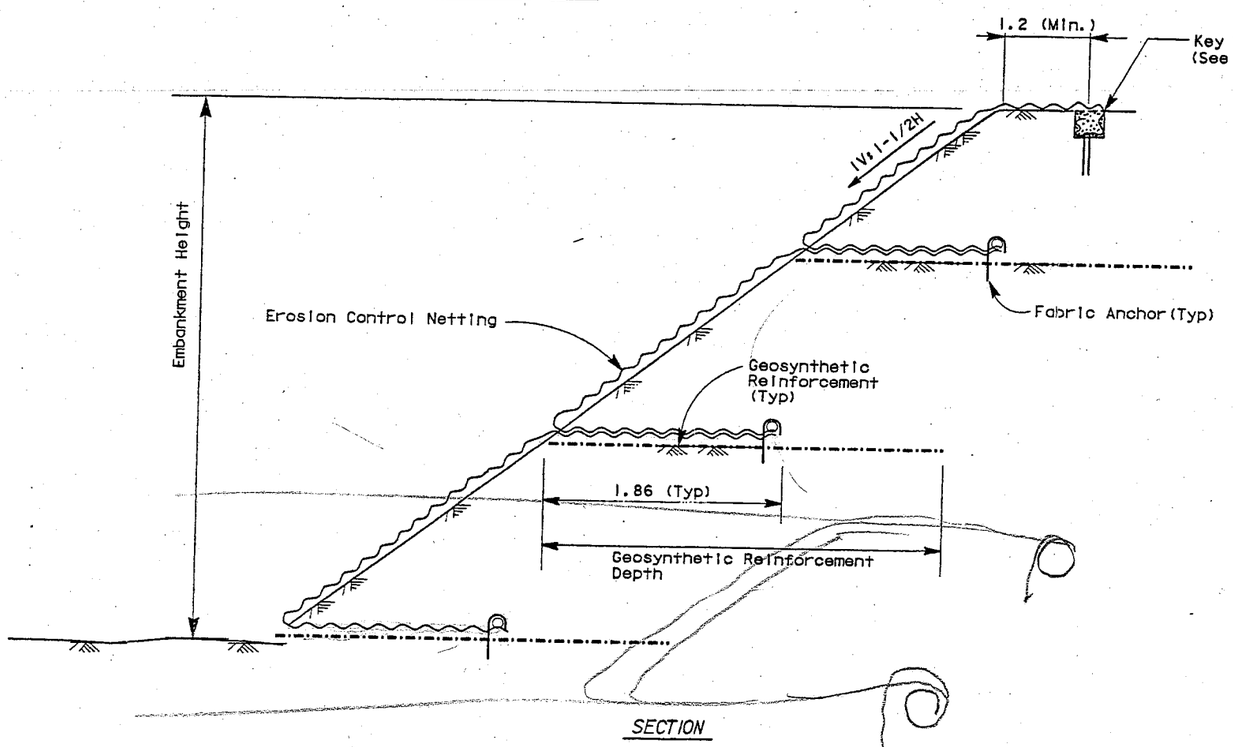
METAL ANCHOR DETAIL



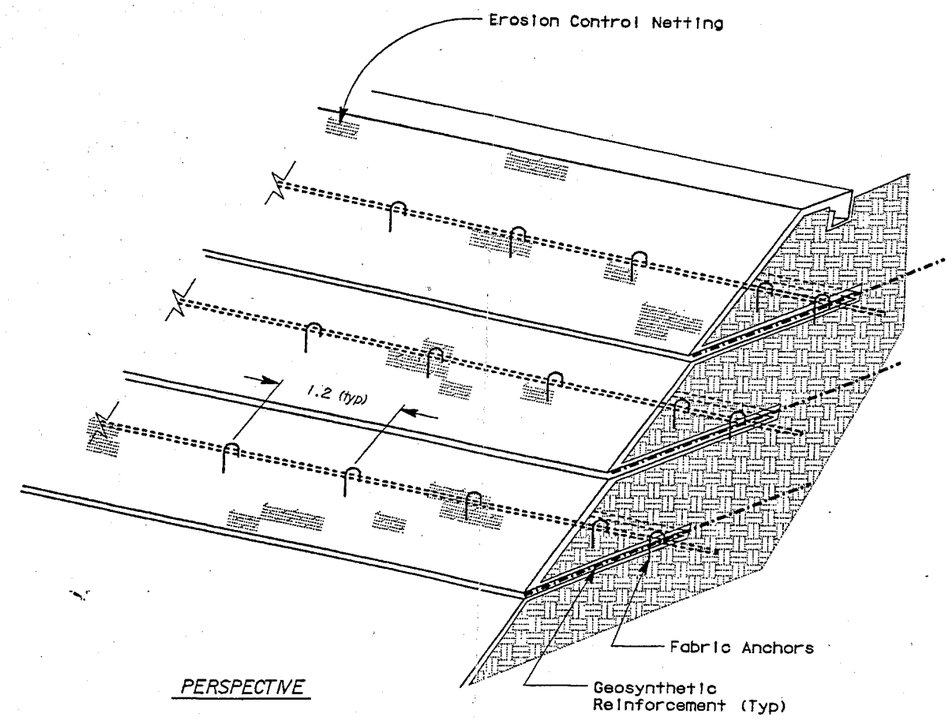
KEY TRENCH DETAIL

NOTES

1. Fabric wrap required on all embankment slope surfaces 1:1-1/2 and steeper with geosynthetic reinforcement.
2. Install erosion control netting in conjunction with installation of geosynthetic reinforcement.
3. Anchor erosion control netting through geosynthetic reinforcement at all locations.



EMBANKMENT STABILIZATION FABRIC FOR EMBANKMENT SLOPES



This sheet accurate for Erosion/Water Pollution Control only.

All Dimensions are in Meters unless otherwise shown

CONSTRUCTION DETAILS

NO SCALE

C-5

Caltrans LANDSCAPE ARCHITECTURE

PROJECT LANDSCAPE ARCHITECT: ROBERT B. SCHOTT

CALCULATED/DESIGNED BY: KDO — CHECKED BY: RBS — DATE — REVISED BY — DATE REVISED

LAST REVISION 03-24-00 — DATE PLOTTED => 27-Dec-2000 — TIME PLOTTED => 14:27

USER ID: t4imerc0WKODE — FILE: /project/1mika/271901/427190a05.dgn — DATE: Wed Dec 27 2000 — TIME: 14:28

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS 0 20 40 60 80 — USERNAME => t4imerco — DGN FILE => 427190g0527142200

Contract No. 04-4S2204

CU 04224 — EA 271901

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Serious drought,
Help save water!

To: MR. ALI ALQATAMI
Senior Transportation Engineer
Central Region, Design I

Date: December 12, 2014

Attention: Ahmad Ahmad

File: 04-MRN-1 PM 10.95
04-4S2201
EFIS# 0400001217-1
Tieback Soldier Pile Wall

From: EDUARDO ORTEGA
Assoc Materials & Research Engineer
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

MAHMOOD MOMENZADEH
Chief, Branch C
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

RIFAAT NASHED
Engineering Geologist
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

CHRIS RISDEN
Chief, Branch B
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

Subject: FOUNDATION REPORT UPDATE

This memorandum updates our recommendations dated December 23, 2013 for the work at the front of the proposed retaining wall. The original recommendations have a bench infront of the retaining wall. Now due to new Coastal Commission requirements, the wall has to be buried and the down slope at the front changes to 2H:1V. Previous Foundation Report dated April 14, 2011 is still valid to mitigate the above storm damage site. The project is located on Route 1 at PM 10.95, in the vicinity of Stinson Beach, in Marin County, California. The recommendations contained in this memorandum are based on the results of our subsurface explorations performed.

RECOMMENDATIONS

I. Backfill and Site Preparation

The proposed wall will extend approximately from LOL Sta. 20+00 to LOL Sta. 22+20.29, based on the current plans. Since the wall alignment is offset from 8 to 17 ft from the existing edge of travel way, the wall construction will be in bottom-up fashion contrary to the top-down normally used for tieback walls. This requires developing a bench of at least 8 ft wide at the location of piles on the downhill slope to accommodate the construction equipments.

The downhill from the bench slope of the fill will be built 2H:1V until intersect the original ground.

The entire area of slope in contact with the proposed fill extending at least 5 ft on the side need to be cleared from all vegetation and loose soils and be developed in multiple benches and steps to provide sufficient interlocking with the fill.

The temporary cuts for the bench shall be no steeper than 1V:1H. The width and height of benches and steps shall not be shorter than 2 ft each.

Due to potential slide, we recommend that the fill material behind the wall be structured backfill to prevent build up of groundwater. The backfill material shall be compacted in lifts no thicker than 8 inches to a relative compaction not less than 95% maximum density.

The proposed embankment shall comply with Chapter 19 of the 2010 Caltrans Standard Specifications and Cal-OSHA requirements.

Other safety measures, as needed, shall be implemented for safe operation of the equipments working on the bench.

II. Fill in Front of Wall

After the wall completion fill is placed infront of the wall and compacted to final slope no steeper than 2(H):1(V). The fill consist of Class 3 permeable material according to Section 68-2.02F(4) and Structure Backfill according to Section 19-3.02B of the 2010 Caltrans Standard Specifications, as shown on the attached plan.

The fill material shall be compacted in lifts no thicker than 8 inches to a relative compaction not less than 90% maximum density.

A 4 inches perforated PVC collector pipe shall be installed at the front of the walls within the Class 3 permeable material to collect the water. The collector pipe will be outlet at the end of the pipe with a 4 inches diameter drain pipe.

Provide slope face with Erosion Control Netting as shown typical on attached plan. Contact District 4 Landscape Architect for updated details and recommendations.

* * * * *

Should you have any questions, please call me at (510) 286-4821.

Attachments:

c: TPokrywka, MMomenzadeh, E☺rtega, Henry_Seto, Ruth Fernandes, Melanie_Brent, RE_Pending_File@dot.ca.gov, John_McMillan. Tom_Whitman Tinu_Mishra

Eduardo ☺rtega/mm/4S2201 FR Update Dec 2014.docx

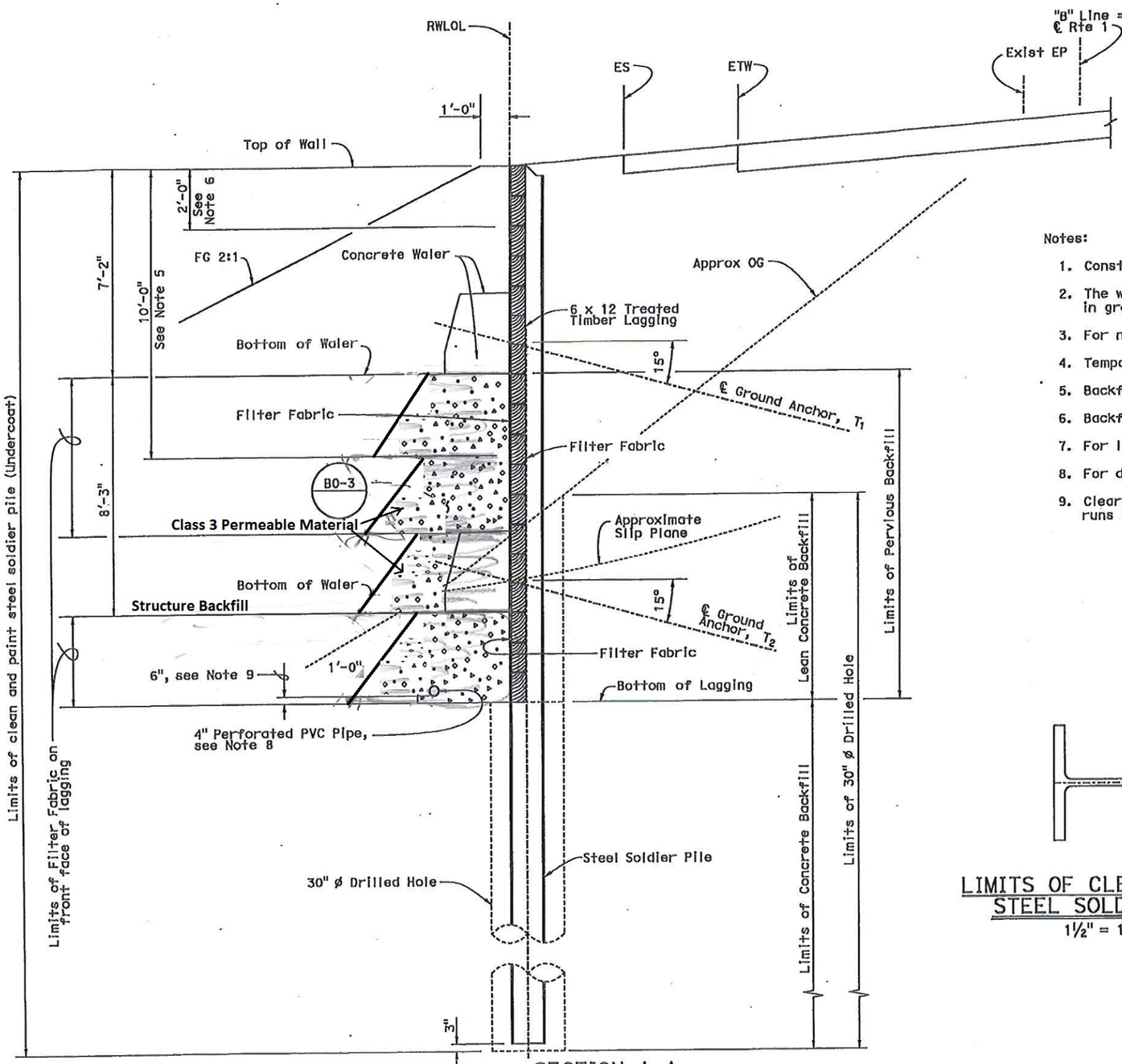
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	1			

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER Philip E. Lutz No. C55839 Exp. 12-31-14 CIVIL STATE OF CALIFORNIA

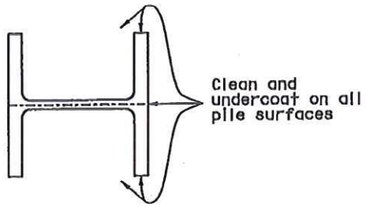


SECTION A-A

½" = 1'-0"

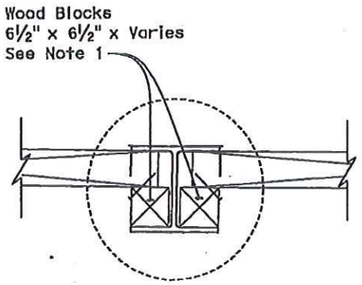
Notes:

1. Construct working bench and install piles and timber lagging.
2. The waler for ground anchor Level T_1 must be in place prior to stressing of ground anchor in ground anchor Level T_2.
3. For number and size of lagging members, see "GENERAL PLAN" and "STRUCTURE PLAN" sheets.
4. Temporary Railing Type K not shown.
5. Backfill to 10'-0" below top of wall prior to stressing of T_2 ground anchors.
6. Backfill to 2'-0" below top of wall prior to stressing of T_1 ground anchors.
7. For location of "Section A-A", see "STRUCTURE PLAN" sheet.
8. For drainage details, see "DRAINAGE PLAN" sheet.
9. Clearance from the bottom of pervious backfill material to edge of PVC pipe shall be 6" where pipe runs horizontally. Clearance varies where the slope of pipe increases.



LIMITS OF CLEAN & PAINT STEEL SOLDIER PILE

1½" = 1'



PART PLAN OF LAGGING MEMBER

1" = 1'-0"

DESIGN	BY P. Lutz	CHECKED R. Candiotti	
DETAILS	BY P. Lutz/D. Elliott	CHECKED R. Candiotti	Contract No. 04-452204
QUANTITIES	BY P. Lutz	CHECKED R. Candiotti	

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9

BRIDGE NO. 27E0028

POST MILE 10.95

DIPSEA TRAIL RETAINING WALL

TYPICAL SECTION NO. 1

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

UNIT: 3594 PROJECT NUMBER & PHASE: 04000012171 CONTRACT NO.: 04-452201

DIRECGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES

SHEET 5 OF 14

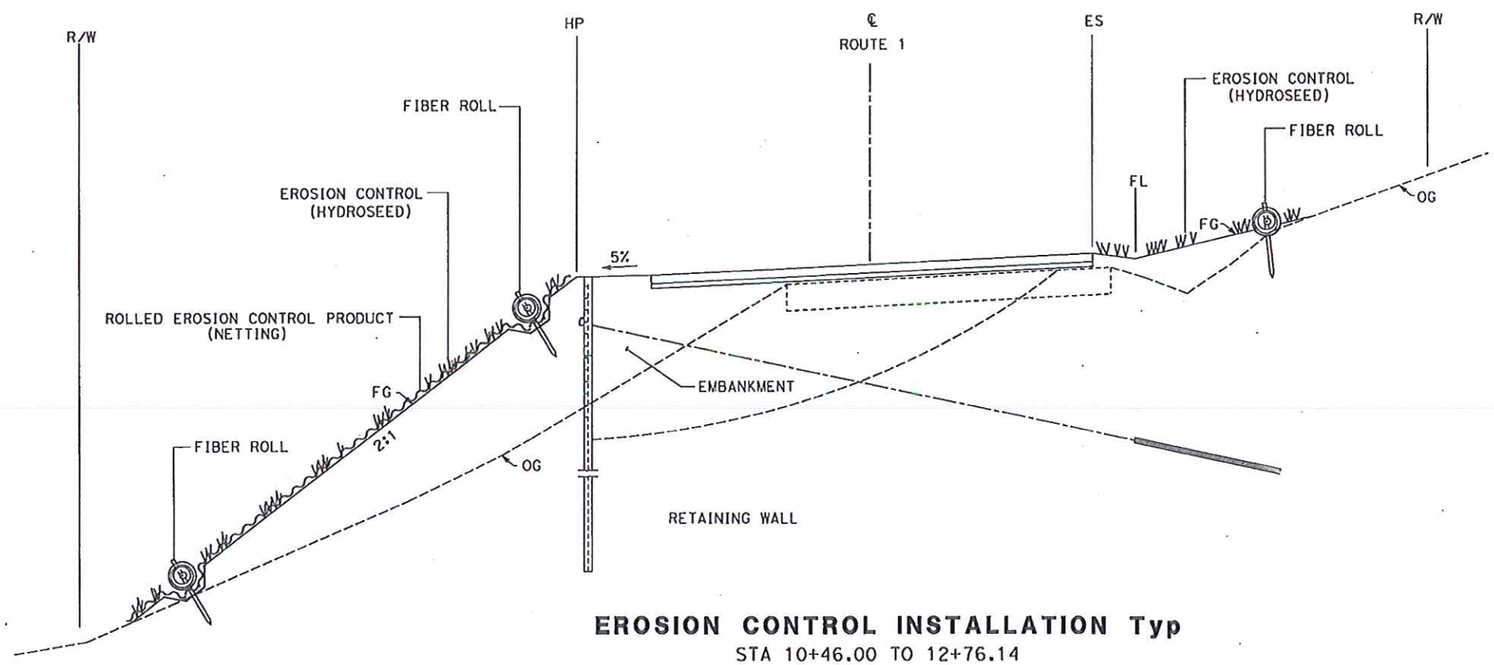
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	1	11.0		

LICENSED LANDSCAPE ARCHITECT

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LICENSED LANDSCAPE ARCHITECT SALLY BANG No. 3298 SIGNATURE 11-30-11 EXPIRATION DATE 04-11-11 DATE STATE OF CALIFORNIA



EROSION CONTROL INSTALLATION Typ

STA 10+46.00 TO 12+76.14

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY

EROSION CONTROL DETAIL

NO SCALE

ECD-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	SENIOR LANDSCAPE ARCHITECT	CALCULATED-DESIGNED BY	SALLY BANG	REVISED BY	
Caltrans WATER QUALITY	DAVID YAM	CHECKED BY	ANGELA KWAN	DATE REVISED	

LAST REVISION 04-11-11 | DATE PLOTTED => 3/10/2014 TIME PLOTTED => 3:53:11 PM

SOIL AND GROUNDWATER SAMPLING REPORT

STATE ROUTE 1
STORM DAMAGE REPAIR PROJECT
MARIN COUNTY, CALIFORNIA

PREPARED FOR:
CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING
111 GRAND AVENUE, MS8C
OAKLAND, CA 94612

PREPARED BY:
GEOCON CONSULTANTS, INC.
6671 BRISA STREET
LIVERMORE, CA 94550

GEOCON PROJECT No. E8560-06-19
CALTRANS PROJECT ID 04-0000-1217-1
CALTRANS EA 04-4S2201

APRIL 2011

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- 1.2 General Objectives 1

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APPENDICES

A. Soil Boring Permit
B. Soil Boring Logs
C. Laboratory Reports and Chain-of-custody Documentation

REPORT LIMITATIONS

This report has been prepared exclusively for the State of California Department of Transportation (Caltrans) District 4. The information contained herein is only valid as of the date of the report and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. Geocon strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

GEOCON CONSULTANTS, INC.

