Preliminary Geotechnical Engineering Report
Subsurface Characterization and Preliminary Settlement
Proposed Irwindale Outlet Center
Irwindale, California

Shannon & Wilson, Inc.

May 20, 2014

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SHANNON & WILSON, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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PRELIMINARY GEOTECHNICAL ENGINEERING REPORT
SUBSURFACE CHARACTERIZATION AND PRELIMINARY SETTLEMENT
PROPOSED IRWINDALE OUTLET CENTER, IRWINDALE, CALIFORNIA

1.0 INTRODUCTION

1.1 General

This report presents our subsurface characterization and preliminary settlement estimate for the proposed Irwindale Outlet Center (Project) in Irwindale, California as shown in Figure 1. The Project site is located on a former sand and gravel quarry that has been backfilled and is currently occupied by the Irwindale Speedway (Plate 1). This report summarizes our subsurface exploration program, laboratory testing and geotechnical engineering studies, and presents preliminary conclusions for the Project. This report is not intended for final geotechnical design of the project.

Our understanding of the Project is based on our previous geotechnical studies, discussions with the design team, and a meeting on June 4, 2013 with the County of Los Angeles (County) and City of Irwindale (City) representatives (Agency Meeting). Our previous geotechnical studies for the Project included:

- A Preliminary Geotechnical Review Letter dated May 8, 2013 (Review Letter), and;
- Minutes of Meeting with Mr. Jim Mnoian dated August 19, 2013 describing the previous site history and development (Mnoian Meeting).

For the Review Letter, we reviewed a proposed building layout for the Project, a previous geotechnical report at the site, and performed a site reconnaissance. We completed a literature review including historic aerial photographs of the site as part of the Mnoian Meeting.

1.2 Project Description

The Project will consist of approximately 130 single-story retail stores with floor spaces ranging from 1,200 square feet (sf) to 28,000 sf and is shown on Plate 2. The location of the shops and major retail stores will be on the south-central portion of the existing speedway site. The remainder of the site will be covered by asphalt paving for parking to the west, north, and east of the shops and stores.

1.3 Scope of Services

Our current scope of services for subsurface characterization and preliminary settlement is described in Phase 2 of our proposal dated February 6, 2014. Mr. Hai Xiao authorized our services on March 19, 2014. Our services as part of this phase included:

- Site Reconnaissance and Field Preparation
- Subsurface Exploration
- Geotechnical Laboratory Testing
- Seismic Design
- Preliminary Settlement Analyses
- Report

Our services included conferring with Professor Jonathan Stewart of University of California at Los Angeles (UCLA) regarding our preliminary recommendations and one meeting with Irwindale Outlet Partners to discuss the preliminary conclusions of our report.

2.0 EXISTING SITE CONDITIONS

2.1 Site History

The Project site is the former Pacific Rock Quarry, which was operated through the late 1960s as a supply of sand and gravel for construction in the Los Angeles basin. The quarry was backfilled from the mid-1970s to May 1993 with approximately 200 vertical feet of fill, reportedly composed of non-hazardous demolition debris as part of the former Nu-Way Landfill. Plate 2 also includes a topographic map of the quarry in 1968, prior to the beginning of landfill backfilling.

The quarry footprint was subdivided in the early 1990s into a western 29 acre plot and an eastern 63 acre plot (Nu-Way, 1999). Two trucking facilities currently reside on the western plot. Irwindale Speedway was constructed on the eastern plot in the late 1990s. NorCal Engineering, Devco Engineering, and Foundation Engineering authored a series of geotechnical reports from 1987 to 1990 for the construction of the two trucking facilities. Devco Engineering recommended construction of a temporary surcharge fill over the proposed facility footprint to minimize post-construction settlement. Devco reported between 4 and 17.5 inches of static settlement at the midpoint of surcharge fills as monitored by Foundation Engineering (Devco, 1990).

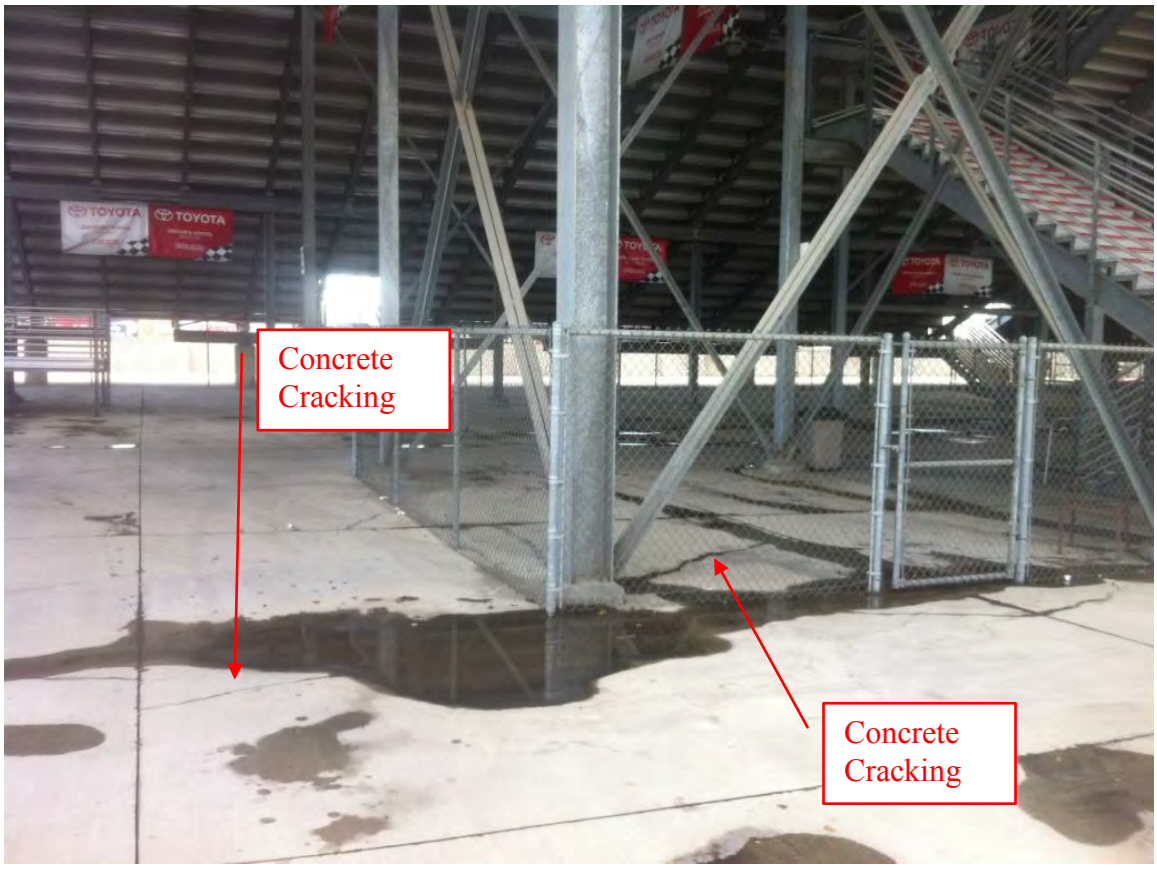
Law/Crandall completed a geotechnical report for the proposed Irwindale Speedway dated March 30, 1998 (L/C Report). The L/C Report recommended that provisions be made to tolerate future settlement and structures be supported on reinforced concrete mat foundations underlain by a blanket of compacted fill. The report discussed the potential for on-going settlement and the need for continuing maintenance (Law/Crandall, 1998).