PROFESSIONAL GEOLOGIST
JOHN W. LOVE
No. 6315
Expires 11-30-12
STATE OF CALIFORNIA

John Love, PG	Richard Day, CEG, CHG
Sr. Project Geologist	Project Manager

CALIFORNIA DEPARTMENT OF TRANSPORTATION – DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING

Reviewed By:	Recommended By:	Approved By:
Max Raafati, PE	Ray Boyer, PE	Allen Baradar, PE, REA
Task Order Manager	District Branch Chief	District Office Chief

PROJECT TEAM

Contact	Affiliation	Responsibility
Romy Fuentes, PE 510.622.8803 510.622.0198 fax romy_f_fuentes@dot.ca.gov	Caltrans – District 4 Consultant Services 111 Grand Avenue, MS7A Oakland, California 94612	Contract Manager
Max Raafati, PE 510.286.5657 510.286.4563 fax Max_Raafati@dot.ca.gov	Caltrans – District 4 Environmental Engineering 111 Grand Avenue, MS8C Oakland, California 94612	Task Order Manager
Richard Day, CEG, CHG John Love, PG 925.371.5900 925.371.5915 fax livermore@geoconinc.com	Geocon Consultants, Inc. 6671 Brisa Street Livermore, CA 94550 (*Caltrans Contractor*)	Project Management Sample Collection Field QA/QC Investigation Report
Christopher Pruner (925) 313-5800 (925) 313-0302 fax cpruner@greggdrilling.com	Gregg Drilling and Testing, Inc. 950 Howe Road Martinez, CA 94553 *(Geocon Subcontractor)*	Driller
Terri Rodgers (408) 436-1127 (408) 436-1675 fax trodgers@dmtraffic.com	D & M Traffic Services 845 Reed Street Santa Clara, CA 95050 *(Geocon Subcontractor)*	Traffic Control
Doug Krause, CIH 530.758.6397 530.758.6506 fax dskrause@pacbell.net	Krause & Associates 216 F. Street, Suite 162 Davis, CA 95616 (*Geocon Subcontractor*)	Health and Safety
Diane Galvan 562.989.4045 562.989.4040 fax diane@atlglobal.com	Advanced Technology Laboratories 1510 E. 33rd Street Signal Hill, CA 90807 (*Geocon Subcontractor*)	Soil Sample Analysis
Dan Kocher 510.895.3675 510.895.3680 milpitaslab@emsl.com	EMSL Analytical Inc. 2235 Polvorosa Avenue, Suite 230 San Leandro, CA 94577 (*Geocon Subcontractor*)	Asbestos Analysis

SOIL AND GROUNDWATER SAMPLING REPORT

1.0 INTRODUCTION

This *Soil and Groundwater Sampling Report* for the State Route 1 Storm Repair Project was prepared by Geocon Consultants, Inc. under California Department of Transportation (Caltrans) Contract No. 04A3578, Task Order No. 19 (TO-19), and Expenditure Authorization 04-4S2201.

1.1 Project Description and Proposed Improvements

The project location is an approximate 230-foot-long section of the south shoulder of State Route 1 (SR-1) in Marin County between Post Mile (PM) 10.95 and 11.00, approximately 1.1 miles south of Stinson Beach, California.

Caltrans is proposing to excavate soils and materials along the southbound shoulder of SR-1 in conjunction with the widening of the traffic lanes and shoulder area, and construction of an approximately 230-foot-long soldier pile tieback retaining wall. The improvements are designed to stabilize the road surface from further landslide movement along this portion of the highway. The project location is depicted on the Vicinity Map, Figure 1.

1.2 General Objectives

The purpose of the soil and groundwater sampling was to evaluate concentrations of California Assessment Manual (CAM) 17 metals, total petroleum hydrocarbons as gasoline (TPHg) and diesel (TPHd), volatile organic compounds (VOCs), and naturally occurring asbestos (NOA) within the proposed excavation area.

The information obtained from this investigation will be used by Caltrans to evaluate soil disposal costs and identify health and safety concerns.

2.0 BACKGROUND

2.1 Hazardous Waste Determination Criteria

Regulatory criteria to classify a waste as California hazardous for handling and disposal purposes are contained in the CCR, Title 22, Division 4.5, Chapter 11, Article 3, §66261.24. Criteria to classify a waste as Resource, Conservation, and Recovery Act (RCRA) hazardous are contained in Chapter 40 of the Code of Federal Regulations (40 CFR), Section 261.

For waste containing metals, the waste is classified as California hazardous when: 1) the total metal content exceeds the respective Total Threshold Limit Concentration (TTLC); or 2) the soluble metal content exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard

Waste Extraction Test (WET). A waste has the potential of exceeding the STLC when the waste's total metal content is greater than or equal to ten times the respective STLC value since the WET uses a 1:10 dilution ratio. Hence, when a total metal is detected at a concentration greater than or equal to ten times the respective STLC, and assuming that 100 percent of the total metals are soluble, soluble metal analysis is required. A material is classified as RCRA hazardous, or Federal hazardous, when the soluble metal content exceeds the Federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP).

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability and corrosivity; however, for the purposes of this investigation, toxicity (i.e., lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or other criteria. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

2.2 Environmental Screening Levels

The San Francisco Bay Regional Water Quality Control Board (SFRWQCB) has prepared a technical report entitled *Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater, Interim Final* (May 2008), which presents Environmental Screening Levels (ESLs) for soil, groundwater, soil gas, and surface water, to assist in evaluating sites impacted by releases of hazardous chemicals. The ESLs are conservative values for more than 100 commonly detected contaminants, which may be used to compare with environmental data collected at a site. ESLs are strictly risk assessment tools and "not regulatory clean up standards." The presence of a chemical at concentrations in excess of an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is or "may be" warranted (SFRWQCB, 2008).

The most conservative ESL tables were used for this characterization: Table A – Shallow Soil (≤3 meters below ground surface; bgs) – Groundwater is a Current or Potential Source of Drinking Water, and Table K-3 – Direct Exposure Screening Levels, Construction/Trench Worker Exposure Scenario. The respective ESLs are listed at the end of Tables 3, 4 and 6 for comparative purposes.

2.3 Naturally Occurring Asbestos

As defined in current California Air Resources Board (CARB) rules, serpentine material refers to any material that contains at least 10% serpentine, and asbestos-containing serpentine refers to serpentine materials with an asbestos content greater than 5% as determined by CARB Test Method 435 (CARB 435). The use of serpentine material for road surfacing is prohibited in California by Title 17 of the California Code of Regulations (CCR) Section 93106, Asbestos Airborne Toxic Control Measure (ATCM) for Surfacing Application (ATCM 93106), unless the material has been tested and determined to have an asbestos content of less than 0.25%. Materials found to contain asbestos of 0.25% or more are considered to be designated waste if transported offsite, requiring disposal at a landfill facility designated to accept asbestos waste. Alternatively, asbestos-containing materials may be reused onsite if buried beneath a minimum 6 inches of soil.

The CARB specifies mitigation practices for construction, grading, quarrying, and surface mining operations that contain natural occurrences of asbestos outlined in Title 17, Section 93105, Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations (ATCM 93105). Based on Part (e) Subpart (2) of ATCM 93105 an asbestos dust mitigation plan is required and must be implemented for a project if NOA is disturbed after the start of construction. Additionally, ATCM 93105 specifies that the air pollution control district (APCD) must be notified and an asbestos dust mitigation plan submitted to the APCD. The ATCM states that air monitoring may be required on the property. NOA potentially posses a health hazard when it becomes an airborne particulate.

The construction/maintenance activities mentioned above could disturb NOA-laden debris and soil, thereby potentially creating an airborne hazard. Mitigation practices can reduce the risk of exposure to airborne NOA containing dust. Dust suppression practices include wetting the materials being disturbed and wearing approved respirators with high-efficiency particulate air (HEPA) filters during construction activities.

3.0 SCOPE OF SERVICES

The scope of services requested by Caltrans under TO-19, EA 04-4S2201 included the following:

3.1 Pre-field Activities

- Prepared a site-specific *Health and Safety Plan* to provide guidelines on the use of personal protective equipment and the health and safety procedures implemented during the field activities.
- Obtained a soil boring permit from the County of Marin Environmental Health Services. A copy of the permit is provided in Appendix A.

- Provided a minimum of 48-hours' notice to the local public utilities via Underground Service Alert prior to job site mobilization.
- Retained the services of Gregg Drilling and Testing, Inc., a Caltrans-approved drilling contractor.
- Retained the services of D & M Traffic Services, a Caltrans-approved traffic control company.
- Retained the services of Advanced Technology Laboratories (ATL), a Caltrans-approved and California-certified analytical laboratory, to perform the chemical analyses of soil and groundwater samples.
- Retained the services of EMSL, Inc., a Caltrans-approved and California-certified analytical laboratory, to perform the asbestos analysis of soil samples.

3.2 Field Activities

The soil and groundwater sampling was conducted on April 4, 2011. The following field activities were performed during the sampling efforts:

- Advanced three soil borings along the southbound shoulder of SR-1 within the 230-foot section of roadway where the new retaining wall is planned for construction.
- Collected 13 soil samples for laboratory analysis. Select soil samples were analyzed for CAM 17 metals, total lead, pH, TPHg, TPHd, and VOCs.
- Collected groundwater samples from one boring location (B1) and one existing monitoring well location (MW). The groundwater samples were analyzed for TPHg, TPHd, and VOCs.
- Transported samples to California-certified environmental laboratories for analysis under standard chain-of-custody (COC) documentation.

4.0 INVESTIGATIVE METHODS

4.1 Sampling Procedures

Soil samples were collected from three boring locations identified by the Caltrans TO Manager. Geocon recorded the boring locations using Differential Global Positioning System (DGPS) equipment. Boring coordinates are presented on Table 1, and boring locations are shown on the Site Plan, Figure 2.

The three soil borings were advanced using a track-mounted (Rhino) drill rig equipped with 6-inch-diameter hollow-stem augers. Soil samples were collected using an 18-inch-long by 2-inch-diameter split-spoon sampler lined with three stainless steel sample tubes. The sampler was hydraulically driven into the ground at target sample depths using threaded-together one-inch-diameter steel drive rods. Once soil samples were collected from the target sample depths, the stainless steel sample tube from

the appropriate depth were removed from the split spoon sampler, labeled, capped with Teflon tape and plastic end caps, and placed in a chest cooled with ice for storage and transport to the analytical laboratory.

A grab-groundwater sample was collected from boring B1 by lowering a disposable polyethylene bailer through the hollow-stem augers, retrieving groundwater to ground surface, and then transferring the groundwater into the appropriate sample containers. A groundwater sample was also collected from an existing monitoring well situated approximately 5 feet north of boring B2 using a polyethylene bailer. Upon sample collection, the groundwater samples were transferred into the appropriate sample containers, labeled, and placed in a chest cooled with ice for storage and transport to the analytical laboratory.

Soil and groundwater samples were transported to a Caltrans-approved, California-certified environmental laboratories using standard COC documentation. After soil and groundwater samples were collected at each boring location, the boreholes were backfilled with Portland cement to within approximately one foot of ground surface. The remainder of each borehole was backfilled to ground surface with concrete.

The field quality assurance/quality control (QA/QC) program consisted of decontaminating reusable sampling equipment between each sample location and analyzing trip blanks and equipment blanks. The stainless steel samplers and push-rods were decontaminated between each sample location using a non-phosphate detergent solution followed by a double rinse with deionized water.

One trip blank accompanied the ice chest used to store and transport the groundwater samples to the analytical laboratory. The trip blank was analyzed for TPHg and used to confirm that groundwater samples were not impacted by external contaminants during storage and transport to the analytical laboratory

One equipment blank was collected during the field sampling. The equipment blank was collected by pouring deionized water through the 18-inch-long split-spoon sampler after it had been decontaminated between sample locations, and capturing the water in 500-milliliter polyethylene containers preserved with nitric acid. The equipment blank was analyzed for total lead, and the results were used to confirm that sample results from each borehole were not compromised by potential cross contamination from a previous boring location due to improper equipment decontamination.

Excess soil derived from the sample collection process was transported back to Geocon’s warehouse in Livermore, pending disposal. The small volume of rinseate fluids generated during the field sampling was incorporated with the Portland cement used to backfill the borings.

4.2 Laboratory Analyses

Laboratory analyses were performed by ATL and EMSL under 48-hour turn-around-time.

Soil samples were analyzed as follows:

- Six samples for CAM 17 metals using Environmental Protection Agency (EPA) Methods 6010 ICAP and 7471A.
- Twelve samples for total lead using EPA Method 6010 ICAP.
- Four samples with total chromium concentrations greater than ten times the STLC value of 5.0 mg/l for hexavalent chromium were further analyzed for WET chromium.
- Two samples with total chromium concentrations greater than 100 mg/kg were further analyzed for TCLP chromium.
- Two samples with total nickel concentrations greater than ten times the STLC value of 20 mg/l were further analyzed for WET nickel.
- One sample with a WET nickel concentration exceeding the STLC of 20 mg/l was further analyzed for TCLP nickel.
- Three samples collected from the 1- to 1.5-foot depth interval for TPHd following EPA Method 8015B.
- Three samples for TPHg following EPA Method 8015B.
- Three samples for NOA using CARB Test Method 435.
- Three samples for pH using EPA Method 9045.

The two groundwater samples were analyzed for TPHd, TPHg using EPA Method 8015B, and VOCs using EPA Method 8260B.

QA/QC water samples were analyzed as follows:

- One trip blank sample for TPHg using EPA Method 8015B.
- One equipment blank sample for total lead using EPA Method 6010 ICAP.

4.3 Laboratory QA/QC

QA/QC procedures were performed for each method of analysis with specificity for each analyte listed in the test method. The laboratory QA/QC procedures included the following:

- One method blank for every ten samples, batch of samples or type of matrix, whichever was more frequent.

- One sample analyzed in duplicate for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One spiked sample for every ten samples, batch of samples or type of matrix; whichever was more frequent, with spike made at ten times the detection limit or at the analyte level.

Prior to submitting the samples to the laboratory, the COC documentation was reviewed for accuracy and completeness.

5.0 INVESTIGATIVE RESULTS

5.1 Subsurface Conditions

Sediments and materials encountered during the advancement of borings B1 to B3 consisted of a heterogeneous mix of gravel, sand, silt, and clays, typical of mélange-type formations along coastal northern California. Refusal was encountered in borings B1 and B3 at an approximate depth of 17 feet, and it was encountered in B2 at 25 feet. Asphalt was present in the upper 2 feet of boring B3, and it was present in B2 from approximately 1 to 6.5 feet.

There was a 2-inch-diameter PVC monitoring well located in the roadway approximately 5 feet north of B2. The well was presumably constructed by Caltrans to monitor groundwater levels within potential landslide areas along SR-1. The well measured approximately 64.5 feet deep, and static groundwater was measured at approximately 9 feet from ground surface.

Groundwater was encountered in B1 at an approximate depth of 15 feet; however, it was not encountered in B2 or B3 before refusal was encountered at depths of 25 and 17 feet, respectively.

Copies of the soil boring logs are provided in Appendix B.

5.2 Laboratory Analytical Results

The analytical results are tabulated in Tables 2 through 6. Copies of the analytical laboratory reports and chain-of-custody documentation are provided in Appendix C.

5.2.1 Soil Results

Soil sample results are summarized below.

- The following metals were not detected above their respective laboratory reporting limits: arsenic, beryllium, cadmium, molybdenum, selenium, silver, and thallium.

- Total lead was reported at concentrations ranging from <1.0 to 10 mg/kg.
- Total chromium was reported at concentrations ranging from 11 to 580 mg/kg, with four samples exceeding ten times the STLC of 5.0 mg/l for hexavalent chromium.
- WET chromium was detected above the laboratory reporting limit of 1.0 mg/l in only one sample (B2-20) at a concentration of 2.5 mg/l.
- TCLP chromium was not detected above the laboratory reporting limit of 0.05 mg/l.
- Total nickel was reported at concentrations ranging from 19 to 900 mg/kg, with two samples exceeding ten times the STLC of 20 mg/l.
- WET nickel was reported at concentrations of 1.5 mg/l and 25 mg/l.
- TCLP nickel was reported in sample B2-20 at a concentration of 2.9 mg/l.
- Remaining CAM 17 metals were reported at concentrations below ten times their respective STLCs.
- TPHg was not detected above the laboratory reporting limit of 1.0 mg/kg.
- TPHd was reported in samples B2-1.5 and B3-2 at concentrations of 660 mg/kg and 150 mg/kg, respectively.
- VOCs were not detected above the laboratory reporting limits.
- NOA was reported in samples B2-10 and B3-6 at concentrations of 0.50% and 3.00%, respectively.
- pH values ranged from 8.3 to 8.7.

5.2.2 Groundwater Results

- TPHd was reported in sample collected from the monitoring well at a concentration of 0.11 milligrams per liter (mg/l).
- TPHg and VOCs were not detected above the reporting limits.

5.2.3 Field QA/QC Sample Results

The QA/QC sample results are summarized below.

- TPHg was not detected above the laboratory reporting limit of 0.050 mg/l in the trip blank sample.
- Lead was not detected above the laboratory reporting limit of 0.25 mg/l in the equipment blank sample.

5.3 Laboratory Quality Assurance/Quality Control

We reviewed the QA/QC results provided with the laboratory analytical reports. The data indicate non-detect results for the method blanks. The data showed acceptable recoveries and relative percent differences (RPDs) for the samples and for the laboratory QA/QC analyses. Based on this limited data review, no additional qualifications of the soil data are necessary, and the data are of sufficient quality for the purposes of this report.

6.0 CONCLUSIONS

6.1 Soil

6.1.1 CAM 17 Metals

Based on the reported concentrations of total and soluble metals, soil excavated at the project location would not be classified as California or RCRA hazardous.

Vanadium was reported at concentrations ranging from 10 to 95 mg/kg, exceeding the residential land use ESL of 16 mg/kg. The maximum vanadium concentration was compared with the residential and commercial/industrial land use ESLs (Table A, SFRWQCB, May 2008) and with published background levels typically present in California soils as presented in *Background Concentrations of Trace and Major Elements in California Soils* (Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California, March 1996). The maximum concentration, ESLs and published background concentrations are summarized below:

Metal	MAXIMUM	RESIDENTIAL ESL	COMMERCIAL/ INDUSTRIAL ESL	PUBLISHED BACKGROUND MEAN[1]	PUBLISHED BACKGROUND RANGE [1]
Vanadium	95	16	200	112	39 to 288

Concentrations reported in milligrams per kilogram (mg/kg)

[1] Kearney Foundation of Soil Science, March 1996

The maximum vanadium concentration in the soil samples collected at the project location is greater than the residential land use ESL. However, it is less than the commercial/industrial land use ESL and is within the published background range. Soil reuse or disposal options may be restricted based on reported vanadium concentrations.

6.1.2 Organics

TPHg and VOCs were not detected in the samples. Reported concentrations of TPHd were above the residential and commercial/industrial land use ESLs of 83 mg/kg in the shallow-depth (1 to 2 feet) samples collected from borings B-2 and B3; however, asphalt was observed in both of these sample locations from near ground surface to depths ranging from 2 to 6.5 feet (see Appendix B).

Based on the shallow-depth TPHd sample results in B2 and B3, there may be restrictions on disposal or reuse options of soil located between ground surface and 6.5 feet.

6.1.3 Naturally Occurring Asbestos

The mapped geology of the general area of the project is indicative of a metamorphic regime where NOA minerals are likely to occur. NOA was reported above the CARB regulatory limit of 0.25% in soil samples from borings B2 and B3.

NOA is a State of California regulated substance. Though asbestos was reported to be present, the asbestos content does not render these materials unsuitable for reuse within the Caltrans project boundaries. However, construction/maintenance activities involving these asbestos-containing materials may fall under regulatory jurisdiction of Cal-OSHA under CCR Title 8 Section 5208. Mitigation measures during construction/maintenance activities should be utilized to minimize releases of NOA to air (dust control) and surface waters (stormwater discharge). If reused within the Caltrans right-of-way, the material from areas where asbestos was reported to be present at or above regulated levels, or where ultramafic rock is present, cannot be used in such a way as to fall under the definition of surfacing material as defined in CARB's Title 17, Section 93106. NOA-containing material may be reused onsite, but must be covered by at least 0.25 foot of pavement, soil, or other material that contains less than 0.25% NOA.

If excess soil is generated during the construction project, excavated NOA-impacted soil must be disposed of at a licensed facility that is permitted to accept NOA-impacted soil that is also classified as California hazardous based on metals content.

6.2 Groundwater

TPHd was the only analyte detected in groundwater samples collected from B1 and MW. It was reported at a concentration exceeding ESLs at sites where groundwater is a current or potential drinking water source and where groundwater discharges to surface water in a freshwater environment.

Groundwater encountered during the construction project may require special handling and/or treatment prior to disposal or discharge based on the reported TPHd concentration.

6.3 Worker Protection

The contractor(s) should prepare a project-specific health and safety plan to prevent or minimize worker exposure to impacted soil and groundwater. The plan should include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of impacted soil and groundwater.

N

0 1 2

Scale in Miles

GEOCON CONSULTANTS, INC.

6671 BRISA STREET – LIVERMORE, CA 94550
PHONE 925.371.5900 – FAX 925.371.5915

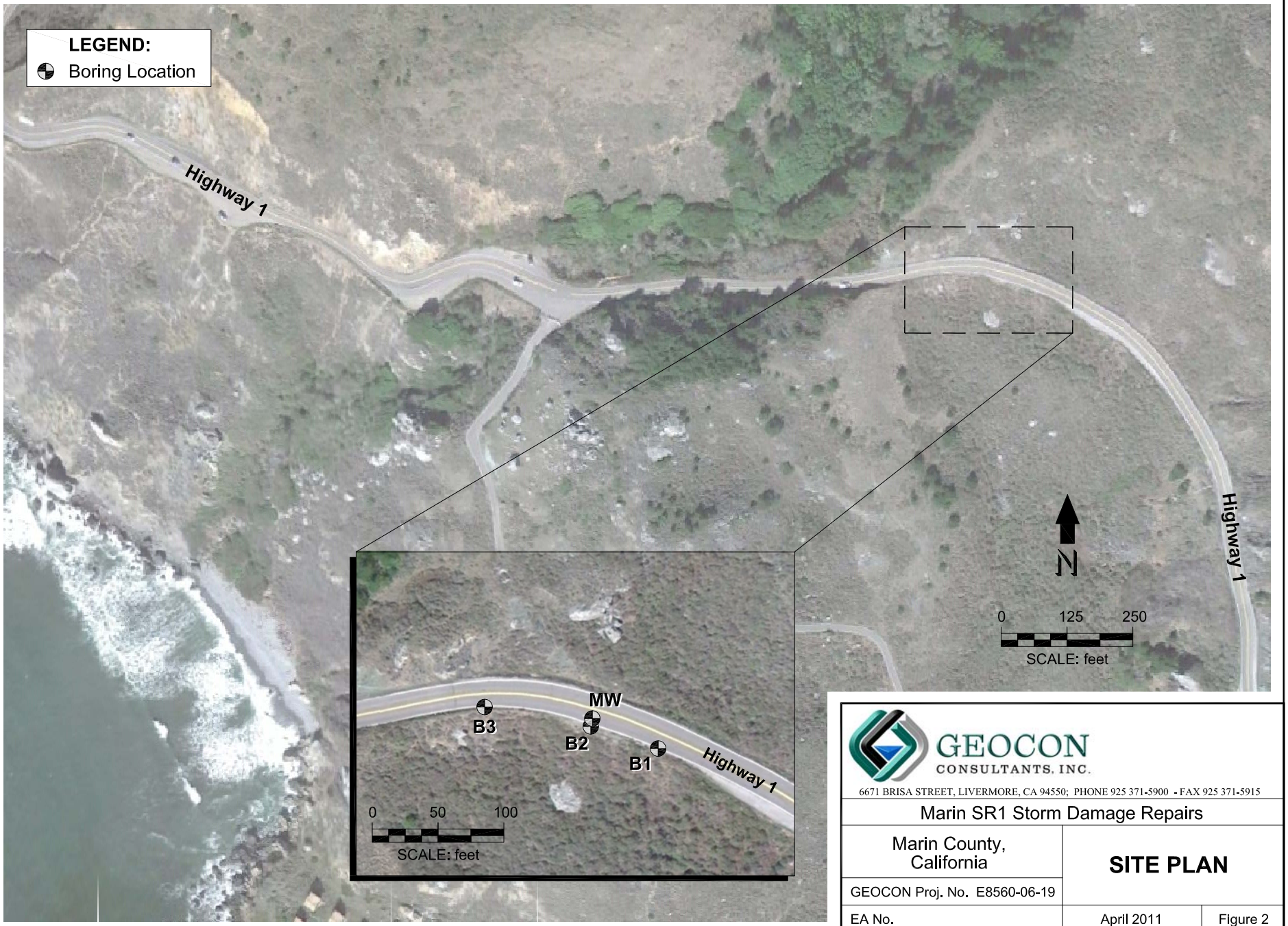
Route 1 at Post Mile 10.95/11.0

Marin County, California

GEOCON Proj. No. E8560-06-19

VICINITY MAP

Task Order No. 19, EA 04-4S2201 | April 2011 | Figure 1



GEOCON CONSULTANTS, INC.

6671 BRISA STREET, LIVERMORE, CA 94550; PHONE 925 371-5900 - FAX 925 371-5915

Marin SR1 Storm Damage Repairs		
Marin County, California	**SITE PLAN**	
GEOCON Proj. No. E8560-06-19		
EA No.	April 2011	Figure 2

SITE0411

TABLE 1
Boring Coordinates
State Route 1 - Storm Repair Project
Marin County, California

Boring	Northing	Easting	Longitude	Latitude
B1	2,152,274.296	5,948,877.030	-122.623637711	37.886664639
B2	2,152,291.094	5,948,825.835	-122.623816382	37.886707569
B3	2,152,305.855	5,948,745.199	-122.624096888	37.886743072

Northing and easting coordinates are shown in feet, NAD 83 (Zone 3)

TABLE 2
Summary of Chromium, Lead, Nickel and pH Results - Soil
State Route 1 - Storm Repair Project
Marin County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	Total Chromium (mg/l)	WET Chromium (mg/l)	TCLP Chromium (mg/l)	Total Nickel (mg/l)	WET Nickel (mg/l)	TCLP Nickel (mg/l)	pH
B1-0.5	0 to 0.5	<5.0	11	---	---	19	---	---	---
B1-1.5	1 to 1.5	<5.0	---	---	---	---	---	---	---
B1-3	2.5 to 3	6.8	---	---	---	---	---	---	8.7
B1-11	10.5 to 11	1.8	71	<1.0	---	61	---	---	---
B2-0.5	0 to 0.5	3.1	24	---	---	42	---	---	---
B2-1.5	1 to 1.5	<5.0	---	---	---	---	---	---	---
B2-10	9.5 to 10	<5.0	---	---	---	---	---	---	8.4
B2-20	19.5 to 20	<1.0	580	2.5	<0.05	900	25	2.9	---
B2-25	24.5 to 25	<5.0	---	---	---	---	---	---	---
B3-2	1.5 to 2	10	250	<1.0	<0.05	290	1.5	---	---
B3-3	2.5 to 3	6.1	---	---	---	---	---	---	8.3
B3-6	5.5 to 6	<5.0	---	---	---	---	---	---	---
B3-10	9.5 to 10	4.9	96	<1.0	---	100	---	---	---
Equipment Blank	---	<0.25	---	---	---	---	---	---	---

Notes:

mg/kg = Milligrams per kilogram
mg/l = Milligrams per liter
--- = Not analyzed
<1.0 = Not detected above the laboratory reporting limit
WET = Waste Extraction Test using citric acid as the extraction fluid
TCLP = Toxicity Characteristic Leaching Procedure

TABLE 3
Summary of CAM 17 Metals Results - Soil
State Route 1 Storm Repair Project
Marin County, California

Boring	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
B1-0.5	0 to 0.5	<2.0	<1.0	19	<1.0	<1.0	11	16	28	<5.0	0.23	<1.0	19	<1.0	<1.0	<1.0	95	39
B1-11	10.5 to 11	<2.0	<1.0	38	<1.0	<1.0	71	21	29	1.8	<0.10	<1.0	61	<1.0	<1.0	<1.0	44	270
B2-0.5	0 to 0.5	<2.0	<1.0	48	<1.0	<1.0	24	17	19	3.1	<0.10	<1.0	42	<1.0	<1.0	<1.0	38	31
B2-20	19.5 to 20	9.8	<1.0	<1.0	<1.0	<1.0	580	39	6.4	<1.0	<0.10	<1.0	900	<1.0	<1.0	<1.0	10	6.7
B3-2	1.5 to 2	4.0	<1.0	44	<1.0	<1.0	250	26	31	10	0.48	<1.0	290	<1.0	<1.0	<1.0	61	58
B3-10	9.5 to 10	<2.0	<1.0	46	<1.0	<1.0	96	15	19	4.9	<0.10	<1.0	100	<1.0	<1.0	<1.0	50	48
ESLs																		
Residential Land Use		6.3	0.39	750	4.0	1.7	750	40	230	200	1.3	40	150	10	20	1.3	16	600
Comm/Ind Land Use		40	1.6	1500	8.0	7.4	750	80	230	750	10	40	150	10	40	16	200	600
Construction Exposure		310	15	2,600	98	39	1.2E+06	94	310,000	750	58	3,900	260	3,900	3,900	62	770	230,000
Hazardous Waste Criteria																		
TTLC		500	500	10,000	75	100	2,500*	8,000	2,500	1,000	20	3,500	2,000	100	500	700	2,400	5,000
STLC		15	5.0	100	0.75	1.0	5.0**	80	25	---	0.2	350	20	1.0	5.0	7.0	24	250
TCLP		---	5.0	100	---	1.0	5.0	---	---	5.0	0.2	---	---	1.0	5.0	---	---	---

Notes:
Total metal results are shown in milligrams per kilogram (mg/kg)
TTLC = total threshold limit concentration
STLC = soluble threshold limit concentration
TCLP = toxicity characteristic leaching procedure
--- = not analyzed or no standard
ESLs = Environmental Screening Levels, Tables A and K-3, SFRWQCB, Revised May 2008
ESLs for chromium are for Chromium III, as there is no standard for total chromium

< = analyte was not detected above the laboratory reporting limit
* = for total chromium and Chromium III compounds
** = for Chromium VI compounds

TABLE 4
Summary of Organics Results - Soil
State Route 1 Storm Repair Project
Marin County, California

Boring	Sample Depth (ft)	TPHg (mg/kg)	TPHd (mg/kg)	VOCs ug/kg)
B1-1.5	1 to 1.5	---	<1.0	---
B1-3	2.5 to 3	<1.0	---	ND
B2-1.5	1 to 1.5	---	660	---
B2-10	9.5 to 10	<1.0	---	ND
B3-2	1.5 to 2	---	150	---
B3-3	2.5 to 3	<1.0	---	ND
	ESLs			
	Residential	83	83	---
	Commercial/Industrial	83	83	---
	Construction Exposure	4,200	4,200	---

Notes:
TPHg = total petroleum hydrocarbons as gasoline
TPHd = total petroleum hydrocarbons as diesel
mg/kg = milligrams per kilogram
--- = not analyzed or not applicable
< = not detected above the stated laboratory reporting limit
ESLs = Environmental Screening Levels, Tables A and K-3, SFRWQCB, May 2008
ND = not detected

TABLE 5
Summary of NOA Results - Soil
State Route 1 Storm Repair Project
Marin County, California

Sample ID	Sample Depth (feet)	Asbestos Content (% dry weight)
B1-3	2.5 to 3	<0.25% Chrysotile
B2-10	9.5 to 10	0.50% Chrysotile
B3-6	5.5 to 6	3.00% Chrysotile

Notes:
< = asbestos not detected at 0.25% target analytical sensitivity

TABLE 6
Summary of Organics Results - Groundwater
State Route 1 Storm Damage Repair Project
Marin County, California

Boring	Sample Depth (ft)	TPHg (mg/l)	TPHd (mg/l)	VOCs (ug/l)
B1	15	<0.050	<0.059	ND
MW	9	<0.050	0.11	ND
Trip Blank	---	<0.050	---	---
Groundwater ESLs				
Current/Potential Source		0.10	0.10	---
Not Current/Potential Source		0.21	0.21	---
Surface Water ESLs				
Freshwater		0.10	0.10	---
Marine		0.21	0.21	---
Estuarine		0.21	0.21	---

Notes:
TPHg = total petroleum hydrocarbons as gasoline
TPHd = total petroleum hydrocarbons as diesel
VOCs = volatile organic compounds
mg/l = milligrams per liter
ug/l = micrograms per liter
ND = none detected
- - = not applicable
< = analyte was not detected above stated reporting limit
ESLs = Environmental Screening Levels, Tables A, B, and F, SFRWQCB, Revised May 2008

APPENDIX A

COUNTY OF MARIN
ENVIRONMENTAL HEALTH SERVICES
3501 CIVIC CENTER DRIVE, RM 236
SAN RAFAEL, CA 94903
415.499.6907/ (Fax) 415.507.4120
www.co.marin.ca.us/ehs

WORK FILE

PERMIT FOR TEST HOLES / SOIL BORINGS

Date of Issuance: March 25, 2011
Date of Expiration: March 25, 2012

To: Caltrans Dist. 4
111Grand Ave., 9th Floor
Oakland, CA 94623

Permit No.: TH 10/11 – 25 (3)

Street Address: Hwy 1, Post Marker 10.95/11.00

City: Stinson Beach

Assessor's Parcel Number: 199-04-053

Driller: Gregg Drilling and Testing, Inc., 950 Howe Road, Martinez, CA 94553

Your application and plans have been reviewed for compliance with relevant California State and Marin County regulations. Permission is hereby granted to perform the stated work at the above, designated site.

In order to provide the necessary inspections and/or to prevent rescheduling the well driller, the well driller shall notify this office in person at least **two working days** in advance of drilling the well. The grout shall not be placed until approval from Environmental Health Services is granted. If arrangements other than an inspection are made and approved before drilling, then documentation on the methods and materials used to destroy the hole shall be submitted within 30 days of drilling.

CONDITIONS:

1. Construction and destruction criteria shall meet all applicable sections of the current State of California Water Well Standards Bulletin 74 (as revised).
2. Unless approved by EHS beforehand, the well driller shall seal with a cement grout and have a pump and tremie system available in the event that groundwater is discovered.
3. The holes shall be sealed ASAP, especially in the event of rain, to prevent contamination of the groundwater by surface water.
4. If the boring is drilled on property owned by a party other than the applicant, this permit is not valid until applicable local encroachment permits or permissions are first obtained. Please contact the appropriate landowner, city, county, park or special district agencies to obtain permissions.
5. The Marin County CUPA (Office of Waste Management, Department of Public Works) or the local L.P.A. shall be notified whenever test results from sampling demonstrate chemical contamination or leakage of underground storage tanks.
6. It is the responsibility of the driller and project consultant to locate all underground utilities which may be impacted by drilling activities.

This permit is valid for twelve months from the date of issuance. If work has not commenced prior to the expiration date, an additional application and the associated fee shall be required.

Issued by,

Scott Callow, Senior R.E.H.S.

c: Geocon Consultants, 6671 Brisa Street, Livermore, CA 94551
CUPA

OFFICE USE ONLY

1. Number of holes to be drilled 3
2. Destruction docs submitted _____
3. Project completed _____

APPENDIX B

PROJECT NO. **E8560-06-19**

DEPTH IN FEET	PENETRAT. RESIST. BLOWS/FT.	SAMPLE NO.	LITHOLOGY	**BORING NO. B1** DATE DRILLED 4/4/2011 WATER LEVEL (ATD) 15.0' EQUIPMENT Rhino Hollow-Stem Auger DRILLER Gregg Drilling	SOIL (USCS)	HEADSPACE (PPM)
				SOIL DESCRIPTION		
1				Firm, moist, reddish brown, Clayey Gravelly well-graded SAND	SC/GC	
2						
3				Firm, slightly moist, light brown to gray, Silty SAND with some small gravel	SM	
4						
5						
6						
7						
8						
9						
10						
11				- poor recovery		
12						
13				dark green, fine to coarse Sandy CLAY (melange), low to medium plasticity	ML/CL	
14						
15				Saturated, Sandy GRAVEL	GW	
16						
17				REFUSAL - BORING TERMINATED AT 17 FEET		

Figure 1, Log of Boring B1, page 1 of 1

ENV_NO_WELL 19- BORING LOGS.GPJ 04/21/11

BORING ELEVATION:	ENGINEER/GEOLOGIST: **JOHN LOVE**

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. **E8560-06-19**

DEPTH IN FEET	PENETRAT. RESIST. BLOWS/FT.	SAMPLE NO.	LITHOLOGY	**BORING NO. B2** DATE DRILLED 4/4/2011 WATER LEVEL (ATD) _____ EQUIPMENT Rhino Hollow-Stem Auger DRILLER Gregg Drilling	SOIL (USCS)	HEADSPACE (PPM)
				SOIL DESCRIPTION		
				Firm, moist, reddish brown, Clayey Gravelly well-graded SAND	SC/GC	
1				- loose asphalt with some soil		
2						
3						
4						
5						
6						
7				slightly moist to moist, olive green, Clayey SAND (melange)	SC	
8				- increase in sand		
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25				REFUSAL - BORING TERMINATED AT 25 FEET		

Figure 2, Log of Boring B2, page 1 of 1

ENV_NO_WELL 19- BORING LOGS.GPJ 04/21/11

BORING ELEVATION:	ENGINEER/GEOLOGIST: **JOHN LOVE**

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. **E8560-06-19**

DEPTH IN FEET	PENETRAT. RESIST. BLOWS/FT.	SAMPLE NO.	LITHOLOGY	**BORING NO. B3** DATE DRILLED 4/4/2011 WATER LEVEL (ATD) _____ EQUIPMENT Rhino Hollow-Stem Auger DRILLER Gregg Drilling	SOIL (USCS)	HEADSPACE (PPM)
				SOIL DESCRIPTION		
1				**ASPHALT**		
2				Dense, slightly moist, dark brown to black, well-graded Sandy GRAVEL	GW	
3						
4						
5						
6						
7						
8						
9						
10				- some interbedded clayey sand		
11						
12						
13						
14						
15						
16						
17				REFUSAL - BORING TERMINATED AT 17 FEET		

Figure 3, Log of Boring B3, page 1 of 1

ENV_NO_WELL 19- BORING LOGS.GPJ 04/21/11

BORING ELEVATION:	ENGINEER/GEOLOGIST: **JOHN LOVE**

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

APPENDIX C

April 08, 2011

ELAP No.: 1838
NELAP No.: 02107CA
CSDLAC No.: 10196
ORELAP No.: CA300003

Workorder No.: 117225

John Love
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550

TEL: (925) 525-4142
FAX: (925) 371-5915

RE: Caltrans MRN-1, E8560-06-19

Attention: John Love

Enclosed are the results for sample(s) received on April 06, 2011 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117225
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117225-001

Client Sample ID: B1
Collection Date: 4/4/2011 10:10:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS BY GC/FID						
EPA 3510C				**EPA 8015B(M)**		
RunID: GC16_110408A	QC Batch: 72085			PrepDate: 4/7/2011		Analyst: **CBR**
DRO	ND	0.059		mg/L	1	4/8/2011 10:13 AM
Surr: p-Terphenyl	87.0	36-126		%REC	1	4/8/2011 10:13 AM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC19_110406A	QC Batch: M11VW070			PrepDate:		Analyst: **DDL**
GRO	ND	0.050		mg/L	1	4/6/2011 04:05 PM
Surr: Bromofluorobenzene (FID)	94.9	70-130		%REC	1	4/6/2011 04:05 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS2_110406A	QC Batch: Q11VW047			PrepDate:		Analyst: **SLL**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,2-Dibromoethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
2-Chlorotoluene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
4-Chlorotoluene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
4-Isopropyltoluene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Benzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117225
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117225-001

Client Sample ID: B1
Collection Date: 4/4/2011 10:10:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS2_110406A	QC Batch:	Q11VW047		PrepDate:		Analyst: **SLL**
Bromobenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Bromodichloromethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Bromoform	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Bromomethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Carbon tetrachloride	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Chlorobenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Chloroethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Chloroform	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Chloromethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Di-isopropyl ether	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Dibromochloromethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Dibromomethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Ethyl tert-butyl ether	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Ethylbenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Isopropylbenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
m,p-Xylene	ND	1.0		µg/L	1	4/6/2011 02:54 PM
Methylene chloride	ND	1.0		µg/L	1	4/6/2011 02:54 PM
MTBE	ND	0.50		µg/L	1	4/6/2011 02:54 PM
n-Butylbenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
n-Propylbenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Naphthalene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
o-Xylene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
sec-Butylbenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Styrene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Tert-amyl methyl ether	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Tert-Butanol	ND	10		µg/L	1	4/6/2011 02:54 PM
tert-Butylbenzene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Tetrachloroethene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Toluene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Trichloroethene	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	4/6/2011 02:54 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

ANALYTICAL RESULTS

Advanced Technology Laboratories

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1
Lab Order:	117225	**Collection Date:**	4/4/2011 10:10:00 AM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	GROUNDWATER
Lab ID:	117225-001		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS2_110406A	QC Batch:	Q11VW047		PrepDate:		Analyst: **SLL**
Vinyl chloride	ND	0.50		µg/L	1	4/6/2011 02:54 PM
Surr: 1,2-Dichloroethane-d4	94.4	70-130		%REC	1	4/6/2011 02:54 PM
Surr: 4-Bromofluorobenzene	106	70-130		%REC	1	4/6/2011 02:54 PM
Surr: Dibromofluoromethane	94.5	70-130		%REC	1	4/6/2011 02:54 PM
Surr: Toluene-d8	96.0	70-130		%REC	1	4/6/2011 02:54 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117225
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117225-002

Client Sample ID: MW
Collection Date: 4/4/2011 12:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS BY GC/FID						
EPA 3510C				**EPA 8015B(M)**		
RunID: GC16_110408A QC Batch: 72085				PrepDate: 4/7/2011		Analyst: **CBR**
DRO	0.11	0.050		mg/L	1	4/8/2011 11:42 AM
Surr: p-Terphenyl	89.0	36-126		%REC	1	4/8/2011 11:42 AM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC19_110406A QC Batch: M11VW070				PrepDate:		Analyst: **DDL**
GRO	ND	0.050		mg/L	1	4/6/2011 03:46 PM
Surr: Bromofluorobenzene (FID)	94.3	70-130		%REC	1	4/6/2011 03:46 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS2_110406A QC Batch: Q11VW047				PrepDate:		Analyst: **SLL**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,2-Dibromoethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
2-Chlorotoluene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
4-Chlorotoluene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
4-Isopropyltoluene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Benzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117225
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117225-002

Client Sample ID: MW
Collection Date: 4/4/2011 12:00:00 PM
Matrix: GROUNDWATER

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS2_110406A QC Batch: Q11VW047 PrepDate: Analyst: **SLL**

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Bromobenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Bromodichloromethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Bromoform	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Bromomethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Carbon tetrachloride	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Chlorobenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Chloroethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Chloroform	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Chloromethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Di-isopropyl ether	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Dibromochloromethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Dibromomethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Ethyl tert-butyl ether	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Ethylbenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Isopropylbenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
m,p-Xylene	ND	1.0		µg/L	1	4/6/2011 03:34 PM
Methylene chloride	ND	1.0		µg/L	1	4/6/2011 03:34 PM
MTBE	ND	0.50		µg/L	1	4/6/2011 03:34 PM
n-Butylbenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
n-Propylbenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Naphthalene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
o-Xylene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
sec-Butylbenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Styrene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Tert-amyl methyl ether	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Tert-Butanol	ND	10		µg/L	1	4/6/2011 03:34 PM
tert-Butylbenzene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Tetrachloroethene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Toluene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Trichloroethene	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	4/6/2011 03:34 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	MW
Lab Order:	117225	**Collection Date:**	4/4/2011 12:00:00 PM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	GROUNDWATER
Lab ID:	117225-002		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS2_110406A	QC Batch:	Q11VW047		PrepDate:		Analyst: **SLL**
Vinyl chloride	ND	0.50		µg/L	1	4/6/2011 03:34 PM
Surr: 1,2-Dichloroethane-d4	90.3	70-130		%REC	1	4/6/2011 03:34 PM
Surr: 4-Bromofluorobenzene	101	70-130		%REC	1	4/6/2011 03:34 PM
Surr: Dibromofluoromethane	91.1	70-130		%REC	1	4/6/2011 03:34 PM
Surr: Toluene-d8	93.6	70-130		%REC	1	4/6/2011 03:34 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