Descriptions of debris and other fill material that was deposited in Nu-Way Landfill is anecdotal and based on the Mnoian Meeting and reports from the Irwindale Speedway operators. The anecdotal reports indicate the fill material may range from crushed concrete and brick to whole cars and layers of car tires. Several Irwindale Speedway site personnel also indicated that 55-gallon drums were deposited at the southeast corner of the site in the early 1990s. The drum contents and origins are unknown.

2.2 Current Conditions

The existing Irwindale Speedway is composed of a NASCAR ½-mile and $^{1}/_{3}$ mile asphalt-paved and banked racetracks with support buildings and a grandstand as shown in Plate 1. J.R. Miller & Associates (JRM, 2013) indicates the support buildings completed for the Irwindale Speedway development are supported on reinforced concrete mat foundations ranging from 18 inches to 24 inches thick. Our Review Letter includes observations and photographs from our April 2013 site reconnaissance regarding the condition of these existing structures. The Review Letter indicates the single story structures show minimal cracking on the building exteriors.

We observed additional pavement cracking around grandstand columns during our April 2014 site reconnaissance (Photograph 1). The cracking generally exhibits a “spider web” formation that propagates radially from the base of grandstand columns that could have resulted from settlement. The column cracking appeared to be more extensive around columns that supported the box seats at the top of the grandstand; these columns likely have the greatest concentrated loads of the grandstand columns.



Photograph 1: Cracking Around Grandstand Column

3.0 SUBSURFACE EXPLORATION

We drilled sonic boring B-1 at the location shown on Plates 1 and 2 between April 21 and 24, 2014 to a depth of 200 feet below ground surface. Appendix A provides the boring log and details of the exploration. A Shannon & Wilson engineering geologist supervised the field exploration program, and a field engineer observed the exploratory drilling, collected samples, and logged the boring.

In addition to our boring, Law/Crandall drilled ten geotechnical explorations during design of the Irwindale Speedway (Law/Crandall, 1998). Plate 1 shows the locations of the Law/Crandall borings and Appendix B provides boring logs for the Law/Crandall borings. The borings were drilled to about 15 to 20 feet depth and generally indicate silty sand fill soils with concrete, brick, and other demolition debris.

4.0 LABORATORY TESTING

We performed geotechnical laboratory testing on selected samples retrieved from the sonic core samples. The testing included visual classifications, moisture content, gradation analyses, Atterberg limits. The boring log in Appendix A displays moisture content, Atterberg limits, and fines content. Appendix C presents additional laboratory test results and descriptions of laboratory test procedures.

5.0 SUBSURFACE CONDITIONS

5.1 General

Boring B-1 indicates the subsurface is composed of the fill underlain by alluvial materials described in the following sections. The cross section on Plate 3 shows the location of our boring and reference to the 1968 quarry profile.

Note that the nature of the quarry backfilling by Nu-Way Landfill suggests that subsurface conditions may vary substantially. The log generated by Boring B-1 is only representative of subsurface conditions in the immediate vicinity of that boring.

5.2 Fill (af)

Fill (geologic symbol: af) was deposited at the site during infilling of the Nu-Way Landfill. The fill generally consists of clayey to silty sand with variable amounts of gravel and demolition debris. Demolition debris encountered in the boring included concrete, brick, wood, and shredded tires. Thin (<5 foot) silt or clay layers of low to medium plasticity subdivide the sand and act as barriers to groundwater. Lean clay caps the site between 3 to 8 feet depth. We encountered clay with intermediate silt between 33 and 42 feet depth that appears to create a perched groundwater layer between 31 and 33 feet.

Demolition debris existed as scattered, crushed particles or as relatively intact segments extracted in the sonic core. We encountered crushed or intact debris layers of about 0.5 to 2 feet thick. In addition, we encountered a 10-foot nearly-homogenous layer of shredded tires from 121 to 131 feet deep. We continued to encounter shredded tires in isolated pockets until 143 feet depth; then again retrieved a nearly-homogenous layer of tires from 158 to 160 feet depth.

Nu-Way Landfill likely placed the fill in an uncontrolled manner (i.e., non-engineered or without compaction testing); therefore, the fill will have varying characteristics with regard to composition, strength and drainage. Demolition debris constituents in the fill is likely highly

variable and may exist at greater frequency than indicated by the sonic boring samples. We encountered fill materials to the reported bottom of the landfill at about 170 feet depth.

5.3 Alluvium (Qa)

We encountered sandy alluvium (geologic symbol: Qa) with variable amounts of silt and gravel below 170 feet deep to the bottom of the boring at 200 feet. Alluvium in the project area is mapped as channel and floodplain deposits composed of sand, gravel and boulders with interbeds of silt and clay (Dibblee, 1999). This material was deposited from deposition of alluvial fans from the San Gabriel Mountains and flooding from the ancestral San Gabriel River prior to flood control and channelization. Density of this relatively granular material generally increases with depth. This material does not contain substantial amounts of fine-grained soil (e.g. silt and clay) and well-drained.