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Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	Trip Blank
Lab Order:	117225	**Collection Date:**	4/4/2011
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	WATER
Lab ID:	117225-003		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
GASOLINE RANGE ORGANICS BY GC/FID						
			EPA 8015B(M)			
RunID: GC19_110406A	QC Batch: M11VW070			PrepDate:		Analyst: **DDL**
GRO	ND	0.050		mg/L	1	4/6/2011 03:07 PM
Surr: Bromofluorobenzene (FID)	96.6	70-130		%REC	1	4/6/2011 03:07 PM

Qualifiers:				
	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

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CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_DSL LL

Sample ID	MB-72085	SampType:	MBLK	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	4/7/2011	RunNo:	131870
Client ID:	PBW	Batch ID:	72085	TestNo:	EPA 8015B(M	EPA 3510C		Analysis Date:	4/8/2011	SeqNo:	2147450

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	0.050									
Surr: p-Terphenyl	0.065		0.08000		81.2	36	126				

Sample ID	LCS-72085	SampType:	LCS	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	4/7/2011	RunNo:	131870
Client ID:	LCSW	Batch ID:	72085	TestNo:	EPA 8015B(M	EPA 3510C		Analysis Date:	4/8/2011	SeqNo:	2147451

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.620	0.050	1.000	0	62.0	52	128				
Surr: p-Terphenyl	0.063		0.08000		79.0	36	126				

Sample ID	MB-72085MS	SampType:	MS	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	4/7/2011	RunNo:	131870
Client ID:	ZZZZZZ	Batch ID:	72085	TestNo:	EPA 8015B(M	EPA 3510C		Analysis Date:	4/8/2011	SeqNo:	2147452

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.648	0.050	1.000	0	64.8	52	128				
Surr: p-Terphenyl	0.065		0.08000		80.9	36	126				

Sample ID	MB-72085MSD	SampType:	MSD	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	4/7/2011	RunNo:	131870
Client ID:	ZZZZZZ	Batch ID:	72085	TestNo:	EPA 8015B(M	EPA 3510C		Analysis Date:	4/8/2011	SeqNo:	2147453

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.656	0.050	1.000	0	65.6	52	128	0.6482	1.19	20	
Surr: p-Terphenyl	0.067		0.08000		84.4	36	126		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID **M110406LCS2** SampType: **LCS** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **131807**
Client ID: **LCSW** Batch ID: **M11VW070** TestNo: **EPA 8015B(M** Analysis Date: **4/6/2011** SeqNo: **2146188**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	1.011	0.050	1.000	0	101	70	130				
Surr: Bromofluorobenzene (FID)	99.743		100.0		99.7	70	130				

Sample ID **M110406MB1MS** SampType: **MS** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **131807**
Client ID: **ZZZZZZ** Batch ID: **M11VW070** TestNo: **EPA 8015B(M** Analysis Date: **4/6/2011** SeqNo: **2146189**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.963	0.050	1.000	0	96.3	70	130				
Surr: Bromofluorobenzene (FID)	100.223		100.0		100	70	130				

Sample ID **M110406MB1MSD** SampType: **MSD** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **131807**
Client ID: **ZZZZZZ** Batch ID: **M11VW070** TestNo: **EPA 8015B(M** Analysis Date: **4/6/2011** SeqNo: **2146190**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.997	0.050	1.000	0	99.7	70	130	0.9630	3.47	20	
Surr: Bromofluorobenzene (FID)	100.098		100.0		100	70	130		0	0	

Sample ID **M110406MB1** SampType: **MBLK** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **131807**
Client ID: **PBW** Batch ID: **M11VW070** TestNo: **EPA 8015B(M** Analysis Date: **4/6/2011** SeqNo: **2146191**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050									
Surr: Bromofluorobenzene (FID)	95.986		100.0		96.0	70	130				

Sample ID **117225-003ADUP** SampType: **DUP** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **131807**
Client ID: **Trip Blank** Batch ID: **M11VW070** TestNo: **EPA 8015B(M** Analysis Date: **4/6/2011** SeqNo: **2146193**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID	**117225-003ADUP**	SampType:	**DUP**	TestCode:	**8015_W_GP**	Units:	**mg/L**	Prep Date:			RunNo:	**131807**	
Client ID:	**Trip Blank**	Batch ID:	**M11VW070**	TestNo:	**EPA 8015B(M**			Analysis Date:	**4/6/2011**		SeqNo:	**2146193**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	94.980		100.0		95.0	70	130		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID **Q110406LCS1** SampType: **LCS** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **LCSW** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2145731**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	17.230	0.50	20.00	0	86.2	70	130				
Benzene	37.630	0.50	40.00	0	94.1	70	130				
Chlorobenzene	20.640	0.50	20.00	0	103	70	130				
MTBE	17.640	0.50	20.00	0	88.2	70	130				
Toluene	39.180	0.50	40.00	0	98.0	70	130				
Trichloroethene	19.260	0.50	20.00	0	96.3	70	130				
Surr: 1,2-Dichloroethane-d4	22.360		25.00		89.4	70	130				
Surr: 4-Bromofluorobenzene	25.060		25.00		100	70	130				
Surr: Dibromofluoromethane	23.430		25.00		93.7	70	130				
Surr: Toluene-d8	24.080		25.00		96.3	70	130				

Sample ID **Q110406MB3MS** SampType: **MS** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **ZZZZZZ** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2145732**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	17.120	0.50	20.00	0	85.6	70	130				
Benzene	38.400	0.50	40.00	0	96.0	70	130				
Chlorobenzene	21.430	0.50	20.00	0	107	70	130				
MTBE	18.410	0.50	20.00	0	92.0	70	130				
Toluene	40.260	0.50	40.00	0	101	70	130				
Trichloroethene	19.340	0.50	20.00	0	96.7	70	130				
Surr: 1,2-Dichloroethane-d4	23.100		25.00		92.4	70	130				
Surr: 4-Bromofluorobenzene	26.030		25.00		104	70	130				
Surr: Dibromofluoromethane	23.960		25.00		95.8	70	130				
Surr: Toluene-d8	24.930		25.00		99.7	70	130				

Sample ID **Q110406MB3MSD** SampType: **MSD** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **ZZZZZZ** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2145733**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID **Q110406MB3MSD** SampType: **MSD** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **ZZZZZZ** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2145733**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	18.020	0.50	20.00	0	90.1	70	130	17.12	5.12	20	
Benzene	37.680	0.50	40.00	0	94.2	70	130	38.40	1.89	20	
Chlorobenzene	20.320	0.50	20.00	0	102	70	130	21.43	5.32	20	
MTBE	17.890	0.50	20.00	0	89.4	70	130	18.41	2.87	20	
Toluene	39.170	0.50	40.00	0	97.9	70	130	40.26	2.74	20	
Trichloroethene	19.550	0.50	20.00	0	97.8	70	130	19.34	1.08	20	
Surr: 1,2-Dichloroethane-d4	22.680		25.00		90.7	70	130		0	0	
Surr: 4-Bromofluorobenzene	25.500		25.00		102	70	130		0	0	
Surr: Dibromofluoromethane	23.190		25.00		92.8	70	130		0	0	
Surr: Toluene-d8	24.340		25.00		97.4	70	130		0	0	

Sample ID **Q110406MB3** SampType: **MBLK** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **PBW** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2145734**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
1,1-Dichloropropene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	0.50									
1,2-Dibromoethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
1,2-Dichloroethane	ND	0.50									

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CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID **Q110406MB3** SampType: **MBLK** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **PBW** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2145734**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichloropropane	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,3-Dichloropropane	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
2,2-Dichloropropane	ND	0.50									
2-Chlorotoluene	ND	0.50									
4-Chlorotoluene	ND	0.50									
4-Isopropyltoluene	ND	0.50									
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
Di-isopropyl ether	ND	0.50									
Dibromochloromethane	ND	0.50									
Dibromomethane	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
Ethyl tert-butyl ether	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
m,p-Xylene	ND	1.0									

Qualifiers:

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CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID **Q110406MB3** SampType: **MBLK** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **PBW** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2145734**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	ND	1.0									
MTBE	ND	0.50									
n-Butylbenzene	ND	0.50									
n-Propylbenzene	ND	0.50									
Naphthalene	ND	0.50									
o-Xylene	ND	0.50									
sec-Butylbenzene	ND	0.50									
Styrene	ND	0.50									
Tert-amyl methyl ether	ND	0.50									
Tert-Butanol	ND	10									
tert-Butylbenzene	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
Vinyl chloride	ND	0.50									
Surr: 1,2-Dichloroethane-d4	24.910		25.00		99.6	70	130				
Surr: 4-Bromofluorobenzene	26.290		25.00		105	70	130				
Surr: Dibromofluoromethane	24.990		25.00		100	70	130				
Surr: Toluene-d8	24.190		25.00		96.8	70	130				

Sample ID **117225-001ADUP** SampType: **DUP** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **B1** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2147378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50						0	0	20	
1,1,1-Trichloroethane	ND	0.50						0	0	20	
1,1,2,2-Tetrachloroethane	ND	0.50						0	0	20	
1,1,2-Trichloroethane	ND	0.50						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID **117225-001ADUP** SampType: **DUP** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **B1** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2147378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethane	ND	0.50						0	0	20	
1,1-Dichloroethene	ND	0.50						0	0	20	
1,1-Dichloropropene	ND	0.50						0	0	20	
1,2,3-Trichlorobenzene	ND	0.50						0	0	20	
1,2,3-Trichloropropane	ND	0.50						0	0	20	
1,2,4-Trichlorobenzene	ND	0.50						0	0	20	
1,2,4-Trimethylbenzene	ND	0.50						0	0	20	
1,2-Dibromo-3-chloropropane	ND	0.50						0	0	20	
1,2-Dibromoethane	ND	0.50						0	0	20	
1,2-Dichlorobenzene	ND	0.50						0	0	20	
1,2-Dichloroethane	ND	0.50						0	0	20	
1,2-Dichloropropane	ND	0.50						0	0	20	
1,3,5-Trimethylbenzene	ND	0.50						0	0	20	
1,3-Dichlorobenzene	ND	0.50						0	0	20	
1,3-Dichloropropane	ND	0.50						0	0	20	
1,4-Dichlorobenzene	ND	0.50						0	0	20	
2,2-Dichloropropane	ND	0.50						0	0	20	
2-Chlorotoluene	ND	0.50						0	0	20	
4-Chlorotoluene	ND	0.50						0	0	20	
4-Isopropyltoluene	ND	0.50						0	0	20	
Benzene	ND	0.50						0	0	20	
Bromobenzene	ND	0.50						0	0	20	
Bromodichloromethane	ND	0.50						0	0	20	
Bromoform	ND	0.50						0	0	20	
Bromomethane	ND	0.50						0	0	20	
Carbon tetrachloride	ND	0.50						0	0	20	
Chlorobenzene	ND	0.50						0	0	20	
Chloroethane	ND	0.50						0	0	20	
Chloroform	ND	0.50						0	0	20	
Chloromethane	ND	0.50						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID **117225-001ADUP** SampType: **DUP** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **B1** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2147378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.50						0	0	20	
cis-1,3-Dichloropropene	ND	0.50						0	0	20	
Di-isopropyl ether	ND	0.50						0	0	20	
Dibromochloromethane	ND	0.50						0	0	20	
Dibromomethane	ND	0.50						0	0	20	
Dichlorodifluoromethane	ND	0.50						0	0	20	
Ethyl tert-butyl ether	ND	0.50						0	0	20	
Ethylbenzene	ND	0.50						0	0	20	
Hexachlorobutadiene	ND	0.50						0	0	20	
Isopropylbenzene	ND	0.50						0	0	20	
m,p-Xylene	ND	1.0						0	0	20	
Methylene chloride	ND	1.0						0	0	20	
MTBE	ND	0.50						0	0	20	
n-Butylbenzene	ND	0.50						0	0	20	
n-Propylbenzene	ND	0.50						0	0	20	
Naphthalene	ND	0.50						0	0	20	
o-Xylene	ND	0.50						0	0	20	
sec-Butylbenzene	ND	0.50						0	0	20	
Styrene	ND	0.50						0	0	20	
Tert-amyl methyl ether	ND	0.50						0	0	20	
Tert-Butanol	ND	10						0	0	20	
tert-Butylbenzene	ND	0.50						0	0	20	
Tetrachloroethene	ND	0.50						0	0	20	
Toluene	ND	0.50						0	0	20	
trans-1,2-Dichloroethene	ND	0.50						0	0	20	
Trichloroethene	ND	0.50						0	0	20	
Trichlorofluoromethane	ND	0.50						0	0	20	
Vinyl chloride	ND	0.50						0	0	20	
Surr: 1,2-Dichloroethane-d4	22.640		25.00		90.6	70	130		0	20	
Surr: 4-Bromofluorobenzene	25.400		25.00		102	70	130		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc.
Work Order: 117225
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID **117225-001ADUP** SampType: **DUP** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **131769**
Client ID: **B1** Batch ID: **Q11VW047** TestNo: **EPA 8260B** Analysis Date: **4/6/2011** SeqNo: **2147378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	22.890		25.00		91.6	70	130		0	20	
Surr: Toluene-d8	23.120		25.00		92.5	70	130		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
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CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#:

Logged By: Date: 4/6/11

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt: 2.2

1. CHILLED Y ☑ N ☐
2. HEADSPACE (VOA) Y ☐ N ☑
3. CONTAINER INTACT Y ☑ N ☐
4. SEALED Y ☐ N ☑
5. # OF SPLS MATCH COC Y ☑ N ☐
6. PRESERVED Y ☑ N ☐

Client: GEOCON CONSULTANTS, INC.
Attn: John Love
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: Caltrans MRN-1 Project #: E8560-06-19 Sampler: (Printed Name) J. Love (Signature)

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
	4/5/11	16:00	Margo	4/6/11	9:34

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: J. Love (Print Name) 4/4/11 (Date)
Signature

Send Report To: Attn: Co: SAME AS ABOVE Address City State Zip

Bill To: Attn: Co: SAME AS ABOVE Address City State Zip

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metal), 8015B (GRO) / BTEX, 8015B (DRO), 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000), OH Gas Package, TPHg only

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

Q A / Q C: RTNE ☐ CT ☐ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	OH Gas Package	TPHg only	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	1172VE-001	B1	4/4/11	10:10			X							X				X		C	3	VG	H	
		B1	↓	↓						X								X		↓	1	LG		
	2	MW	↓	12:00			X							X				X		↓	3	VG	H	
		MW	↓	↓						X								X		↓	1	LG		
	3	Trip Blank	4/4/11	–											X		X			C	2	VG	H	

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

Contract No: 04-4S2204

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

April 08, 2011

ELAP No.: 1838
NELAP No.: 02107CA
CSDLAC No.: 10196
ORELAP No.: CA300003

Workorder No.: 117226

John Love
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550

TEL: (925) 525-4142
FAX: (925) 371-5915

RE: Caltrans MRN-1, E8560-06-19

Attention: John Love

Enclosed are the results for sample(s) received on April 06, 2011 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

CLIENT: Geocon Consultants, Inc.
Project: Caltrans MRN-1, E8560-06-19
Lab Order: 117226

CASE NARRATIVE

Analytical Comments for Method 6010

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 117226-014AMS and 117226-014AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Duplicate (DUP) and/or Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for samples 117226-014ADUP and 117226-014AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Analytical Comments for Method 8015 (DRO)

Dilution was necessary for samples 117226-006A and 117226-011A, due to sample matrix.

RPD for Duplicate (DUP) is outside criteria for sample 117226-002ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Analytical Comments for Method 8015 (GRO)

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for sample 117209-004AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for sample 117209-004AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Analytical Comments for Method 8260

RPD for Duplicate (DUP) is outside criteria for sample 117226-003ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

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Advanced Technology Laboratories

Date: 4/8/2011

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	117226
Project:	Caltrans MRN-1, E8560-06-19	**Date Received**	4/6/2011 9:34:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
117226-002A	B1-1.5	ND	mg/Kg	72053	5.0	1	4/4/2011	4/7/2011
117226-003A	B1-3	6.8	mg/Kg	72053	5.0	1	4/4/2011	4/7/2011
117226-006A	B2-1.5	ND	mg/Kg	72053	5.0	1	4/4/2011	4/7/2011
117226-007A	B2-10	ND	mg/Kg	72053	5.0	1	4/4/2011	4/7/2011
117226-009A	B2-25	ND	mg/Kg	72053	5.0	1	4/4/2011	4/7/2011
117226-012A	B3-3	6.1	mg/Kg	72053	5.0	1	4/4/2011	4/7/2011
117226-013A	B3-6	ND	mg/Kg	72053	5.0	1	4/4/2011	4/7/2011

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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Advanced Technology Laboratories

Date: 4/8/2011

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	117226
Project:	Caltrans MRN-1, E8560-06-19	**Date Received**	4/6/2011 9:34:00 AM
Project No:		**Matrix:**	Water
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
117226-010A	Equipment Blank	ND	mg/L	72079	0.25	1	4/4/2011	4/8/2011

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories
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Advanced Technology Laboratories

Date: 4/8/2011

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	117226
Project:	Caltrans MRN-1, E8560-06-19	**Date Received**	4/6/2011 9:34:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
117226-003A	B1-3	8.7	pH Units	R131845	0.10	1	4/4/2011	4/8/2011
117226-007A	B2-10	8.4	pH Units	R131845	0.10	1	4/4/2011	4/8/2011
117226-012A	B3-3	8.3	pH Units	R131845	0.10	1	4/4/2011	4/8/2011

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117226
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117226-001

Client Sample ID: B1-0.5
Collection Date: 4/4/2011 8:50:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_110407A	QC Batch: 72049			PrepDate:	4/6/2011	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2011 02:36 PM
Arsenic	ND	1.0		mg/Kg	1	4/7/2011 02:36 PM
Barium	19	1.0		mg/Kg	1	4/7/2011 02:36 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2011 02:36 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2011 02:36 PM
Chromium	11	1.0		mg/Kg	1	4/7/2011 02:36 PM
Cobalt	16	1.0		mg/Kg	1	4/7/2011 02:36 PM
Copper	28	2.0		mg/Kg	1	4/7/2011 02:36 PM
Lead	ND	1.0		mg/Kg	1	4/7/2011 02:36 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2011 02:36 PM
Nickel	19	1.0		mg/Kg	1	4/7/2011 02:36 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2011 02:36 PM
Silver	ND	1.0		mg/Kg	1	4/7/2011 02:36 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2011 02:36 PM
Vanadium	95	1.0		mg/Kg	1	4/7/2011 02:36 PM
Zinc	39	1.0		mg/Kg	1	4/7/2011 02:36 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_110407A	QC Batch: 72050			PrepDate:	4/6/2011	Analyst: **VV**
Mercury	0.23	0.10		mg/Kg	1	4/7/2011 04:06 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories
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Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-1.5
Lab Order:	117226	**Collection Date:**	4/4/2011 8:53:00 AM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	SOIL
Lab ID:	117226-002		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_110407B	QC Batch: 72046			PrepDate:	4/6/2011	Analyst: **CBR**
DRO	ND	1.0		mg/Kg	1	4/7/2011 11:58 AM
Surr: p-Terphenyl	66.9	30-128		%REC	1	4/7/2011 11:58 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

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Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-3
Lab Order:	117226	**Collection Date:**	4/4/2011 9:00:00 AM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	SOIL
Lab ID:	117226-003		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_110407A	QC Batch: E11VS138			PrepDate:		Analyst: **TP**
GRO	ND	1.0		mg/Kg	1	4/7/2011 02:07 PM
Surr: Bromofluorobenzene (FID)	116	62-153		%REC	1	4/7/2011 02:07 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS4_110407A	QC Batch: K11VS104			PrepDate:		Analyst: **BD**
1,1,1,2-Tetrachloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,1,1-Trichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,1,2-Trichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,1-Dichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,1-Dichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,1-Dichloropropene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,2,3-Trichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,2,3-Trichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,2,4-Trimethylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/Kg	1	4/7/2011 12:04 PM
1,2-Dibromoethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,2-Dichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,2-Dichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,2-Dichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,3,5-Trimethylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,3-Dichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,3-Dichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
1,4-Dichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
2,2-Dichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
2-Chlorotoluene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
4-Chlorotoluene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
4-Isopropyltoluene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Benzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Bromobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Bromodichloromethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Bromoform	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Bromomethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Carbon tetrachloride	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Chlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-3
Lab Order:	117226	**Collection Date:**	4/4/2011 9:00:00 AM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	SOIL
Lab ID:	117226-003		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS4_110407A	QC Batch: K11VS104			PrepDate:		Analyst: **BD**
Chloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Chloroform	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Chloromethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
cis-1,2-Dichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
cis-1,3-Dichloropropene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Di-isopropyl ether	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Dibromochloromethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Dibromomethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Dichlorodifluoromethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Ethyl Tert-butyl ether	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Hexachlorobutadiene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Isopropylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
m,p-Xylene	ND	10		µg/Kg	1	4/7/2011 12:04 PM
Methylene chloride	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
MTBE	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
n-Butylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
n-Propylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Naphthalene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
o-Xylene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
sec-Butylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Styrene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Tert-amyl methyl ether	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Tert-Butanol	ND	100		µg/Kg	1	4/7/2011 12:04 PM
tert-Butylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Tetrachloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Toluene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
trans-1,2-Dichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Trichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Trichlorofluoromethane	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Vinyl chloride	ND	5.0		µg/Kg	1	4/7/2011 12:04 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%REC	1	4/7/2011 12:04 PM
Surr: 4-Bromofluorobenzene	92.9	70-130		%REC	1	4/7/2011 12:04 PM
Surr: Dibromofluoromethane	103	70-130		%REC	1	4/7/2011 12:04 PM
Surr: Toluene-d8	101	70-130		%REC	1	4/7/2011 12:04 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117226
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117226-004

Client Sample ID: B1-11
Collection Date: 4/4/2011 9:21:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_110407A	QC Batch: 72049			PrepDate:	4/6/2011	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2011 02:40 PM
Arsenic	ND	1.0		mg/Kg	1	4/7/2011 02:40 PM
Barium	38	1.0		mg/Kg	1	4/7/2011 02:40 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2011 02:40 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2011 02:40 PM
Chromium	71	1.0		mg/Kg	1	4/7/2011 02:40 PM
Cobalt	21	1.0		mg/Kg	1	4/7/2011 02:40 PM
Copper	29	2.0		mg/Kg	1	4/7/2011 02:40 PM
Lead	1.8	1.0		mg/Kg	1	4/7/2011 02:40 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2011 02:40 PM
Nickel	61	1.0		mg/Kg	1	4/7/2011 02:40 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2011 02:40 PM
Silver	ND	1.0		mg/Kg	1	4/7/2011 02:40 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2011 02:40 PM
Vanadium	44	1.0		mg/Kg	1	4/7/2011 02:40 PM
Zinc	270	1.0		mg/Kg	1	4/7/2011 02:40 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_110407A	QC Batch: 72050			PrepDate:	4/6/2011	Analyst: **VV**
Mercury	ND	0.10		mg/Kg	1	4/7/2011 04:08 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117226
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117226-005

Client Sample ID: B2-0.5
Collection Date: 4/4/2011 10:25:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_110407A	QC Batch: 72049			PrepDate:	4/6/2011	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2011 02:43 PM
Arsenic	ND	1.0		mg/Kg	1	4/7/2011 02:43 PM
Barium	48	1.0		mg/Kg	1	4/7/2011 02:43 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2011 02:43 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2011 02:43 PM
Chromium	24	1.0		mg/Kg	1	4/7/2011 02:43 PM
Cobalt	17	1.0		mg/Kg	1	4/7/2011 02:43 PM
Copper	19	2.0		mg/Kg	1	4/7/2011 02:43 PM
Lead	3.1	1.0		mg/Kg	1	4/7/2011 02:43 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2011 02:43 PM
Nickel	42	1.0		mg/Kg	1	4/7/2011 02:43 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2011 02:43 PM
Silver	ND	1.0		mg/Kg	1	4/7/2011 02:43 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2011 02:43 PM
Vanadium	38	1.0		mg/Kg	1	4/7/2011 02:43 PM
Zinc	31	1.0		mg/Kg	1	4/7/2011 02:43 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_110407A	QC Batch: 72050			PrepDate:	4/6/2011	Analyst: **VV**
Mercury	ND	0.10		mg/Kg	1	4/7/2011 04:10 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B2-1.5
Lab Order:	117226	**Collection Date:**	4/4/2011 10:30:00 AM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	SOIL
Lab ID:	117226-006		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_110407B	QC Batch: 72046			PrepDate:	4/6/2011	Analyst: **CBR**
DRO	660	60		mg/Kg	10	4/7/2011 01:44 PM
Surr: p-Terphenyl	73.4	30-128		%REC	10	4/7/2011 01:44 PM

Qualifiers:				
	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B2-10
Lab Order:	117226	**Collection Date:**	4/4/2011 10:50:00 AM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	SOIL
Lab ID:	117226-007		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC2_110407A QC Batch: E11VS138 PrepDate: Analyst: **TP**						
GRO	ND	1.0		mg/Kg	1	4/7/2011 02:39 PM
Surr: Bromofluorobenzene (FID)	119	62-153		%REC	1	4/7/2011 02:39 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
EPA 8260B						
RunID: MS4_110407A QC Batch: K11VS104 PrepDate: Analyst: **BD**						
1,1,1,2-Tetrachloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,1,1-Trichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,1,2-Trichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,1-Dichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,1-Dichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,1-Dichloropropene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,2,3-Trichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,2,3-Trichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,2,4-Trimethylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/Kg	1	4/7/2011 12:54 PM
1,2-Dibromoethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,2-Dichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,2-Dichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,2-Dichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,3,5-Trimethylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,3-Dichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,3-Dichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
1,4-Dichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
2,2-Dichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
2-Chlorotoluene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
4-Chlorotoluene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
4-Isopropyltoluene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Benzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Bromobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Bromodichloromethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Bromoform	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Bromomethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Carbon tetrachloride	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Chlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117226
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117226-007

Client Sample ID: B2-10
Collection Date: 4/4/2011 10:50:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS4_110407A	QC Batch: K11VS104			PrepDate:		Analyst: **BD**
Chloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Chloroform	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Chloromethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
cis-1,2-Dichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
cis-1,3-Dichloropropene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Di-isopropyl ether	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Dibromochloromethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Dibromomethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Dichlorodifluoromethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Ethyl Tert-butyl ether	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Hexachlorobutadiene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Isopropylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
m,p-Xylene	ND	10		µg/Kg	1	4/7/2011 12:54 PM
Methylene chloride	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
MTBE	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
n-Butylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
n-Propylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Naphthalene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
o-Xylene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
sec-Butylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Styrene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Tert-amyl methyl ether	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Tert-Butanol	ND	100		µg/Kg	1	4/7/2011 12:54 PM
tert-Butylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Tetrachloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Toluene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
trans-1,2-Dichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Trichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Trichlorofluoromethane	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Vinyl chloride	ND	5.0		µg/Kg	1	4/7/2011 12:54 PM
Surr: 1,2-Dichloroethane-d4	97.6	70-130		%REC	1	4/7/2011 12:54 PM
Surr: 4-Bromofluorobenzene	91.0	70-130		%REC	1	4/7/2011 12:54 PM
Surr: Dibromofluoromethane	101	70-130		%REC	1	4/7/2011 12:54 PM
Surr: Toluene-d8	98.4	70-130		%REC	1	4/7/2011 12:54 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117226
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117226-008

Client Sample ID: B2-20
Collection Date: 4/4/2011 11:00:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_110407A	QC Batch: 72049			PrepDate:	4/6/2011	Analyst: **SRB**
Antimony	9.8	2.0		mg/Kg	1	4/7/2011 02:47 PM
Arsenic	ND	1.0		mg/Kg	1	4/7/2011 02:47 PM
Barium	ND	1.0		mg/Kg	1	4/7/2011 02:47 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2011 02:47 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2011 02:47 PM
Chromium	580	1.0		mg/Kg	1	4/7/2011 02:47 PM
Cobalt	39	1.0		mg/Kg	1	4/7/2011 02:47 PM
Copper	6.4	2.0		mg/Kg	1	4/7/2011 02:47 PM
Lead	ND	1.0		mg/Kg	1	4/7/2011 02:47 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2011 02:47 PM
Nickel	900	1.0		mg/Kg	1	4/7/2011 02:47 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2011 02:47 PM
Silver	ND	1.0		mg/Kg	1	4/7/2011 02:47 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2011 02:47 PM
Vanadium	9.9	1.0		mg/Kg	1	4/7/2011 02:47 PM
Zinc	6.7	1.0		mg/Kg	1	4/7/2011 02:47 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_110407A	QC Batch: 72050			PrepDate:	4/6/2011	Analyst: **VV**
Mercury	ND	0.10		mg/Kg	1	4/7/2011 04:12 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT: Geocon Consultants, Inc.
Lab Order: 117226
Project: Caltrans MRN-1, E8560-06-19
Lab ID: 117226-011

Client Sample ID: B3-2
Collection Date: 4/4/2011 12:40:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_110407A	QC Batch: 72049			PrepDate:	4/6/2011	Analyst: **SRB**
Antimony	4.0	2.0		mg/Kg	1	4/7/2011 02:51 PM
Arsenic	ND	1.0		mg/Kg	1	4/7/2011 02:51 PM
Barium	44	1.0		mg/Kg	1	4/7/2011 02:51 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2011 02:51 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2011 02:51 PM
Chromium	250	1.0		mg/Kg	1	4/7/2011 02:51 PM
Cobalt	26	1.0		mg/Kg	1	4/7/2011 02:51 PM
Copper	31	2.0		mg/Kg	1	4/7/2011 02:51 PM
Lead	10	1.0		mg/Kg	1	4/7/2011 02:51 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2011 02:51 PM
Nickel	290	1.0		mg/Kg	1	4/7/2011 02:51 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2011 02:51 PM
Silver	ND	1.0		mg/Kg	1	4/7/2011 02:51 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2011 02:51 PM
Vanadium	61	1.0		mg/Kg	1	4/7/2011 02:51 PM
Zinc	58	1.0		mg/Kg	1	4/7/2011 02:51 PM
DIESEL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_110407B	QC Batch: 72046			PrepDate:	4/6/2011	Analyst: **CBR**
DRO	150	10		mg/Kg	5	4/7/2011 01:34 PM
Surr: p-Terphenyl	58.1	30-128		%REC	5	4/7/2011 01:34 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_110407A	QC Batch: 72050			PrepDate:	4/6/2011	Analyst: **VV**
Mercury	0.48	0.10		mg/Kg	1	4/7/2011 04:19 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B3-3
Lab Order:	117226	**Collection Date:**	4/4/2011 12:40:00 PM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	SOIL
Lab ID:	117226-012		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_110407A	QC Batch: E11VS138			PrepDate:		Analyst: **TP**
GRO	ND	1.0		mg/Kg	1	4/7/2011 02:55 PM
Surr: Bromofluorobenzene (FID)	114	62-153		%REC	1	4/7/2011 02:55 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS4_110407A	QC Batch: K11VS104			PrepDate:		Analyst: **BD**
1,1,1,2-Tetrachloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,1,1-Trichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,1,2-Trichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,1-Dichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,1-Dichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,1-Dichloropropene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,2,3-Trichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,2,3-Trichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,2,4-Trimethylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/Kg	1	4/7/2011 12:37 PM
1,2-Dibromoethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,2-Dichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,2-Dichloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,2-Dichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,3,5-Trimethylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,3-Dichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,3-Dichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
1,4-Dichlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
2,2-Dichloropropane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
2-Chlorotoluene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
4-Chlorotoluene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
4-Isopropyltoluene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Benzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Bromobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Bromodichloromethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Bromoform	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Bromomethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Carbon tetrachloride	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Chlorobenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B3-3
Lab Order:	117226	**Collection Date:**	4/4/2011 12:40:00 PM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	SOIL
Lab ID:	117226-012		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS4_110407A	QC Batch: K11VS104			PrepDate:		Analyst: **BD**
Chloroethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Chloroform	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Chloromethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
cis-1,2-Dichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
cis-1,3-Dichloropropene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Di-isopropyl ether	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Dibromochloromethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Dibromomethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Dichlorodifluoromethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Ethyl Tert-butyl ether	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Hexachlorobutadiene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Isopropylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
m,p-Xylene	ND	10		µg/Kg	1	4/7/2011 12:37 PM
Methylene chloride	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
MTBE	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
n-Butylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
n-Propylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Naphthalene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
o-Xylene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
sec-Butylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Styrene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Tert-amyl methyl ether	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Tert-Butanol	ND	100		µg/Kg	1	4/7/2011 12:37 PM
tert-Butylbenzene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Tetrachloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Toluene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
trans-1,2-Dichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Trichloroethene	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Trichlorofluoromethane	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Vinyl chloride	ND	5.0		µg/Kg	1	4/7/2011 12:37 PM
Surr: 1,2-Dichloroethane-d4	91.0	70-130		%REC	1	4/7/2011 12:37 PM
Surr: 4-Bromofluorobenzene	85.2	70-130		%REC	1	4/7/2011 12:37 PM
Surr: Dibromofluoromethane	94.7	70-130		%REC	1	4/7/2011 12:37 PM
Surr: Toluene-d8	94.5	70-130		%REC	1	4/7/2011 12:37 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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ANALYTICAL RESULTS

Print Date: *08-Apr-11*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B3-10
Lab Order:	117226	**Collection Date:**	4/4/2011 12:48:00 PM
Project:	Caltrans MRN-1, E8560-06-19	**Matrix:**	SOIL
Lab ID:	117226-014		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_110407A	QC Batch: 72049			PrepDate:	4/6/2011	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2011 02:55 PM
Arsenic	ND	1.0		mg/Kg	1	4/7/2011 02:55 PM
Barium	46	1.0		mg/Kg	1	4/7/2011 02:55 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2011 02:55 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2011 02:55 PM
Chromium	96	1.0		mg/Kg	1	4/7/2011 02:55 PM
Cobalt	15	1.0		mg/Kg	1	4/7/2011 02:55 PM
Copper	19	2.0		mg/Kg	1	4/7/2011 02:55 PM
Lead	4.9	1.0		mg/Kg	1	4/7/2011 02:55 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2011 02:55 PM
Nickel	100	1.0		mg/Kg	1	4/7/2011 02:55 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2011 02:55 PM
Silver	ND	1.0		mg/Kg	1	4/7/2011 02:55 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2011 02:55 PM
Vanadium	50	1.0		mg/Kg	1	4/7/2011 02:55 PM
Zinc	48	1.0		mg/Kg	1	4/7/2011 02:55 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_110407A	QC Batch: 72050			PrepDate:	4/6/2011	Analyst: **VV**
Mercury	ND	0.10		mg/Kg	1	4/7/2011 04:02 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	MB-72049	SampType:	MBLK	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131821
Client ID:	PBS	Batch ID:	72049	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	4/7/2011	SeqNo:	2146421

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	0.198	1.0									

Sample ID	LCS-72049	SampType:	LCS	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131821
Client ID:	LCSS	Batch ID:	72049	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	4/7/2011	SeqNo:	2146422

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	50.007	2.0	50.00	0	100	80	120				
Arsenic	47.310	1.0	50.00	0	94.6	80	120				
Barium	51.896	1.0	50.00	0	104	80	120				
Beryllium	51.787	1.0	50.00	0	104	80	120				
Cadmium	48.662	1.0	50.00	0	97.3	80	120				
Chromium	47.043	1.0	50.00	0	94.1	80	120				
Cobalt	49.814	1.0	50.00	0	99.6	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID **LCS-72049** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/6/2011** RunNo: **131821**
Client ID: **LCSS** Batch ID: **72049** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2011** SeqNo: **2146422**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	52.193	2.0	50.00	0	104	80	120				
Lead	49.289	1.0	50.00	0	98.6	80	120				
Molybdenum	50.727	1.0	50.00	0	101	80	120				
Nickel	48.525	1.0	50.00	0	97.1	80	120				
Selenium	43.912	1.0	50.00	0	87.8	80	120				
Silver	47.285	1.0	50.00	0	94.6	80	120				
Thallium	48.706	1.0	50.00	0	97.4	80	120				
Vanadium	51.872	1.0	50.00	0	104	80	120				
Zinc	48.364	1.0	50.00	0.1976	96.3	80	120				

Sample ID **117226-014A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/6/2011** RunNo: **131821**
Client ID: **B3-10** Batch ID: **72049** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2011** SeqNo: **2146429**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.958	2.0						1.617	0	20	
Arsenic	ND	1.0						0	0	20	
Barium	175.770	1.0						45.58	118	20	R
Beryllium	ND	1.0						0	0	20	
Cadmium	0.475	1.0						0.6623	0	20	
Chromium	59.765	1.0						95.56	46.1	20	R
Cobalt	10.312	1.0						14.97	36.9	20	R
Copper	25.829	2.0						19.44	28.2	20	R
Lead	9.774	1.0						4.853	67.3	20	R
Molybdenum	ND	1.0						0	0	20	
Nickel	67.684	1.0						103.4	41.7	20	R
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	36.370	1.0						50.03	31.6	20	R
Zinc	35.743	1.0						47.64	28.5	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID **117226-014A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/6/2011** RunNo: **131821**
Client ID: **B3-10** Batch ID: **72049** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2011** SeqNo: **2146430**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	107.810	2.0	125.0	1.617	85.0	32	105				
Arsenic	105.983	1.0	125.0	0	84.8	49	106				
Barium	346.052	1.0	125.0	45.58	240	31	133				S
Beryllium	113.987	1.0	125.0	0	91.2	56	106				
Cadmium	103.993	1.0	125.0	0.6623	82.7	51	103				
Chromium	177.166	1.0	125.0	95.56	65.3	45	114				
Cobalt	121.463	1.0	125.0	14.97	85.2	52	106				
Copper	156.367	2.0	125.0	19.44	110	54	125				
Lead	115.201	1.0	125.0	4.853	88.3	34	126				
Molybdenum	109.417	1.0	125.0	0	87.5	54	106				
Nickel	186.924	1.0	125.0	103.4	66.8	45	111				
Selenium	103.004	1.0	125.0	0	82.4	47	104				
Silver	117.185	1.0	125.0	0	93.7	56	112				
Thallium	98.532	1.0	125.0	0	78.8	46	101				
Vanadium	159.226	1.0	125.0	50.03	87.4	54	114				
Zinc	146.449	1.0	125.0	47.64	79.0	28	125				

Sample ID **117226-014A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/6/2011** RunNo: **131821**
Client ID: **B3-10** Batch ID: **72049** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2011** SeqNo: **2146431**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	104.264	2.0	125.0	1.617	82.1	32	105	107.8	3.34	20	
Arsenic	102.290	1.0	125.0	0	81.8	49	106	106.0	3.55	20	
Barium	200.444	1.0	125.0	45.58	124	31	133	346.1	53.3	20	R
Beryllium	112.695	1.0	125.0	0	90.2	56	106	114.0	1.14	20	
Cadmium	102.746	1.0	125.0	0.6623	81.7	51	103	104.0	1.21	20	
Chromium	189.115	1.0	125.0	95.56	74.8	45	114	177.2	6.52	20	
Cobalt	120.187	1.0	125.0	14.97	84.2	52	106	121.5	1.06	20	
Copper	150.951	2.0	125.0	19.44	105	54	125	156.4	3.53	20	
Lead	106.290	1.0	125.0	4.853	81.1	34	126	115.2	8.05	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID **117226-014A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/6/2011** RunNo: **131821**
Client ID: **B3-10** Batch ID: **72049** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2011** SeqNo: **2146431**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	106.837	1.0	125.0	0	85.5	54	106	109.4	2.39	20	
Nickel	193.553	1.0	125.0	103.4	72.1	45	111	186.9	3.48	20	
Selenium	99.937	1.0	125.0	0	79.9	47	104	103.0	3.02	20	
Silver	114.081	1.0	125.0	0	91.3	56	112	117.2	2.68	20	
Thallium	95.871	1.0	125.0	0	76.7	46	101	98.53	2.74	20	
Vanadium	167.328	1.0	125.0	50.03	93.8	54	114	159.2	4.96	20	
Zinc	150.256	1.0	125.0	47.64	82.1	28	125	146.4	2.57	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID	MB-72053A	SampType:	MBLK	TestCode:	6010_SPB	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131835
Client ID:	PBS	Batch ID:	72053	TestNo:	EPA 6010B	EPA 3050M		Analysis Date:	4/7/2011	SeqNo:	2146647

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID	LCS-72053	SampType:	LCS	TestCode:	6010_SPB	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131835
Client ID:	LCSS	Batch ID:	72053	TestNo:	EPA 6010B	EPA 3050M		Analysis Date:	4/7/2011	SeqNo:	2146648

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	248.735	5.0	250.0	0	99.5	80	120				

Sample ID	117226-013A-DUP	SampType:	DUP	TestCode:	6010_SPB	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131835
Client ID:	B3-6	Batch ID:	72053	TestNo:	EPA 6010B	EPA 3050M		Analysis Date:	4/7/2011	SeqNo:	2146656

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.573	5.0						4.497	0	20	

Sample ID	117226-013A-MS	SampType:	MS	TestCode:	6010_SPB	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131835
Client ID:	B3-6	Batch ID:	72053	TestNo:	EPA 6010B	EPA 3050M		Analysis Date:	4/7/2011	SeqNo:	2146657

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	187.902	5.0	250.0	4.497	73.4	34	126				

Sample ID	117226-013A-MSD	SampType:	MSD	TestCode:	6010_SPB	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131835
Client ID:	B3-6	Batch ID:	72053	TestNo:	EPA 6010B	EPA 3050M		Analysis Date:	4/7/2011	SeqNo:	2146658

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	181.531	5.0	250.0	4.497	70.8	34	126	187.9	3.45	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPB

Sample ID	LCS-72079	SampType:	LCS	TestCode:	6010_WPB	Units:	mg/L	Prep Date:	4/7/2011	RunNo:	131847
Client ID:	LCSW	Batch ID:	72079	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	4/8/2011	SeqNo:	2146824

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.054	0.25	1.000	0	105	85	115				

Sample ID	117226-010A-DUP	SampType:	DUP	TestCode:	6010_WPB	Units:	mg/L	Prep Date:	4/7/2011	RunNo:	131847
Client ID:	Equipment Blank	Batch ID:	72079	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	4/8/2011	SeqNo:	2146826