5.4 Groundwater

We encountered free groundwater in the sonic boring at about 194 feet depth, as detected by the saturated sonic samples beginning at that depth; drilling activities prohibited direct measurement of groundwater. In addition, we encountered a perched groundwater table from 31 to 33 feet depth.

The project site's historic high groundwater is reported at approximately 70 to 80 feet below ground surface (CDMG, 1998). California State Water Resources Control Board (CSWRCB) measured groundwater at 186 feet below ground surface in February 2014 at well No. L10008793600, which is about 1,200 feet southeast of the site (CSWRCB, 2014). Topographic maps provided by Nu-Way Landfill indicate groundwater levels around 115 feet below ground surface in 1968 and 145 feet below ground surface in 1964 (Nu-Way, 2014).

Groundwater levels reflect conditions at the time of measurement and may fluctuate in response to recent rainfall, seasonal variations, and other factors. We assessed seismic hazards, such as liquefaction, using a groundwater level of 70 feet depth, with perched groundwater from 31 to 33 feet depth. We assessed dry seismic settlement (seismic compression) using a groundwater depth of 194 feet to quantify this hazard independently of liquefaction.

6.0 PRELIMINARY ENGINEERING ANALYSES

6.1 General

Our current scope of services is intended to provide preliminary seismic and static settlement estimates for the proposed outlet center. At the previous agency meeting, the County verbally indicated that outlet center buildings subject to greater than 4 inches of settlement would require deep foundations or ground improvement to mitigate settlement.

6.2 Seismic Settlement

Seismic settlement may originate from seismic compression or liquefaction. California Geological Survey (CGS) Special Publications 117 (SP-117) prescribes a seismic settlement limit of 4 to 6 inches for proposed developments (CGS, 2008). Professor Jonathan Stewart at UCLA proposed more recent methods to evaluate seismic compression (Stewart et al., 2003; Stewart et al., 2004). We reviewed these publications as part of this study.

6.2.1 Seismic Hazard

The project is located in seismically active southern California and the project site is likely to experience strong ground motion during the lifespan of the facility. Major faults mapped by the State of California in the project vicinity area are shown in Figure 2. Principal fault sources that contribute to this ground motion include the Raymond Fault, the Sierra Madre Fault, the Upper Elysian Park Fault, and the Puente Hills (Coyote Hills) Fault. The intensity of ground motion generated by a seismic event will depend on the characteristics of the generating fault, distance to the fault, earthquake magnitude, earthquake duration, and site-specific geologic conditions. Ground motions may be amplified or attenuated by the looser alluvial or fill deposits at the site depending on the level of ground shaking on the underlying bedrock, underlying soil type, depth to bedrock, and other factors.

We estimated peak ground acceleration (PGA) at the site using the online probabilistic seismic hazard analysis (PSHA) and deterministic seismic hazard analysis (DSHA) tools available from the USGS (2008), which are based on the 2008 updates to the national seismic hazard maps (Petersen et al., 2008). The PSHA accounts for uncertainties and randomness in potential earthquake source, size, location, recurrence, and source-to-site attenuation. The DSHA assumes median peak ground acceleration at the site by computing the closest fault distance coupled with a maximum credible earthquake magnitude for that fault.

We evaluated the PSHA for a 2 percent probability of exceedance in 50 years seismic event (2,475-year return period) and the DSHA for an 84th percentile event in accordance with American Society of Civil Engineers (ASCE) Standard 7-10 (ASCE, 2013). The combined PSHA and DSHA for the site result in a PGA of 0.73g (equivalent to 0.73 times the acceleration of gravity).

6.2.2 Seismic Compression

Seismic compression results from the cyclically-induced vertical densification and strain of granular soil strata. Fill soils are particularly susceptible to seismic compression and researchers have documented several cases of seismic compression of fills in Southern California (Stewart et al., 2001; Stewart et al., 2004a).

We evaluated seismic compression using methods by Stewart et al. (2003), and Stewart et al. (2004b). The methods estimate volumetric strains due to seismic shaking based on shear wave velocity, relative density, plasticity index, fines content and confining pressure. Our initial analysis indicated that the site may experience 6 to 10 inches of settlement during a design-level earthquake. The settlement values are sensitive to shear wave velocity, particularly in the upper 40 feet of fill material. Settlement values determined in this study may vary by 4 to 6 inches if the actual shear wave velocity of the fill differs from our estimates. The proposed SASW study (next phase of our services) will refine the shear wave values of the fill.

6.2.3 Liquefaction

Liquefaction occurs when seismically-induced porewater pressures exceed the confining stress of a soil deposit. Liquefaction typically occurs in relatively clean, loose sands, but has also been observed in silts and gravels. Liquefaction may results in loss of shear strength, bearing capacity, or settlement of soil strata.

We performed liquefaction analyses on the Standard Penetration Test (SPT) N-value data of Boring B-1 using methods by Cetin et al. (2004), Idriss and Boulanger (2006), and Youd et al. (2001). We considered the historic high groundwater table at 70 feet depth in accordance with SP-117 and the perched groundwater table from 31 to 33 feet depth in our analyses, as noted in Section 5.4. The local standard of practice typically limits liquefaction potential to the upper 50 feet of soil; therefore, we limit our analysis to the perched groundwater conditions.

Our liquefaction analyses of soils in the perched water indicated that the silty sand layer from 31 to 33 feet depth will liquefy under a design PGA = 0.73g, as derived in Section 6.2.1.

Estimated settlement due to liquefaction will ranges from 1 to 2 inches at this location, primarily within the layer at 31 to 33 feet below ground surface.

6.3 Static Settlement

Static settlement may occur as elastic deformation or consolidation settlement. Granular or fine grain soils experience elastic deformation during loading of the subsurface by foundations, fill embankments, or other sources. Fine grained soils may additionally experience consolidation settlement from the gradual dissipation of excess porewater pressures generated by loading of the subsurface soils. Consolidation settlement may occur over months to years depending on soil properties. The magnitude and duration of settlement depends on soil plasticity, stress history, and permeability.