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID	117226-010A-MS	SampType:	MS	TestCode:	6010_WPB	Units:	mg/L	Prep Date:	4/7/2011	RunNo:	131847
Client ID:	Equipment Blank	Batch ID:	72079	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	4/8/2011	SeqNo:	2146827

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.356	0.25	2.500	0	94.2	80	118				

Sample ID	117226-010A-MSD	SampType:	MSD	TestCode:	6010_WPB	Units:	mg/L	Prep Date:	4/7/2011	RunNo:	131847
Client ID:	Equipment Blank	Batch ID:	72079	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	4/8/2011	SeqNo:	2146828

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.377	0.25	2.500	0	95.1	80	118	2.356	0.875	20	

Sample ID	MB-72079	SampType:	MBLK	TestCode:	6010_WPB	Units:	mg/L	Prep Date:	4/7/2011	RunNo:	131847
Client ID:	PBW	Batch ID:	72079	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	4/8/2011	SeqNo:	2147645

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID	MB-72050	SampType:	MBLK	TestCode:	7471_S	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131829
Client ID:	PBS	Batch ID:	72050	TestNo:	EPA 7471A			Analysis Date:	4/7/2011	SeqNo:	2146546

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID	LCS-72050	SampType:	LCS	TestCode:	7471_S	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131829
Client ID:	LCSS	Batch ID:	72050	TestNo:	EPA 7471A			Analysis Date:	4/7/2011	SeqNo:	2146547

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.927	0.10	0.8300	0	112	80	120				

Sample ID	117226-014A-MS	SampType:	MS	TestCode:	7471_S	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131829
Client ID:	B3-10	Batch ID:	72050	TestNo:	EPA 7471A			Analysis Date:	4/7/2011	SeqNo:	2146548

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.928	0.10	0.8300	0	112	70	130				

Sample ID	117226-014A-MSD	SampType:	MSD	TestCode:	7471_S	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131829
Client ID:	B3-10	Batch ID:	72050	TestNo:	EPA 7471A			Analysis Date:	4/7/2011	SeqNo:	2146549

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.932	0.10	0.8300	0	112	70	130	0.9283	0.404	20	

Sample ID	117226-014A-DUP	SampType:	DUP	TestCode:	7471_S	Units:	mg/Kg	Prep Date:	4/6/2011	RunNo:	131829
Client ID:	B3-10	Batch ID:	72050	TestNo:	EPA 7471A			Analysis Date:	4/7/2011	SeqNo:	2146551

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10						0	0	20	

Qualifiers:

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DO	Surrogate Diluted Out		Calculations are based on raw values		

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ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DSL LL

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
MB-72046	**MBLK**	**8015_S_DSL**	**mg/Kg**	**4/6/2011**	**131814**
Client ID: **PBS**	Batch ID: **72046**	TestNo: **EPA 8015B(M EPA 3550B**		Analysis Date: **4/7/2011**	SeqNo: **2146250**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0									
Surr: p-Terphenyl	1.552		2.670		58.1	30	128				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
LCS-72046	**LCS**	**8015_S_DSL**	**mg/Kg**	**4/6/2011**	**131814**
Client ID: **LCSS**	Batch ID: **72046**	TestNo: **EPA 8015B(M EPA 3550B**		Analysis Date: **4/7/2011**	SeqNo: **2146251**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	14.503	1.0	33.00	0	43.9	35	118				
Surr: p-Terphenyl	1.868		2.670		70.0	30	128				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
117209-004AMS	**MS**	**8015_S_DSL**	**mg/Kg**	**4/6/2011**	**131814**
Client ID: **ZZZZZZ**	Batch ID: **72046**	TestNo: **EPA 8015B(M EPA 3550B**		Analysis Date: **4/7/2011**	SeqNo: **2146255**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	19.638	1.0	33.00	3.361	49.3	25	129				
Surr: p-Terphenyl	2.165		2.670		81.1	30	128				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
117209-004AMSD	**MSD**	**8015_S_DSL**	**mg/Kg**	**4/6/2011**	**131814**
Client ID: **ZZZZZZ**	Batch ID: **72046**	TestNo: **EPA 8015B(M EPA 3550B**		Analysis Date: **4/7/2011**	SeqNo: **2146256**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	17.276	1.0	33.00	3.361	42.2	25	129	19.64	12.8	20	
Surr: p-Terphenyl	1.838		2.670		68.8	30	128		0	0	

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
117226-002ADUP	**DUP**	**8015_S_DSL**	**mg/Kg**	**4/6/2011**	**131814**
Client ID: **B1-1.5**	Batch ID: **72046**	TestNo: **EPA 8015B(M EPA 3550B**		Analysis Date: **4/8/2011**	SeqNo: **2147685**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	1.813	1.0						0	200	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DSL LL

Sample ID	**117226-002ADUP**	SampType:	**DUP**	TestCode:	**8015_S_DSL**	Units:	**mg/Kg**	Prep Date:	**4/6/2011**	RunNo:	**131814**		
Client ID:	**B1-1.5**	Batch ID:	**72046**	TestNo:	**EPA 8015B(M**	**EPA 3550B**		Analysis Date:	**4/8/2011**	SeqNo:	**2147685**		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Surr: p-Terphenyl		1.876		2.670		70.3	30	128		0	0		

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
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ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID **E110407LC1** SampType: **LCS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **131840**
Client ID: **LCSS** Batch ID: **E11VS138** TestNo: **EPA 8015B(M** Analysis Date: **4/7/2011** SeqNo: **2146751**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.735	1.0	5.000	0	94.7	70	130				
Surr: Bromofluorobenzene (FID)	117.751		100.0		118	62	153				

Sample ID **E110407MB1MS** SampType: **MS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **131840**
Client ID: **ZZZZZZ** Batch ID: **E11VS138** TestNo: **EPA 8015B(M** Analysis Date: **4/7/2011** SeqNo: **2146752**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.644	1.0	5.000	0	92.9	49	131				
Surr: Bromofluorobenzene (FID)	117.020		100.0		117	62	153				

Sample ID **E110407MB1MSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **131840**
Client ID: **ZZZZZZ** Batch ID: **E11VS138** TestNo: **EPA 8015B(M** Analysis Date: **4/7/2011** SeqNo: **2146753**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.589	1.0	5.000	0	91.8	49	131	4.644	1.19	20	
Surr: Bromofluorobenzene (FID)	111.966		100.0		112	62	153		0	0	

Sample ID **E110407MB1** SampType: **MBLK** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **131840**
Client ID: **PBS** Batch ID: **E11VS138** TestNo: **EPA 8015B(M** Analysis Date: **4/7/2011** SeqNo: **2146754**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0									
Surr: Bromofluorobenzene (FID)	91.950		100.0		92.0	62	153				

Sample ID **117209-004KMS** SampType: **MS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **131840**
Client ID: **ZZZZZZ** Batch ID: **E11VS138** TestNo: **EPA 8015B(M** Analysis Date: **4/7/2011** SeqNo: **2146756**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	3.208	1.0	5.000	0.2580	59.0	49	131				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID **117209-004KMS** SampType: **MS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **131840**
Client ID: **ZZZZZZ** Batch ID: **E11VS138** TestNo: **EPA 8015B(M** Analysis Date: **4/7/2011** SeqNo: **2146756**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	110.839		100.0		111	62	153				

Sample ID **117209-004IMSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **131840**
Client ID: **ZZZZZZ** Batch ID: **E11VS138** TestNo: **EPA 8015B(M** Analysis Date: **4/7/2011** SeqNo: **2146757**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	1.972	1.0	5.000	0.2580	34.3	49	131	3.208	47.7	20	SR
Surr: Bromofluorobenzene (FID)	93.966		100.0		94.0	62	153		0	0	

Sample ID **117226-003ADUP** SampType: **DUP** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **131840**
Client ID: **B1-3** Batch ID: **E11VS138** TestNo: **EPA 8015B(M** Analysis Date: **4/7/2011** SeqNo: **2146759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.290	1.0						0.2570	0	20	
Surr: Bromofluorobenzene (FID)	117.217		100.0		117	62	153		0	0	

Sample ID **117246-074ADUP** SampType: **DUP** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **131840**
Client ID: **ZZZZZZ** Batch ID: **E11VS138** TestNo: **EPA 8015B(M** Analysis Date: **4/7/2011** SeqNo: **2146898**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.286	1.0						0.2410	0	20	
Surr: Bromofluorobenzene (FID)	114.574		100.0		115	62	153		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID **K110407LCS1** SampType: **LCS** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **LCSS** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147236**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	46.670	5.0	50.00	0	93.3	70	130				
Benzene	98.870	5.0	100.0	0	98.9	70	130				
Chlorobenzene	49.540	5.0	50.00	0	99.1	82	130				
MTBE	50.570	5.0	50.00	0	101	70	130				
Toluene	101.970	5.0	100.0	0	102	70	130				
Trichloroethene	50.900	5.0	50.00	0	102	77	130				
Surr: 1,2-Dichloroethane-d4	44.620		50.00		89.2	70	130				
Surr: 4-Bromofluorobenzene	47.170		50.00		94.3	70	130				
Surr: Dibromofluoromethane	45.710		50.00		91.4	70	130				
Surr: Toluene-d8	46.530		50.00		93.1	70	130				

Sample ID **K110407MB2MS** SampType: **MS** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **ZZZZZZ** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147237**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	47.720	5.0	50.00	0	95.4	70	130				
Benzene	101.300	5.0	100.0	0	101	70	130				
Chlorobenzene	49.700	5.0	50.00	0	99.4	70	130				
MTBE	50.570	5.0	50.00	0	101	70	130				
Toluene	103.720	5.0	100.0	0	104	70	130				
Trichloroethene	51.750	5.0	50.00	0	104	70	130				
Surr: 1,2-Dichloroethane-d4	43.110		50.00		86.2	70	130				
Surr: 4-Bromofluorobenzene	46.610		50.00		93.2	70	130				
Surr: Dibromofluoromethane	45.020		50.00		90.0	70	130				
Surr: Toluene-d8	47.420		50.00		94.8	70	130				

Sample ID **K110407MB2MSD** SampType: **MSD** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **ZZZZZZ** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147238**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID **K110407MB2MSD** SampType: **MSD** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **ZZZZZZ** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147238**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	48.450	5.0	50.00	0	96.9	70	130	47.72	1.52	20	
Benzene	102.330	5.0	100.0	0	102	70	130	101.3	1.01	20	
Chlorobenzene	51.080	5.0	50.00	0	102	70	130	49.70	2.74	20	
MTBE	49.960	5.0	50.00	0	99.9	70	130	50.57	1.21	20	
Toluene	105.570	5.0	100.0	0	106	70	130	103.7	1.77	20	
Trichloroethene	53.640	5.0	50.00	0	107	70	130	51.75	3.59	20	
Surr: 1,2-Dichloroethane-d4	43.340		50.00		86.7	70	130		0	0	
Surr: 4-Bromofluorobenzene	46.200		50.00		92.4	70	130		0	0	
Surr: Dibromofluoromethane	43.590		50.00		87.2	70	130		0	0	
Surr: Toluene-d8	47.330		50.00		94.7	70	130		0	0	

Sample ID **K110407MB2** SampType: **MBLK** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **PBS** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147239**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	10									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID **K110407MB2** SampType: **MBLK** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **PBS** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147239**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									
Carbon tetrachloride	ND	5.0									
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
cis-1,3-Dichloropropene	ND	5.0									
Di-isopropyl ether	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethyl Tert-butyl ether	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	10									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID **K110407MB2** SampType: **MBLK** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **PBS** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147239**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	ND	5.0									
MTBE	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
Tert-amyl methyl ether	ND	5.0									
Tert-Butanol	ND	100									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									
Trichlorofluoromethane	ND	5.0									
Vinyl chloride	ND	5.0									
Surr: 1,2-Dichloroethane-d4	45.750		50.00		91.5	70	130				
Surr: 4-Bromofluorobenzene	43.810		50.00		87.6	70	130				
Surr: Dibromofluoromethane	45.910		50.00		91.8	70	130				
Surr: Toluene-d8	46.520		50.00		93.0	70	130				

Sample ID **117226-003ADUP** SampType: **DUP** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **B1-3** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147322**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0						0	0	20	
1,1,1-Trichloroethane	ND	5.0						0	0	20	
1,1,2,2-Tetrachloroethane	ND	5.0						0	0	20	
1,1,2-Trichloroethane	ND	5.0						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID **117226-003ADUP** SampType: **DUP** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **B1-3** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147322**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethane	ND	5.0						0	0	20	
1,1-Dichloroethene	ND	5.0						0	0	20	
1,1-Dichloropropene	ND	5.0						0	0	20	
1,2,3-Trichlorobenzene	ND	5.0						0	0	20	
1,2,3-Trichloropropane	ND	5.0						0	0	20	
1,2,4-Trichlorobenzene	ND	5.0						0	0	20	
1,2,4-Trimethylbenzene	ND	5.0						0	0	20	
1,2-Dibromo-3-chloropropane	ND	10						0	0	20	
1,2-Dibromoethane	ND	5.0						0	0	20	
1,2-Dichlorobenzene	ND	5.0						0	0	20	
1,2-Dichloroethane	ND	5.0						0	0	20	
1,2-Dichloropropane	ND	5.0						0	0	20	
1,3,5-Trimethylbenzene	ND	5.0						0	0	20	
1,3-Dichlorobenzene	ND	5.0						0	0	20	
1,3-Dichloropropane	ND	5.0						0	0	20	
1,4-Dichlorobenzene	ND	5.0						0	0	20	
2,2-Dichloropropane	ND	5.0						0	0	20	
2-Chlorotoluene	ND	5.0						0	0	20	
4-Chlorotoluene	ND	5.0						0	0	20	
4-Isopropyltoluene	ND	5.0						0	0	20	
Benzene	ND	5.0						0	0	20	
Bromobenzene	ND	5.0						0	0	20	
Bromodichloromethane	ND	5.0						0	0	20	
Bromoform	ND	5.0						0	0	20	
Bromomethane	ND	5.0						0	0	20	
Carbon tetrachloride	ND	5.0						0	0	20	
Chlorobenzene	ND	5.0						0	0	20	
Chloroethane	ND	5.0						0	0	20	
Chloroform	ND	5.0						0	0	20	
Chloromethane	ND	5.0						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID **117226-003ADUP** SampType: **DUP** TestCode: **8260_S** Units: **µg/Kg** Prep Date: RunNo: **131859**
Client ID: **B1-3** Batch ID: **K11VS104** TestNo: **EPA 8260B** Analysis Date: **4/7/2011** SeqNo: **2147322**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	5.0						0	0	20	
cis-1,3-Dichloropropene	ND	5.0						0	0	20	
Di-isopropyl ether	ND	5.0						0	0	20	
Dibromochloromethane	ND	5.0						0	0	20	
Dibromomethane	ND	5.0						0	0	20	
Dichlorodifluoromethane	ND	5.0						0	0	20	
Ethyl Tert-butyl ether	ND	5.0						0	0	20	
Ethylbenzene	ND	5.0						0	0	20	
Hexachlorobutadiene	ND	5.0						0	0	20	
Isopropylbenzene	ND	5.0						0	0	20	
m,p-Xylene	ND	10						0	0	20	
Methylene chloride	5.760	5.0						0	200	20	R
MTBE	ND	5.0						0	0	20	
n-Butylbenzene	ND	5.0						0	0	20	
n-Propylbenzene	ND	5.0						0	0	20	
Naphthalene	ND	5.0						0	0	20	
o-Xylene	ND	5.0						0	0	20	
sec-Butylbenzene	ND	5.0						0	0	20	
Styrene	ND	5.0						0	0	20	
Tert-amyl methyl ether	ND	5.0						0	0	20	
Tert-Butanol	ND	100						0	0	20	
tert-Butylbenzene	ND	5.0						0	0	20	
Tetrachloroethene	ND	5.0						0	0	20	
Toluene	ND	5.0						0	0	20	
trans-1,2-Dichloroethene	ND	5.0						0	0	20	
Trichloroethene	ND	5.0						0	0	20	
Trichlorofluoromethane	ND	5.0						0	0	20	
Vinyl chloride	ND	5.0						0	0	20	
Surr: 1,2-Dichloroethane-d4	51.450		50.00		103	70	130		0	20	
Surr: 4-Bromofluorobenzene	44.620		50.00		89.2	70	130		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID	**117226-003ADUP**	SampType:	**DUP**	TestCode:	**8260_S**	Units:	**µg/Kg**	Prep Date:		RunNo:	**131859**	
Client ID:	**B1-3**	Batch ID:	**K11VS104**	TestNo:	**EPA 8260B**			Analysis Date:	**4/7/2011**	SeqNo:	**2147322**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	52.930		50.00		106	70	130		0	20	
Surr: Toluene-d8	51.570		50.00		103	70	130		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID	**117247-001ADUP**	SampType:	**DUP**	TestCode:	**9045_S**	Units:	**pH Units**	Prep Date:			RunNo:	**131845**	
Client ID:	**ZZZZZZ**	Batch ID:	**R131845**	TestNo:	**EPA 9045C**			Analysis Date:	**4/8/2011**		SeqNo:	**2146800**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	9.020	0.10						8.900	1.34	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#:

Logged By: Date: 4/6/11

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt:
1. CHILLED 2.2 Y ☑ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ n/a
3. CONTAINER INTACT Y ☑ N ☐
4. SEALED Y ☐ N ☑
5. # OF SPLS MATCH COC Y ☑ N ☐
6. PRESERVED Y ☑ N ☑

Client: GEOCON CONSULTANTS, INC.
Attn: John Love
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: Caltrans MRN-1 Project #: E8560-06-19 Sampler: (Printed Name) J. Love (Signature)

Relinquished by: (Signature and Printed Name) Date: 4/5/11 Time: 16:00 Received by: (Signature and Printed Name) Date: 4/6/11 Time: 9:34
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: J. Love (Print Name) 4/4/11 (Date)
Signature

Send Report To:
Attn:
Co: SAME AS ABOVE
Address
City State Zip

Bill To:
Attn:
Co: SAME AS ABOVE
Address
City State Zip

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

QA/QC: RTNE ☐ CT ☐ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	pH	Gas Package	Lead only		SOIL	WATER	GROUND WATER	WASTEWATER			TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	1172464 001	B1-0.5	4/4/11	8:50									X					X						C	1	T	m	
	2	B1-1.5		8:53						X					X			X										
	3	B1-3		9:00										X	X	X		X										
	4	B1-11		9:21									X					X										
	5	B2-0.5		10:25									X					X										
	6	B2-1.5		10:30						X						X		X										
	7	B2-10		10:50										X	X	X		X										
	8	B2-20		11:00									X					X										
	9	B2-25		11:10												X		X										
	10	Equipment Blank		12:15												X			X						P	P	N	

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

Contract No. 04-4S2204

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.
Attn: John Love
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: Caltrans MRN-1 Project #: E8560-06-19 Sampler: (Printed Name) J. Love (Signature)

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
	4/5/11	16:00		4/6/11	9:34

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: J. Love (Print Name) 4/4/11 (Date)
Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

Q A / Q C: RTNE ☐ CT ☐ SWRCB ☐ Logcode _____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	pH	Gas Package	Lead only	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	117226- 11	B3-2	4/4/11	12:40						X		X					X				C	1	T m		
	12	B3-3	↓	12:40									X	X	X		X				↓	1	↓		
	13	B3-6	↓	12:43											X		X				↓	1	↓		
	14	B3-10	↓	12:48								X					X				↓	1	↓		

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

Contract No: 04-4S2204

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

April 14, 2011

ELAP No.: 1838
NELAP No.: 02107CA
CSDLAC No.: 10196
ORELAP No.: CA300003

Workorder No.: 117226

John Love
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550

TEL: (925) 525-4142
FAX: (925) 371-5915

RE: Caltrans MRN-1, E8560-06-19

Attention: John Love

Enclosed are the results for sample(s) received on April 06, 2011 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *14-Apr-11*

CLIENT: Geocon Consultants, Inc.
Project: Caltrans MRN-1, E8560-06-19
Lab Order: 117226

CASE NARRATIVE

Analytical Comments for Method 6010

Dilution was necessary for samples 117226-004A, 117226-008A, 117226-011A and 117226-014A, due to sample matrix.