The trucking facilities immediately west of the Irwindale Speedway are constructed over fill soils consisting of demolition debris deposited in the former Nu-Way Landfill, probably similar to the Project site. For development of the trucking facilities, temporary fill embankments were constructed at the site prior to construction of building foundations or building elements. The temporary embankments preloaded and densified the landfill soil by inducing static settlement (Devco, 1990).

The report by Devco Engineering, Inc. and Foundation Engineering (1990) indicate the temporary fill embankments were approximately 20 feet high and generally located over the building footprints. The report indicated that temporary embankment settlement ranged from 4 inches to 17.5 inches. Data found in the report indicates 80 to 90 percent of settlement occurred in the first 30 days. A letter by Foundation Engineering stated that historical records indicated the fill was approximately 30 to 35 feet thick below the temporary embankments (Foundation Engineering, 1987).

We estimated static settlement at the Project by using the settlement data from the Devco Engineering temporary embankment as elastic deformation. This allowed us to back calculate an elastic modulus of the subsurface fill equal to 75 kips per square foot (ksf). We calculated this value using a 20-foot high and 60-foot square embankment, which is equal to embankment geometry provided by Devco and Foundation Engineering (1990). We then modeled settlement of the subsurface fill at Boring B-1 with a load created by a 20-foot by 40-foot outlet center building structure constructed on a mat foundation bearing at 1.5 ksf. Our analysis indicated the outlet center structure will likely settle 6 to 8 inches under an outlet center structure load of 1.5 ksf.

6.4 Hydrocompression

Hydrocompression is settlement caused by the breakdown of soil cementation when wetted and may occur in alluvium or loosely compacted fill material. Hydrocompression typically occurs in arid environments, where surficial water from either heavy rain or more commonly irrigation cause infiltration into natural soils that have not been previously saturated and then are subjected to a new increased vertical load. Our sampling methods completed with the sonic drilling equipment do not easily allow analysis of hydrocompression; however, review of laboratory testing by Law/Crandall (1998) indicates that hydrocompression may be in the range of 6%-10% for the upper soils zone between at 10 and 13 feet below the existing ground surface in 1998. Additional explorations discussed in Section 8.2 will yield a more refined estimate of settlement due to hydrocompression.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 General

The conclusions and recommendation provided below are preliminary estimates based on the limited subsurface information gathered during our single exploration and subsequent laboratory testing. We augmented this information with available historical data and local experience on similar projects. In addition we estimated building loads assuming a single-story, steel-framed structure covered with stucco or equivalent weight exterior finish. These recommendations will likely be revised during subsequent design phases.

7.2 Preliminary Estimate Settlement

We estimate that the outlet center structures would likely experience 7 to 12 inches of seismic settlement, 6 to 8 inches of static settlement, and settlement equivalent to 6 to 10 percent of the saturated soil column for hydrocompression if the buildings are constructed on the in-situ fill without subsurface improvement. The estimated settlement is outlined below in the table below.

PRELIMINARY SETTLEMENT ESTIMATE

Settlement Source	Settlement (inches)
Seismic Settlement	
Seismic Compression	6 to 10
Liquefaction	1 to 2
Subtotal	7 to 12
Static Settlement	6 to 8
Hydrocompression	Variable
Total	**12 to 20***

*Hydrocompression is variable based on depth and amount of infiltration of surface water

We estimate that the majority of static settlement would occur within one month after the estimated building loads would be applied during construction.

7.3 Potential Mitigation Measures

The proposed outlet center structures will likely not tolerate 6 to 8 inches of static settlement. Further, the County indicated that no more than 4 inches of seismic settlement will be permissible in accordance with SP-117. In response, we recommend consideration of the following settlement remediation options:

- Surcharge fill;
- Deep dynamic compaction (DDC);
- Geopiers;
- Deep Soil Mixing;
- Densification; and
- Other ground improvement methods.

These methods will require additional design during future phases of subsurface exploration, and will be dependent on the local fill depth. Some methods (DDC, Geopiers, densification) may require the consideration of a specialty contractor.

8.0 ADDITIONAL GEOTECHNICAL PHASES

8.1 Geophysical Survey

Our next phase of services will consist of a geophysical survey to determine the average S-wave velocity of the upper 200 feet of fill and alluvial sediments for seismic design, and to determine if there is significant lateral velocity variation (or change in subsurface materials) at the site. Our geophysical subconsultant will use active surface wave (spectral analysis of surface waves and/or multi-channel analysis of surface waves) techniques.

Once completed, we should have a better three dimensional understanding of the subsurface characteristics of the landfill materials and alluvial soils below the site. This information will allow a more accurate estimate of site-wide settlement, as opposed to the single point location at Boring B-1.

8.2 Final Design

Our final design services are intended to provide updated geotechnical design sufficient for civil engineering design for the proposed outlet center, including foundation design and ground improvements based on our previous findings and meetings with review agencies. We will complete additional subsurface exploration at the site, and the new explorations will allow us to collect additional samples and complete additional testing appropriate for a site-wide study. The new borings will also allow a better understating of the depths and limits of the quarry pit, which are currently based on the 1968 topographic map (Plate 2). Both the samples, testing, and delineation of the quarry depth will be required for both civil and structural engineering as well as County review requirements.

8.3 Supplemental Consultation and Plan Review

Upon completion of our final geotechnical design report, we will be available to discuss our recommendations with the project team. We can also provide recommendations for alternative foundation designs and assist in permitting issues and respond to County or regulatory review comment letters, as requested, under separate scope. We anticipate at least one round of reviews from the County or other regulatory agency. As the improvement plans are completed, we should review the documents to confirm that the intent of our recommendations has been incorporated.

8.4 Construction Observation and Testing

The purpose of our construction observation and testing services will be to monitor compliance of the site grading, earthwork, and foundation installations with the project plans and specifications and our recommendations. This includes observing site preparation, placement and compaction of new fills (if required), and preparation of deep foundation installation and building footing subgrades. We can provide these services under separate scope when design and construction specifications become available.

9.0 LIMITATIONS

This report was prepared for the exclusive use of the Irwindale Outlet Partners, LLC c/o the Lindom Company and other members of the design team for specific application to this project.

The analyses, conclusions, and recommendations contained in this report are preliminary and based on site conditions as they presently exist. We assume that the boring performed for this project is representative of the subsurface conditions throughout the site (i.e., the subsurface conditions everywhere are not significantly different from those disclosed by the explorations). If conditions different from those described in this report are observed or appear to be present during construction, we should be advised at once so that we can review these conditions and reconsider our recommendations, where necessary. If there is a substantial lapse of time between submission of our report and the start of work at the site, or if conditions have changed because of natural forces or construction operations at or near the site, it is recommended that this report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

Within the limitations of the scope, schedule, and budget, the analyses, conclusions, and recommendations presented in this report were prepared in accordance with generally accepted professional geotechnical engineering principles and practices in this area at the time this report was prepared. We make no other warranty, either express or implied. These conclusions and recommendations were based on our understanding of the project as described in this report and the site conditions as interpreted from the current explorations.

Unanticipated soil conditions are commonly encountered and cannot be fully determined by merely taking soil samples or completing test pits. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

The scope of our geotechnical services did not include any environmental assessment or evaluation regarding the presence or absence of wetlands or hazardous or toxic materials in the surface water, groundwater, or air at the subject site. Shannon & Wilson, Inc. can provide these services at your request.

Shannon & Wilson, Inc. has prepared the document, "Important Information About Your Geotechnical/Environmental Report," in Appendix D to assist you and others in understanding the use and limitations of this report.

SHANNON & WILSON, INC.

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Geologic items related to geology, geologic setting, stratigraphy, and groundwater were prepared by or prepared under the direct supervision of Dean G. Francuch, P.G., C.E.G.

Geotechnical items related to the geotechnical laboratory testing, stability analyses, and conceptual engineering recommendations were prepared by or prepared under the direct supervision of R. Travis Deane, P.E., G.E.

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0 1,000 2,000 4,000

SCALE: 1"=2,000'

NOTE

Map adapted from aerial imagery provided by Google Earth Pro, reproduced by permission granted by Google Earth ™ Mapping Service.

Irwindale Speedway Redevelopment
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Irwindale, California

VICINITY MAP

May 2014 51-1-10087-003

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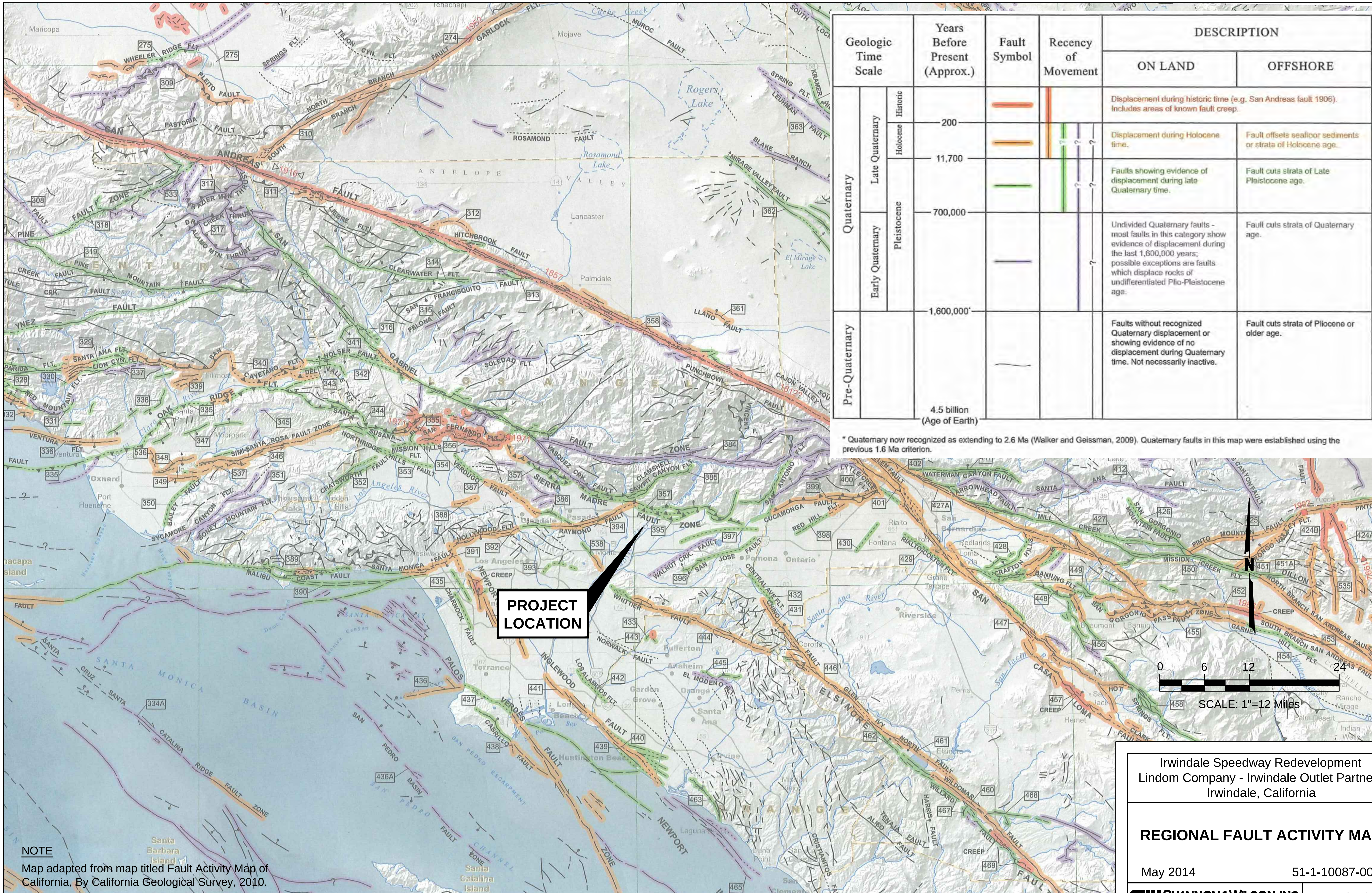
FIG. 1

Filename: I:\PROJECTS\10087 Irwindale Speedway\003 Preliminary Settlement Analysis\Graphics\FIG 1 - VICINITY MAP.dwg Date: 05-19-2014 Login: Louis Larios



Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION: ON LAND	DESCRIPTION: OFFSHORE
Quaternary	Late Quaternary	Historic		(red line)		Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
		Holocene	200	(orange line)		Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
		Pleistocene	11,700	(green line)		Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
	Early Quaternary		700,000	(purple line)		Undivided Quaternary faults - most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary			1,600,000*	(black line)		Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.
			4.5 billion (Age of Earth)				

* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion.