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 116888-040AMS and 116888-040AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *14-Apr-11*

CLIENT: Geocon Consultants, Inc.
Project: Caltrans MRN-1, E8560-06-19
Lab Order: 117226

Lab ID: 117226-004 **Collection Date:** 4/4/2011 9:21:00 AM
Client Sample ID: B1-11 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS BY STLC						
WET/ EPA 6010B						
RunID: ICP8_110414D QC Batch: R132040 PrepDate: Analyst: **IL**						
Chromium	ND	1.0		mg/L	20	4/14/2011 12:20 PM

Lab ID: 117226-008 **Collection Date:** 4/4/2011 11:00:00 AM
Client Sample ID: B2-20 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS BY STLC						
WET/ EPA 6010B						
RunID: ICP8_110414D QC Batch: R132040 PrepDate: Analyst: **IL**						
Chromium	2.5	1.0		mg/L	20	4/14/2011 12:40 PM
Nickel	25	1.0		mg/L	20	4/14/2011 12:40 PM
ICP METALS BY TCLP EXTRACTION						
EPA3010A **EPA 1311/ 6010B**						
RunID: ICP8_110414A QC Batch: 72200 PrepDate: 4/13/2011 Analyst: **IL**						
Chromium	ND	0.050		mg/L	1	4/14/2011 11:06 AM
Nickel	2.9	0.050		mg/L	1	4/14/2011 11:06 AM

Lab ID: 117226-011 **Collection Date:** 4/4/2011 12:40:00 PM
Client Sample ID: B3-2 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS BY STLC						
WET/ EPA 6010B						
RunID: ICP8_110414D QC Batch: R132040 PrepDate: Analyst: **IL**						
Chromium	ND	1.0		mg/L	20	4/14/2011 12:43 PM
Nickel	1.5	1.0		mg/L	20	4/14/2011 12:43 PM
ICP METALS BY TCLP EXTRACTION						
EPA3010A **EPA 1311/ 6010B**						
RunID: ICP8_110414A QC Batch: 72200 PrepDate: 4/13/2011 Analyst: **IL**						
Chromium	ND	0.050		mg/L	1	4/14/2011 11:09 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories
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Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *14-Apr-11*

CLIENT: Geocon Consultants, Inc.
Project: Caltrans MRN-1, E8560-06-19

Lab Order: 117226

Lab ID: 117226-014 **Collection Date:** 4/4/2011 12:48:00 PM
Client Sample ID: B3-10 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS BY STLC						
WET/ EPA 6010B						
RunID: ICP8_110414D QC Batch: R132040 PrepDate: Analyst: **IL**						
Chromium	ND	1.0		mg/L	20	4/14/2011 12:46 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_ST

Sample ID: **MB-72169** SampType: **MBLK** TestCode: **6010_ST** Units: **mg/L** Prep Date: RunNo: **132040**
Client ID: **PBS** Batch ID: **R132040** TestNo: **WET/ EPA 60** Analysis Date: **4/14/2011** SeqNo: **2150770**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	0.050									
Nickel	ND	0.050									

Sample ID: **MB-72169A STLC** SampType: **MBLK** TestCode: **6010_ST** Units: **mg/L** Prep Date: RunNo: **132040**
Client ID: **PBS** Batch ID: **R132040** TestNo: **WET/ EPA 60** Analysis Date: **4/14/2011** SeqNo: **2150771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									
Nickel	ND	1.0									

Sample ID: **LCS-72169** SampType: **LCS** TestCode: **6010_ST** Units: **mg/L** Prep Date: RunNo: **132040**
Client ID: **LCSS** Batch ID: **R132040** TestNo: **WET/ EPA 60** Analysis Date: **4/14/2011** SeqNo: **2150772**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.923	0.050	1.000	0	92.3	85	115				
Nickel	1.012	0.050	1.000	0	101	85	115				

Sample ID: **117226-004A-DUP** SampType: **DUP** TestCode: **6010_ST** Units: **mg/L** Prep Date: RunNo: **132040**
Client ID: **B1-11** Batch ID: **R132040** TestNo: **WET/ EPA 60** Analysis Date: **4/14/2011** SeqNo: **2150774**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.182	1.0						0.1809	0	20	
Nickel	0.898	1.0						0.8979	0	20	

Sample ID: **117226-004A-MS** SampType: **MS** TestCode: **6010_ST** Units: **mg/L** Prep Date: RunNo: **132040**
Client ID: **B1-11** Batch ID: **R132040** TestNo: **WET/ EPA 60** Analysis Date: **4/14/2011** SeqNo: **2150775**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_ST

Sample ID: **117226-004A-MS** SampType: **MS** TestCode: **6010_ST** Units: **mg/L** Prep Date: RunNo: **132040**
Client ID: **B1-11** Batch ID: **R132040** TestNo: **WET/ EPA 60** Analysis Date: **4/14/2011** SeqNo: **2150775**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	2.350	1.0	2.500	0.1809	86.8	78	115				
Nickel	3.202	1.0	2.500	0.8979	92.2	78	120				

Sample ID: **117226-004A-MSD** SampType: **MSD** TestCode: **6010_ST** Units: **mg/L** Prep Date: RunNo: **132040**
Client ID: **B1-11** Batch ID: **R132040** TestNo: **WET/ EPA 60** Analysis Date: **4/14/2011** SeqNo: **2150776**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	2.332	1.0	2.500	0.1809	86.1	78	115	2.350	0.754	20	
Nickel	3.187	1.0	2.500	0.8979	91.6	78	120	3.202	0.450	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TC

Sample ID: **MB-72200** SampType: **MBLK** TestCode: **6010_TC** Units: **mg/L** Prep Date: **4/13/2011** RunNo: **132032**
Client ID: **PBS** Batch ID: **72200** TestNo: **EPA 1311/ 60 EPA3010A** Analysis Date: **4/14/2011** SeqNo: **2150672**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	0.050									
Nickel	ND	0.050									

Sample ID: **MB-72187A TCLP** SampType: **MBLK** TestCode: **6010_TC** Units: **mg/L** Prep Date: **4/13/2011** RunNo: **132032**
Client ID: **PBS** Batch ID: **72200** TestNo: **EPA 1311/ 60 EPA3010A** Analysis Date: **4/14/2011** SeqNo: **2150673**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	0.050									
Nickel	ND	0.050									

Sample ID: **LCS-72200** SampType: **LCS** TestCode: **6010_TC** Units: **mg/L** Prep Date: **4/13/2011** RunNo: **132032**
Client ID: **LCSS** Batch ID: **72200** TestNo: **EPA 1311/ 60 EPA3010A** Analysis Date: **4/14/2011** SeqNo: **2150674**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.996	0.050	1.000	0	99.6	85	115				
Nickel	1.014	0.050	1.000	0	101	85	115				

Sample ID: **116888-040A-DUP** SampType: **DUP** TestCode: **6010_TC** Units: **mg/L** Prep Date: **4/13/2011** RunNo: **132032**
Client ID: **ZZZZZZ** Batch ID: **72200** TestNo: **EPA 1311/ 60 EPA3010A** Analysis Date: **4/14/2011** SeqNo: **2150676**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.001	0.050						0.001769	0	20	
Nickel	0.023	0.050						0.03621	0	20	

Sample ID: **116888-040A-MS** SampType: **MS** TestCode: **6010_TC** Units: **mg/L** Prep Date: **4/13/2011** RunNo: **132032**
Client ID: **ZZZZZZ** Batch ID: **72200** TestNo: **EPA 1311/ 60 EPA3010A** Analysis Date: **4/14/2011** SeqNo: **2150677**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.669	0.050	2.500	0.001769	66.7	78	115				S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

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CLIENT: Geocon Consultants, Inc.
Work Order: 117226
Project: Caltrans MRN-1, E8560-06-19

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TC

Sample ID: **116888-040A-MS** SampType: **MS** TestCode: **6010_TC** Units: **mg/L** Prep Date: **4/13/2011** RunNo: **132032**
Client ID: **ZZZZZZ** Batch ID: **72200** TestNo: **EPA 1311/ 60 EPA3010A** Analysis Date: **4/14/2011** SeqNo: **2150677**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nickel	1.756	0.050	2.500	0.03621	68.8	78	120				S

Sample ID: **116888-040A-MSD** SampType: **MSD** TestCode: **6010_TC** Units: **mg/L** Prep Date: **4/13/2011** RunNo: **132032**
Client ID: **ZZZZZZ** Batch ID: **72200** TestNo: **EPA 1311/ 60 EPA3010A** Analysis Date: **4/14/2011** SeqNo: **2150678**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.557	0.050	2.500	0.001769	62.2	78	115	1.669	6.94	20	S
Nickel	1.638	0.050	2.500	0.03621	64.1	78	120	1.756	6.92	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Diane Galvan

From: John Love [love@geoconinc.com]
Sent: Monday, April 11, 2011 9:29 AM
To: Diane Galvan
Cc: 'Rick Day'
Subject: FW: Results/EDD - Caltrans MRN-1 (117226)
Attachments: 117226.pdf; 117226.xls

Hi Diane:

In the attached results I need the following run:

B1-11 WET for Cr
B2-20 WET and TCLP for Cr and Ni
B3-2 WET and TCLP for Cr, and WET for Ni
B3-10 WET for Cr

We need them analyzed on 48 hr turnaround time.

Let me know if you have any questions.

Thanks Diane.

John Love, PG | *Sr. Project Geologist*
Geocon Consultants, Inc.
6671 Brisa Street, Livermore, California 94550
Tel 925.371.5900 Fax 925.371.5915 Cell 925.525.4142
www.geoconinc.com

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: sanleandrolab@emsl.com

Attn: **John Love**
Geocon Consultants, Inc.
6671 Brisa Street

Livermore, CA 94550

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **E8560-06-19**

Customer ID: GECN21
Customer PO: E8560-06-19
Received: 04/06/11 9:30 AM
EMSL Order: 091103144

EMSL Proj: E8560-06-**
Analysis Date: 4/7/2011

Test Report: PLM Analysis of Bulk Samples for Asbestos via EPA 600/R-93/116 Method with CARB 435 Prep (Milling) Level A for 0.25% Target Analytical Sensitivity

			Non-Asbestos		Asbestos	
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**	
B-1 3' *091103144-0001*		Brown Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**<0.25%**	**Chrysotile**
B-2 10 *091103144-0002*		Brown Non-Fibrous Homogeneous		99.50% Non-fibrous (other)	**0.50%**	**Chrysotile**
B-3 6' *091103144-0003*		Brown Non-Fibrous Homogeneous		97.00% Non-fibrous (other)	**3.00%**	**Chrysotile**

Initial report from 04/07/2011 19:04:55

Analyst(s)
Adam C. Fink (3)

Baojia Ke, Laboratory Manager
or other approved signatory

This report relates only to the samples listed above and may not be reproduced except in full, without EMSL's written approval. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. EMSL is not responsible for sample collection activities or method limitations. Some samples may contain asbestos fibers below the resolution limit of PLM. EMSL recommends that samples reported as none detected or less than the limit of detection undergo additional analysis via TEM.Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc San Leandro, CA

THIS IS THE LAST PAGE OF THE REPORT.

091103144

091103144

EMSL ANALYTICAL, INC.

EMSL – San Leandro ◆ 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

(888) 455-3675 ◆ Phone (510) 895-3675 ◆ Fax (510) 895-3680 ◆ sanleandrolab@emsl.com

EMSL Rep:		*Third Party Billing*	**requires written authorization from third party*
Company:	Geocon Consultants, Inc.	EMSL-Bill to:	
Contact:	John Love	Contact:	
Address:	6671 Brisa St.	Address:	
City & State:	Livermore CA Zip 94550	City & State:	Zip
Phone:	925-371-5900	Fax:	
☒ Email Results	love@geoconinc.com	☐ Fax results	
Project Name or Number:	E8560-06-19	Purchase Order Number:	

TURNAROUND TIME

☐ 3 Hours	☐ 6 Hours	☐ 12 Hours	☐ 24 Hours	☒ 48 Hours	☐ 72 Hours	☐ 4 Days	☐ 5 Days	☐ 6-10 Days

SAMPLE MATRIX

☐ Air	☐ Bulk	☒ Soil	☐ Wipe	☐ Micro-Vac	☐ Drinking Water	☐ Wastewater	☐ Chips	☐ Other

ASBESTOS ANALYSIS

PCM - Air
- ☐ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/TWA

TEM AIR
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

PLM - Bulk
- ☐ EPA 600/R-93/116
- ☐ NY Stratified Point Count

CARB 435 Level: ☐ A ☐ B ☐ C ☐ D ☐ E
- ☐ NIOSH 9002
- ☐ PLM NOB (Gravimetric) NYS 198.1
- ☐ EPA Point Count (400 Points)
- ☐ EPA Point Count (1,000 Points)
- ☐ Standard Addition Point Count

SOILS

EPA Protocol ☐ Qualitative ☐ Quantitative

CARB 435 Level: ☒ A ☐ B ☐ C ☐ D ☐ E
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)

TEM BULK
- ☐ Drop Mount (Qualitative)
- ☐ Chatfield SOP-1988-02
- ☐ TEM NOB (Gravimetric) NY 198.4

TEM MICROVAC
- ☐ ASTM D 5755-95 (Quantitative)

TEM WIPE
- ☐ ASTM D-6480-99
- ☐ Qualitative☐

TEM WATER
- ☐ EPA 100.1
- ☐ EPA 100.2
- ☐ NYS 198.2

OTHER:

LEAD ANALYSIS

Flame Atomic Absorption
- ☐ Wipe, SW846-7420☐ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420
- ☐ TCLP LEAD SW846-1311/7420

Graphite Furnace Atomic Absorption
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

ICP – Inductively Coupled Plasma
- ☐Wipe, SW846-6010☐ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

MATERIALS ANALYSIS
- ☐ Full Particle Identification
- ☐ Optical Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterizaton
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other:

MICROBIAL ANALYSIS

Air Samples
- ☐Mold & Fungi by Air O Cell
- ☐Mold & Fungi by Agar Plate count & id
- ☐Bacterial Count and Gram Stain
- ☐Bacterial Count and Identification

Water Samples
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

Wipe and Bulk Samples
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other:

IAQ ANALYSIS
- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐Niosh 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other:

Client Sample # (S) _____ - _____ TOTAL SAMPLE # 3

Relinquished:	[signature]	Date:	4/5/11	Time:	16:00
Received:	[signature]	Date:	4/6/11	Time:	0924 courier
Relinquished:		Date:		Time:	
Received:		Date:		Time:	

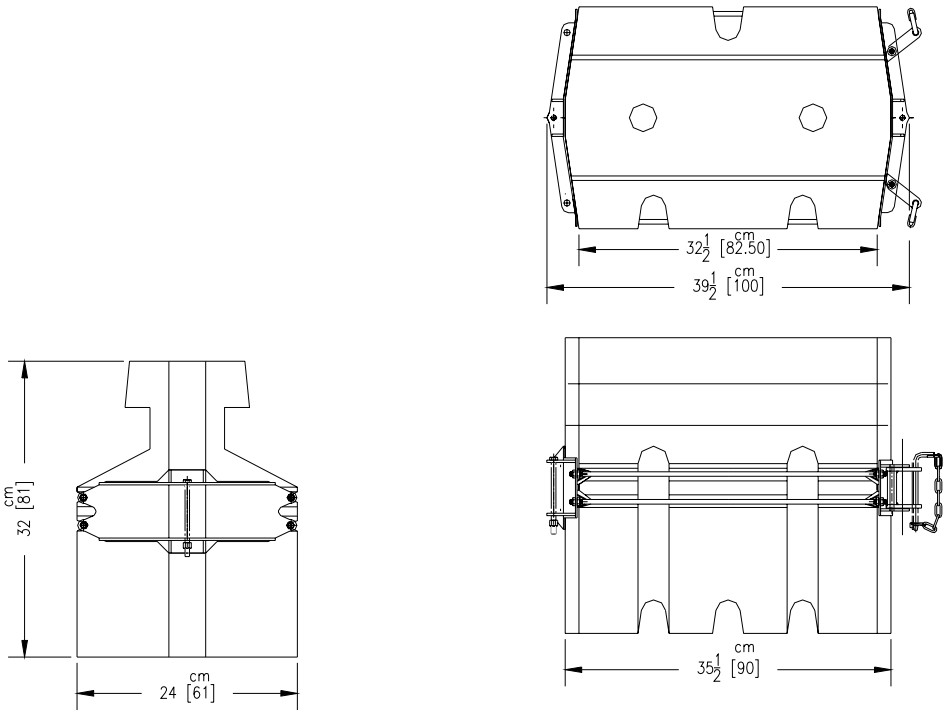
091103144

EMSL ANALYTICAL, INC.

EMSL – San Leandro • 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME Air (L) Area (Inches sq.)
B-1 3'	soil	4/4/11
B-2 10'	↓	↓
B-3 6'	↓	↓

Relinquished:		Date:		Time:	
Received:	[signature]	Date:	4/6/11	Time:	0924 courier
Relinquished:		Date:		Time:	
Received:		Date:		Time:	



NOTE:
THICKNESS OF WELD TO BE EQUAL TO THE THINNER OF 2 PIECES BEING JOINED. WELD TO BE ALL AROUND UNLESS OTHERWISE NOTED.

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REV.	CHANGES	DATE	BY	REQ'D	NEXT ASSY.	ITEM

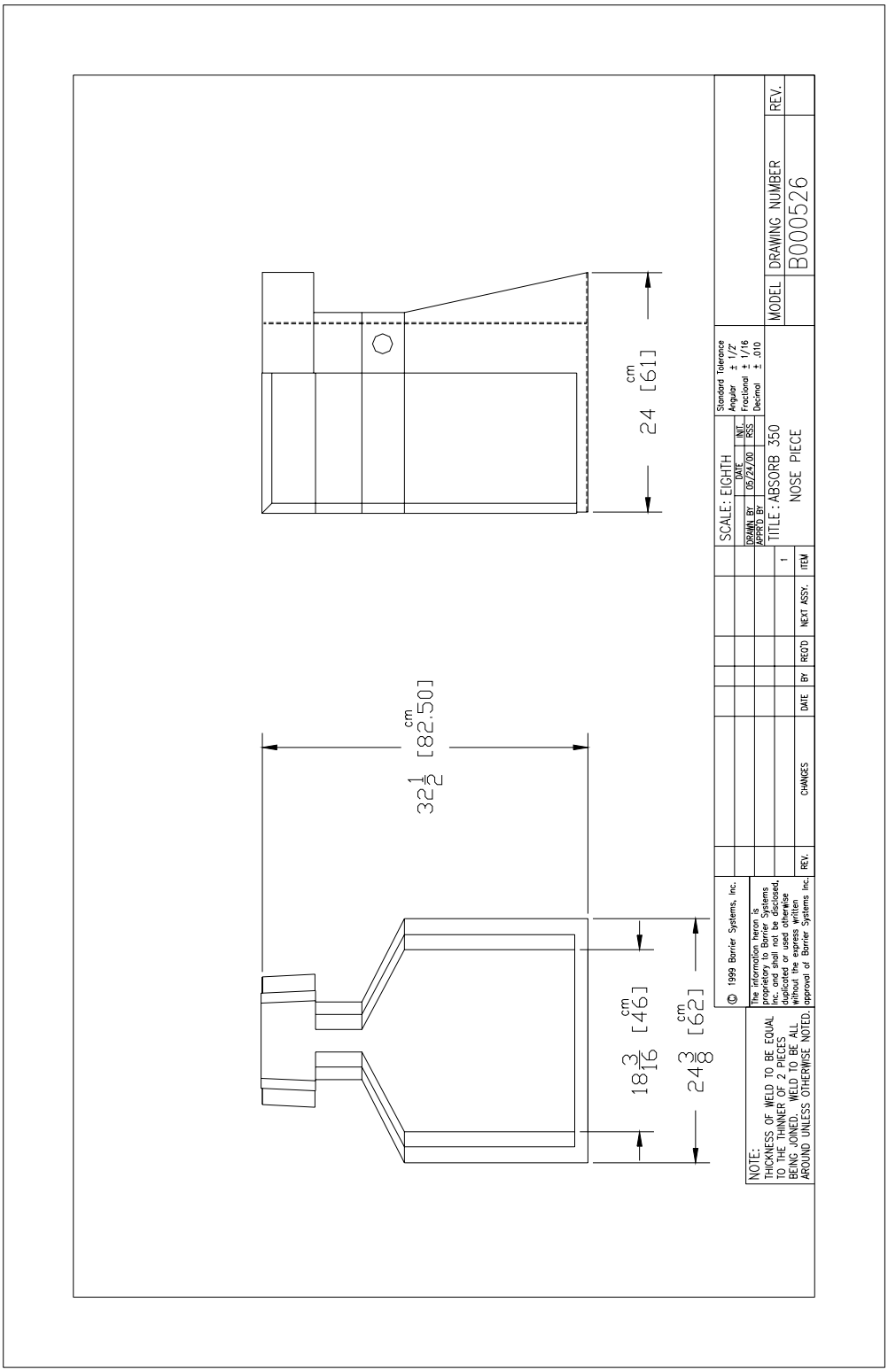
SCALE: 1=10

	DATE	INIT.
DRAWN BY	3/2/00	R.R.C.
APPR'D BY		

TITLE : ABSORB 350 ELEMENT

Standard Tolerance
Angular ± 1/2°
Fractional ± 1/16
Decimal ± .010

MODEL	DRAWING NUMBER	REV.
	B000524	


24 cm [61]
32 1/2 cm [82.50]
18 3/16 cm [46]
24 3/8 cm [62]
NOTE:
THICKNESS OF WELD TO BE EQUAL TO THE THINNER OF 2 PIECES BEING JOINED. WELD TO BE ALL AROUND UNLESS OTHERWISE NOTED.
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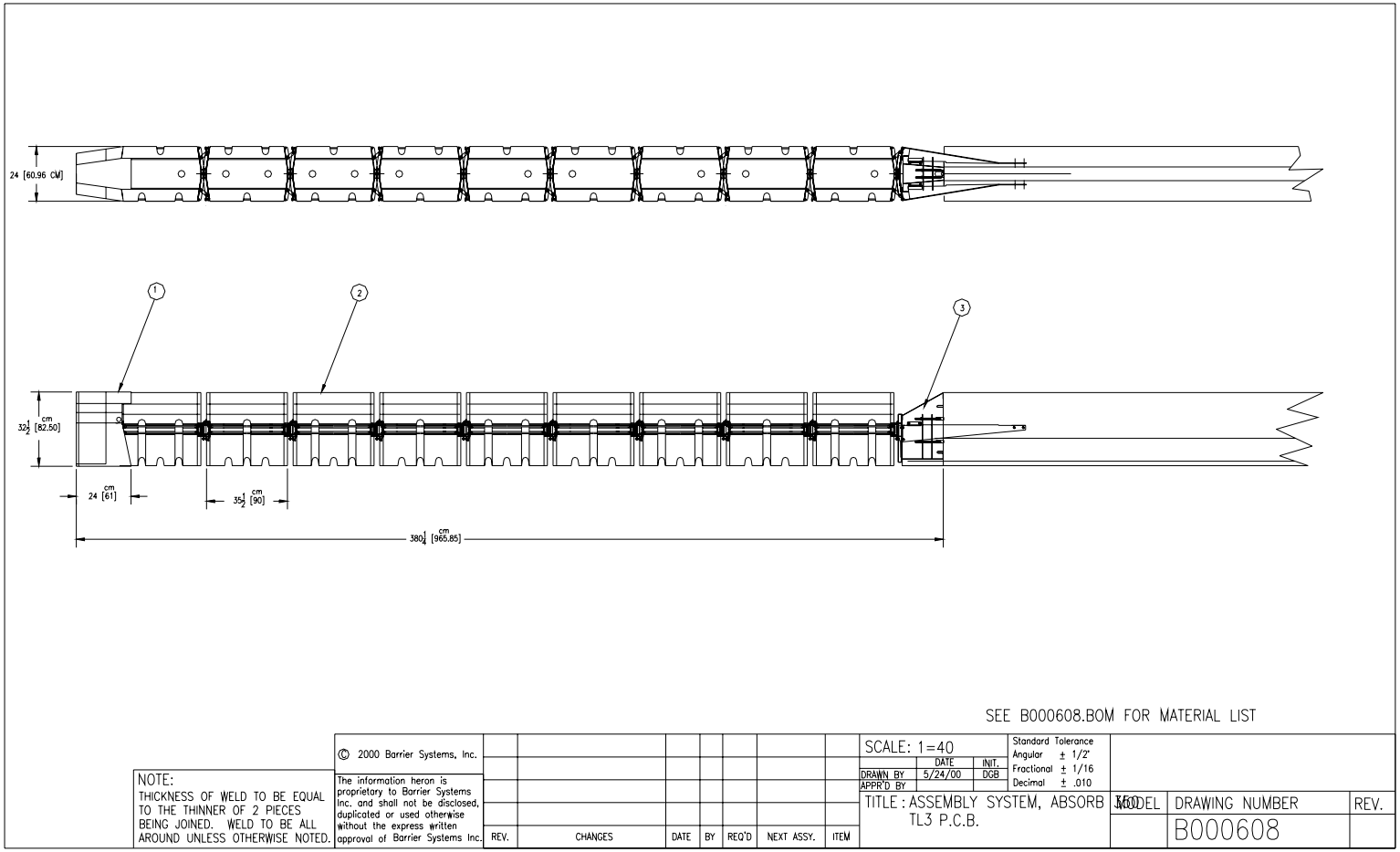
REV.
CHANGES
DATE
BY
REQ'D
NEXT ASSY.
ITEM
1
SCALE: EIGHTH
DRAWN BY
APPR'D BY
DATE
05/24/00
INIT.
RSS
TITLE: ABSORB 350
NOSE PIECE
Standard Tolerance
Angular ± 1/2°
Fractional ± 1/16
Decimal ± .010
MODEL
DRAWING NUMBER
B000526
REV.