NOTE

Map adapted from map titled Fault Activity Map of California, By California Geological Survey, 2010.

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REGIONAL FAULT ACTIVITY MAP

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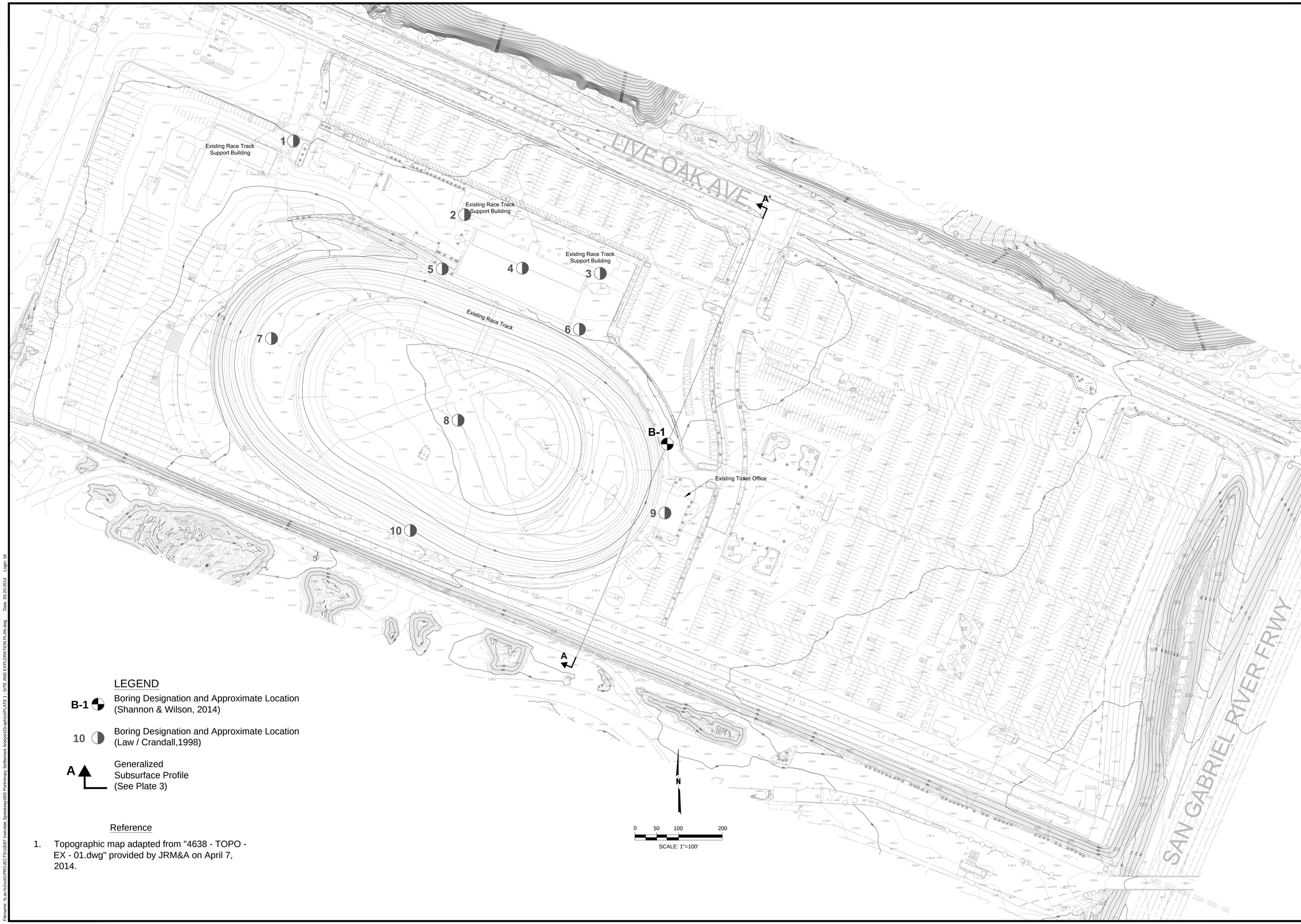
FIG. 2

Filename: I:\PROJECTS\10087 Irwindale Speedway\003 Preliminary Settlement Analysis\Graphics\FIG 2 - REGIONAL FAULT ACTIVITY MAP.dwg Date: 05-19-2014 Login: Louis Larios



LEGEND

B-1 Boring Designation and Approximate Location (Shannon & Wilson, 2014)

10 Boring Designation and Approximate Location (Law / Crandall,1998)

A Generalized Subsurface Profile (See Plate 3)

Reference

1. Topographic map adapted from "4638 - TOPO - EX - 01.dwg" provided by JRM&A on April 7, 2014.

TITLE: Irwindale Speedway Redevelopment

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Irwindale, California

S & W Job Number: 51-1-10087-003

BY	DATE	REVISIONS

SITE AND EXPLORATION PLAN

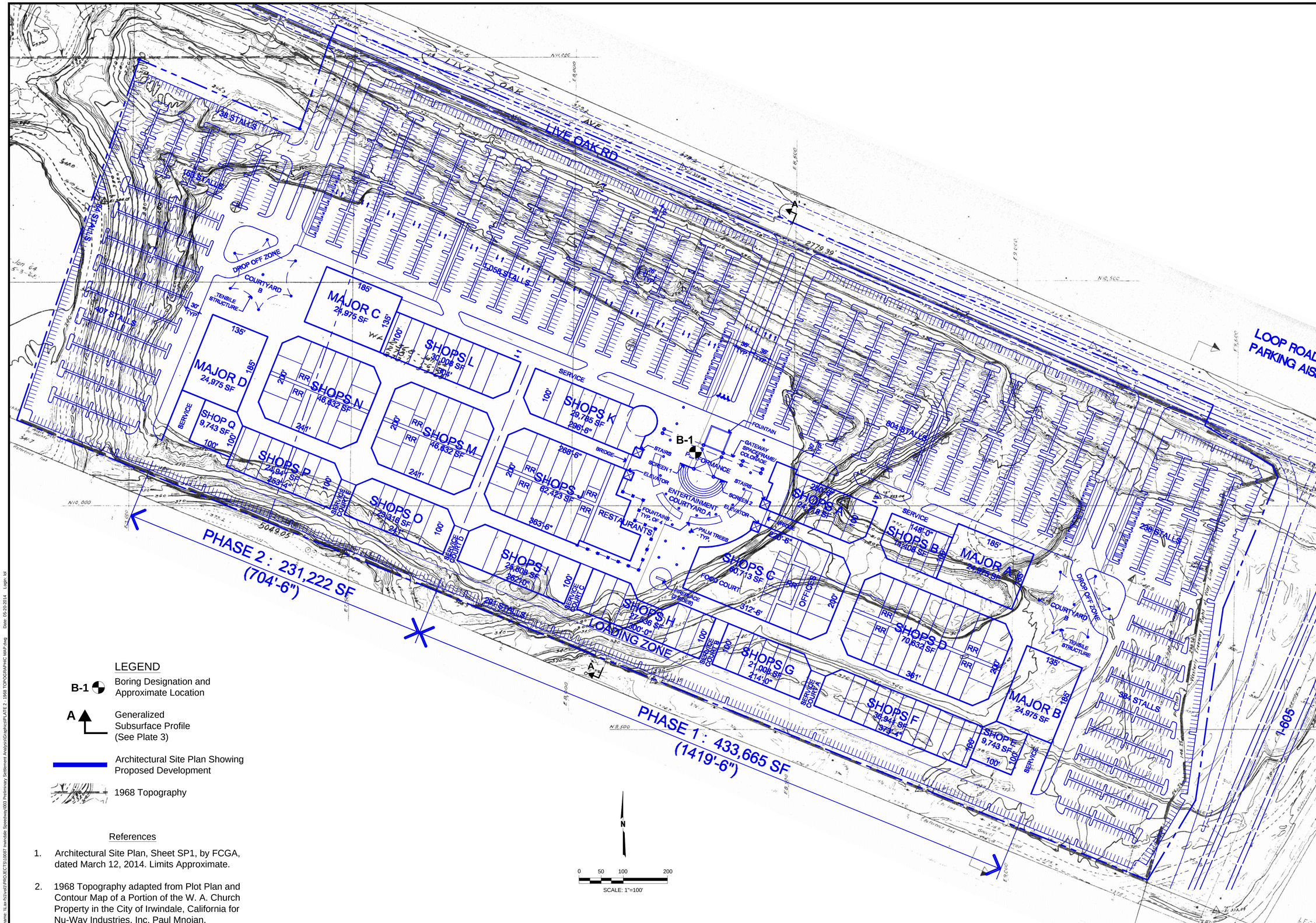
SHANNON&WILSON, INC.
Geotechnical and Environmental Consultants
664 West Broadway
Glendale, California 91204
(818) 543-4560 FAX: (818) 543-4565

DATE: May 2014
DRAWN: LOL
CHECKED: JZB
JOB NO. 51-1-10087-003

This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"

PLATE 1

Filename: \\Law-fs1svr01\PROJECTS\10087 Irwindale Speedway\003 Preliminary Settlement Analysis\Graphics\PLATE 1 - SITE AND EXPLORATION PLAN.dwg Date: 05-20-2014 Login: kl



LEGEND

B-1 Boring Designation and Approximate Location

A Generalized Subsurface Profile (See Plate 3)

Architectural Site Plan Showing Proposed Development

1968 Topography

References

1. Architectural Site Plan, Sheet SP1, by FCGA, dated March 12, 2014. Limits Approximate.
2. 1968 Topography adapted from Plot Plan and Contour Map of a Portion of the W. A. Church Property in the City of Irwindale, California for Nu-Way Industries, Inc, Paul Mnoian.

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1968 TOPOGRAPHIC MAP WITH PROPOSED DEVELOPMENT OVERLAIN

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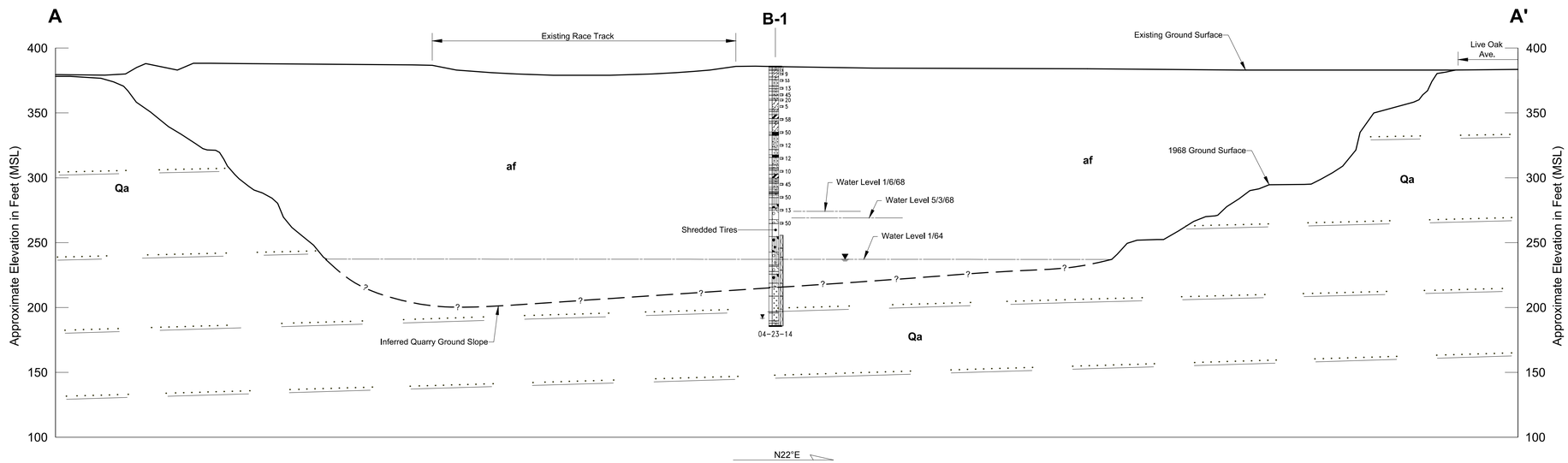
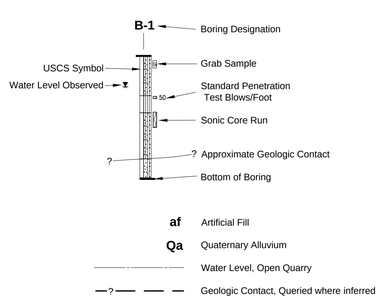
PLATE 2