SEE B000608.BOM FOR MATERIAL LIST

NOTE:
THICKNESS OF WELD TO BE EQUAL TO THE THINNER OF 2 PIECES BEING JOINED. WELD TO BE ALL AROUND UNLESS OTHERWISE NOTED.

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REV.	CHANGES	DATE	BY	REQ'D	NEXT ASSY.	ITEM

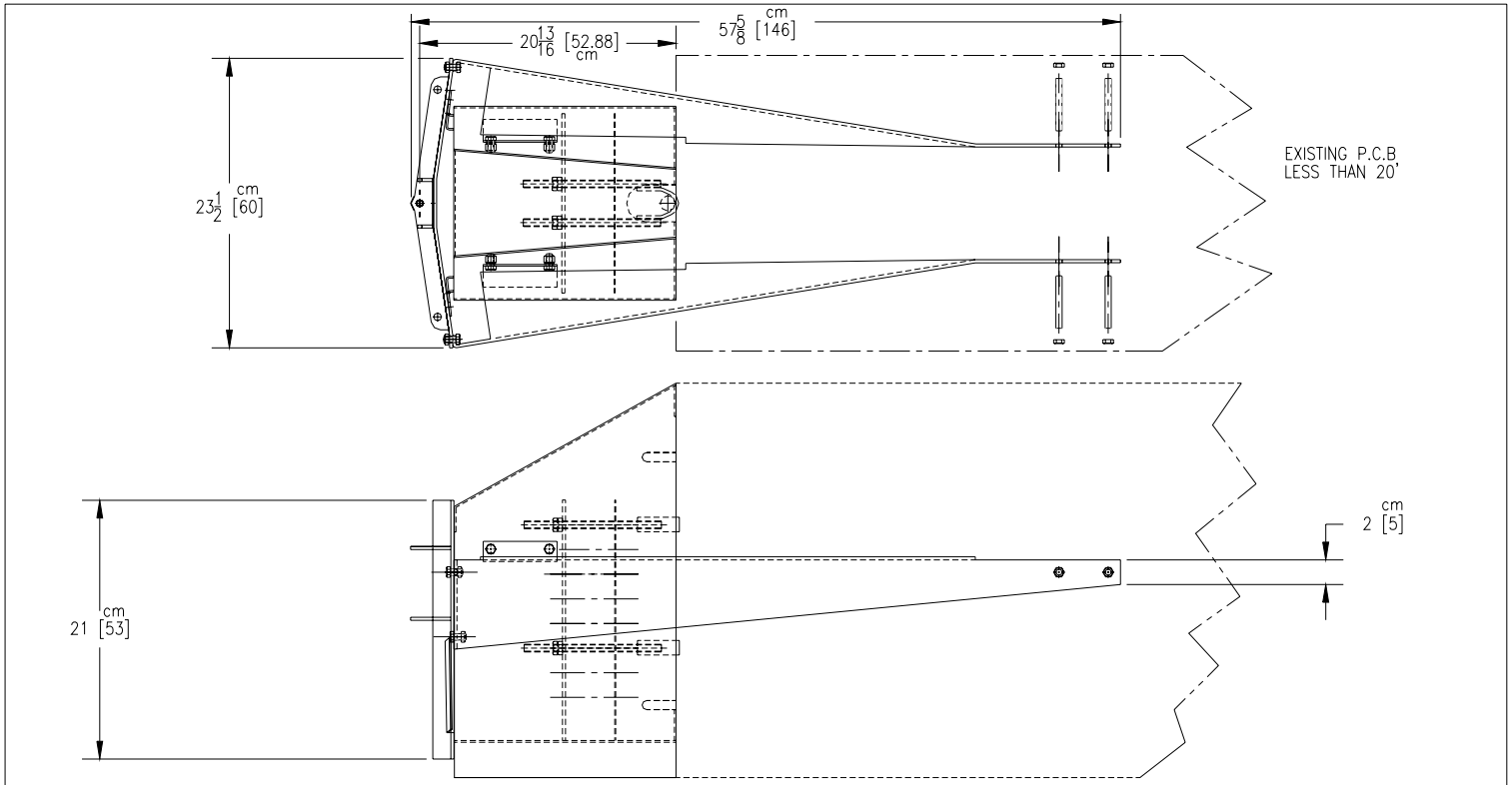
SCALE: 1=40

	DATE	INIT.
DRAWN BY	5/24/00	DGB
APPR'D BY		

Standard Tolerance
Angular ± 1/2°
Fractional ± 1/16
Decimal ± .010

TITLE : ASSEMBLY SYSTEM, ABSORB 100 TL3 P.C.B.

MODEL	DRAWING NUMBER	REV.
	B000608	



NOTE:
THICKNESS OF WELD TO BE EQUAL TO THE THINNER OF 2 PIECES BEING JOINED. WELD TO BE ALL AROUND UNLESS OTHERWISE NOTED.

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REV.	CHANGES	DATE	BY	REQ'D	NEXT ASSY.	ITEM

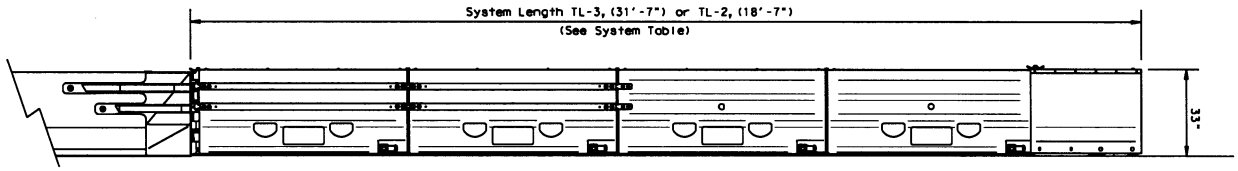
SCALE: EIGHTH

	DATE	INIT.
DRAWN BY	05/24/00	R.R.C.
APPR'D BY		JM

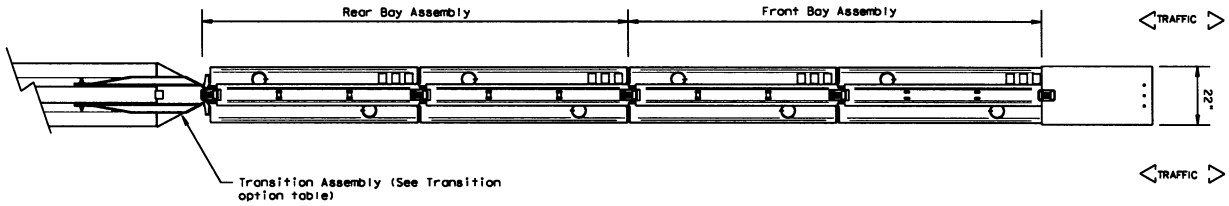
Standard Tolerance
Angular ± 1/2°
Fractional ± 1/16
Decimal ± .010

TITLE : TRANSITION HARDWARE
ABSORB 350 TL2
P.C.B.

MODEL	DRAWING NUMBER	REV.
	B000531	



ELEVATION



PLAN

Bi-Directional traffic flow shown.

GENERAL NOTES

1. For additional information contact: Energy Absorption Systems Inc. 35 E. Wacker Dr. Suite 1100 Chicago, IL. 60601. 1(888)323-6374.
2. Refer to Installation manual and configuration chart for specific system assembly and element orientation.
2. The ACZ 350 system is approved for use in temporary (Work Zone) locations. The ACZ 350 is a water filled non-redirective, gating crash cushion that does not need to be attached to a foundation and can be installed on top of concrete, asphalt, or any surface capable of bearing the weight of the system.
3. The ACZ 350 system consist of four major components, the transition assembly, rear bay assembly, front bay assembly, and nose assembly. See manufacturer's installation manual for details.
4. Maximum permissible cross-slope is 8% .
5. The installation area should be free from curbs, elevated objects, or depressions.
6. The ACZ 350 should be approximately parallel with the barrier or ℄ of merging barrier.

PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	3595601-0000	FRONT BAY ASSY, ACZ-350, TL-3	1
2	3595601-0000	REAR BAY ASSY, ACZ-350, TL-3	1
* 3	3595608-*000	NOSE, ACZ-350, (See Below)	1
4	SEE TABLE	TRANSITION ASSEMBLY	1

*See details below for nose delineation

TRANSITION ASSEMBLY OPTIONS

PART NO.	BARRIER
3595616-0000	CTB SAFETY SHAPE (8" TOP)
3595618-0000	CSB F-SHAPE (9 ½" TOP)
3595620-0000	SSCB SINGLE SLOPE (8" TOP)

ACZ-350 (NARROW) SYSTEM

TEST LEVEL	SYSTEM LENGTH
TL-2	18'- 7"
TL-3	31'- 7"

TRANSITION OPTIONS

The ACZ 350 system is approved for use at bi-directional sites, additional hardware may be required. (See the Manufacurer's product manual)

Backup and Transition types are shown elsewhere on the plans (i.e. Attenuator location details or in the general notes).

3595608-0000 NO STRIPING | 3595608-1000 TRAFFIC PASSES ON THE RIGHT | 3595608-2000 TRAFFIC PASSES ON THE LEFT | 3595608-3000 TRAFFIC PASSES ON BOTH SIDES

Texas Department of Transportation — Design Division Standard

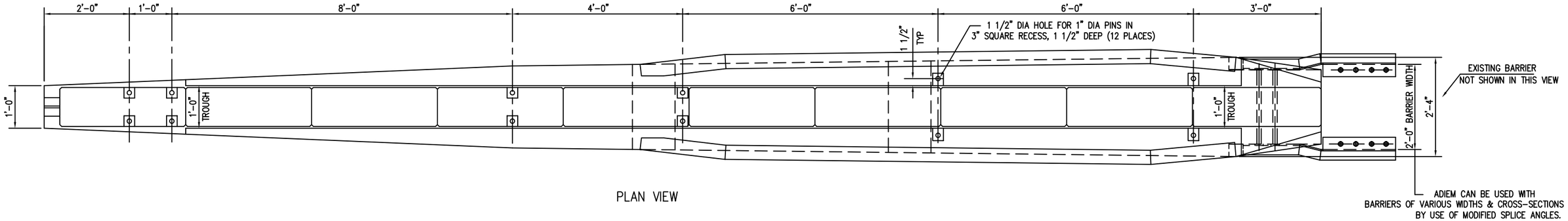
ENERGY ABSORPTION ACZ-350 CRASH CUSHION (TEMPORARY, WORK ZONE)

ACZ(350)-13

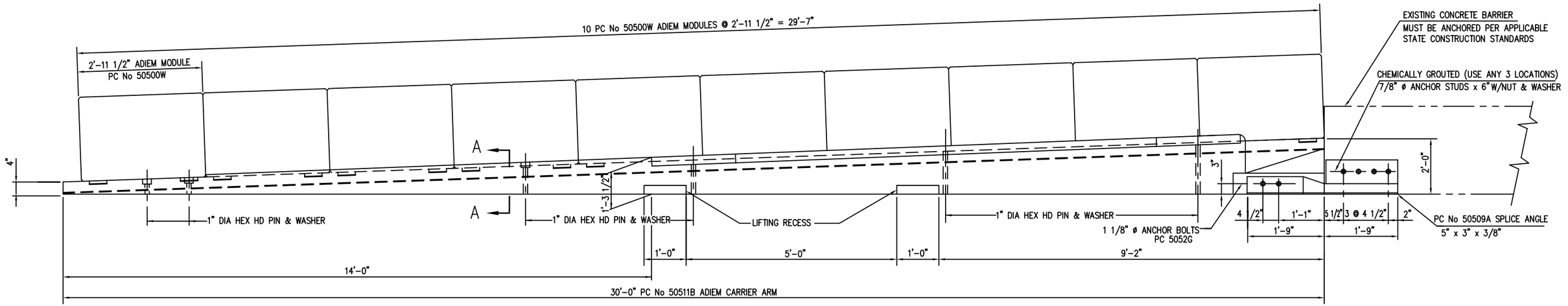
FILE: acz35013.dgn	DN: TxDOT	CK: AM	DW: BD	CK:
©TxDOT March 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED JUNE, 2013 (VP)	DIST		COUNTY	SHEET NO.

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

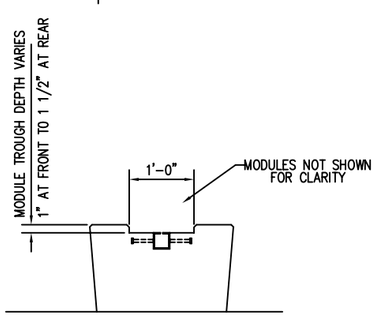
DATE:
FILE:



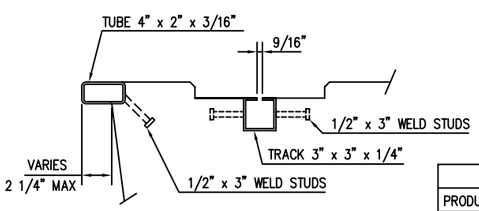
PLAN VIEW



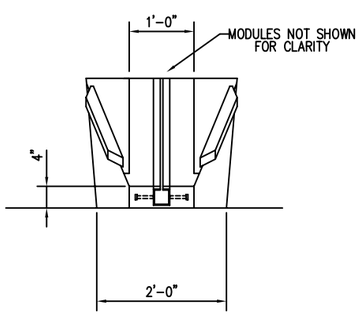
ELEVATION VIEW



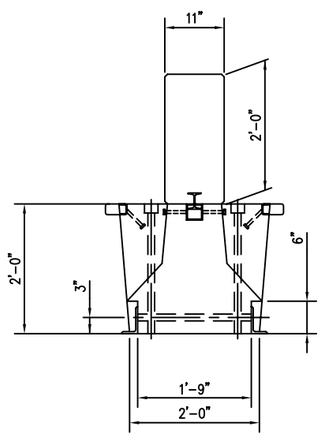
SECTION A–A



TRACK & BUMPER DETAIL



FRONT ELEVATION VIEW



REAR ELEVATION VIEW

BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION	REMARKS
50500W	10	MODULES x 2'-11 1/2"	
50511B	1	BASE x 30'-0"	
50508A	1	SPLICE ANGLE x 3'-6" RT	
50509A	1	SPLICE ANGLE x 3'-6" LT	
6549W	1	GARNA-THANE COATING (1 GAL)	
5052G	2	1 1/8" ø x 25" HEX HD BOLT	
4963G	4	1 1/8" WASHER	
3976G	2	1 1/8" HEX NUT	
4616G	6	7/8"ø STUD x 6" (FULL THD)	
3725G	6	7/8" WASHER	
3735G	6	7/8" HEX NUT	
☆ 5206B	1	ADHESIVE HY150 CARTRIDGE	
3900G	12	1" WASHER	
5665G	SEE SCH	1" ø HEX HD PIN x 48"	SEE NOTES 1-5
5642G	↓	1" ø HEX HD PIN x 42"	
5650G		1" ø HEX HD PIN x 36"	
5641G		1" ø HEX HD PIN x 30"	
5646G		1" ø HEX HD PIN x 24"	
5643G		1" ø HEX HD PIN x 18"	

ANCHOR PIN SCHEDULE PER SURFACE (SEE NOTES 1-5)		
PCC	ACP	BASE
		4
	4	
4		4
	4	4
	4	
4		

Contract No. 04-4S2204
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☆ EACH CARTRIDGE INCLUDES 1 EACH : MIXER HY 150 CARTDIDGE(NOZZLE)
: FILLER HIT HY 150 (FILLER TUBE)

NOTES:
1) ANCHOR PINS ARE 1" DIA HEX HD, POINTED, GALV RODS (A307)
2) PORTLAND CEMENT CONCRETE (PCC)
3) ASPHALTIC CONCRETE (ACP)
4) BASE AND/OR COMPACTED SOIL (BASE)
5) ADIEM INSTALLATION NOT RECOMMENDED ON LOOSE SOIL.

ADIEM INSTALLATION INSTRUCTIONS

1. The ADIEM base is to be placed on a smooth surface (the same horizontal plane as the concrete barrier) and parallel to the mainline or ramp traveled lane(s).
2. Install anchor rods for ADIEM base by driving in soil or soft asphalt or driving in pre-drilled holes for hard asphalt or concrete (no epoxy required). The base should not be moved after the holes are drilled. The holes should be drilled using, at a mininum, a 35# hammer and minimum 36 inch long drill bit. (A 50# hammer is recommended.)
3. Attach connection brackets to base with two (2) 1 1/8" X 25" hex head bolts provided. Then field drill holes in the existing barrier and attach connection brackets to it with chemically grouted hardware provided.
4. Oil the ADIEM base track. Slide the modules onto the base. Be careful not to damage edges of the modules while sliding onto the base.
5. If the modules are scuffed or nicked, apply GARNA-THANE coating to the affected area.
6. Recommended tools and equipment:
   - 35/50# air hammer/drill
   - 1 3/8" ø x 36" rock drill
   - 1 1/4" ø x 12" rock drill
   - Sledge hammer
   - Oil
   - Wrenches

OPTIONAL ANCHOR ITEMS	
PRODUCT CODE	DESCRIPTION
5205B	ADHESIVE DISPENSER
5207B	MIXER HIT HY150 (NOZZLE)
5208B	FILLER HIT HY150 (FILLER TUBE)
5209B	BIT TE-C+ 11/16-18 (11/16" ø BIT)

ALTERNATE ADIEM INSTALLATION INSTRUCTIONS

1. At a holding site, the modules are slid into the ADIEM base after oiling the base track. Be careful not to damage the edges of the modules while sliding them onto the base.
2. If the modules are scuffed or nicked, apply GARNA-THANE coating to the affected area.
3. The unit is then delivered to the job site. The unit is to be placed on a smooth surface (the same horizontal slope as the concrete barrier) and parallel to the mailine or ramp traveled lane (s).
4. The front module should be removed so the remaining modules can be shifted for easy access for drilling the anchor rod holes.
5. Install anchor rods for ADIEM base by driving in soil or soft asphalt or driving in predrilled holes for hard asphalt or concrete (no epoxy required). The base should not be moved after the holes are drilled. The holes should be drilled using, at a minimum, a 35# hammer and a minimum 36 inch long drilling bit. (A 50# hammer is recommended.)
6. Attach connection brackets to base with two (2) 1 1/8" X 25" hex head bolts provided. Then field drill holes in the existing barrier and attach connection brackets to it with chemically grouted hardware provided.

REV.	CHK'D	BY	DATE	REMARKS
6	B.T.	L.H.	12/10/03	REPLACED GROUT WITH HILTI, UPDATED DWG
5		L.H.	03/12/03	DELETED NOTE #7, REVISED NOTE #3
4	D.D.	L.H.	12/17/99	REVISED COATING, CHANGED TITLE BLOCK
3		BT	3-14-97	DELETED PC 5484, ADDED PC 5052, CHG QTY PC 3976
2		BT	2-14-97	GENERAL UPDATES

ADIEM 30'

ERECTION DETAILS

TRINITY INDUSTRIES, INC.
HIGHWAY SAFETY PRODUCTS
2525 STEMMONS FREEWAY, DALLAS, TX 75207

DRAWN	B.TAKACH
CHECKED	D.D.
APPROVED	
DATE	3/19/96
ENG. FILE #	SS349-01E
SHT.No.	E1 OF 1
DRAWING NO.	SS 349
REV.	6

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