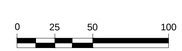
This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"

Filename: \\Lax-fs1\vol1\PROJECTS\10087 Irwindale Speedway\003 Preliminary Settlement Analysis\Graphics\PLATE 2 - 1968 TOPOGRAPHIC MAP.dwg Date: 05-20-2014 Login: lol



LEGEND





NOTES:

1. Quarry ground slope based on Cross Section STA 20+00
2. Water levels shown on section represent water surface in open quarry pit.

TITLE: Irwindale Speedway Redevelopment

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CROSS SECTION A-A'

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PLATE 3

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Filename: I:\PROJECTS\10087 Irwindale Speedway\003 Preliminary Settlement Analysis\Graphics\PLATE 3 - CROSS SECTION A-A.dwg Date: 05-20-2014 Login: lol

APPENDIX A

SUBSURFACE EXPLORATION

APPENDIX A

SUBSURFACE EXPLORATION

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A.1.2 Sonic Core Samples A-2
A.1.3 Soil Classification System A-2
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FIGURES

A-1 Soil Classification and Log Key (3 sheets)
A-2 Log of Sonic Core B-1 (8 sheets)

APPENDIX A

SUBSURFACE EXPLORATION

A.1 SOIL BORING

We drilled sonic boring B-1 at the location shown on Plates 1 and 2 between April 21 and 24, 2014 to a depth of 200 feet. Figure A-1 presents Shannon & Wilson's material classification system. Figure A-2 presents the boring B-1 sonic log. A Shannon & Wilson engineering geologist supervised the field exploration program and a staff engineer observed the exploratory drilling, collected samples, and logged the boring.

The boring B-1 location was selected within a deeper portion of the original quarry based on the 1968 topographic map provided by the Irwindale Speedway owner, Jim Minoian. In addition, the boring is located near the center of the proposed Project.

A.1.1 Sonic Drilling

Cascade Drilling performed the sonic drilling. The sonic core drilling method uses high-frequency vibratory motion applied to the top of the core barrels, along with down-pressure and rotation, to obtain nearly continuous core samples in soil and/or soft rock. Soil samples were obtained using 4.5-inch inside-diameter (I.D.) core barrels. After advancing the core barrel a specific distance (termed a core "run"), the drill column and core barrel were then removed from the borehole and the core sample was ejected from the core barrel into flexible plastic bags. After retrieval of the core for a specific interval, a temporary casing was vibrated to the bottom of the sampled interval. The casing was then cleared of slough and the next core sample was collected, starting at the bottom of the temporary casing.

Sonic drilling progressed efficiently through the fill materials until about 120 feet deep, where the layer of shredded tires inhibited advancement of the casing and caused the core barrel to repeatedly bind against the collapsing tires. Cascade Drilling advanced the core barrel below the tire layer by using a specialized drill bit intended to ream out the tires and enlarged the borehole in that stratum; however, they were unable to advance the casing below 120 feet despite the specialized bit. The absence of casing below 120 feet depth allowed material to slough into the open hole. Cascade typically withdrew 5 to 10 feet of sloughing material for each 10-foot run of extracted sonic core.

A.1.2 Sonic Core Samples

Cascade Drilled extended the core barrel 5 to 10 feet into the soil at the bottom of the borehole during each sampling run prior to extracting the core barrel from the hole. After withdrawing the core barrel, the driller ejected the core sample into plastic bags from the bottom of the core barrel. Each bag contained about 0.5 to 4 feet of soil; therefore, multiple bags were required for each run. The filled bags were about 6 inches in diameter. Cohesive, hard soil was difficult to extract and often required the use of pressurized air inside the core barrel to force the soil out through the end of the core barrel. Sonic core sampling heavily disturbs the soil through the coring and extraction process (e.g., fragmented cobbles and gravel, remolded clays and silts, etc.). Marked sample locations may be approximate.

Our field representative tied the sample bags at each end using plastic ties, knots, and/or tape to preserve the natural moisture content and integrity of the sample. Each bag was labeled with exploration number, run number, and depth interval. The bags were sealed, placed in labeled wooden core boxes, and transported to the southwest corner of the Irwindale Speedway site for sorting, storage, and geologic logging.

A.1.3 Soil Classification System

We classified the soil samples in general accordance with ASTM D 2487, Standard Test Method for Classification of Soil for Engineering Purposes, and ASTM D 2488, Standard Recommended Practice for Description of Soils. The system is called the Unified Soil Classification System (USCS) and is summarized in Figure A-1. The USCS descriptors are plotted on the boring logs.

A.1.4 Standard Penetration Test (SPT)

We performed SPTs in the boring at 5-foot intervals to the 30-foot depth and at 10-foot intervals thereafter to the 120-foot depth. We suspended SPTs at 120 feet due to the casing and material sloughing issues detailed above.

The SPTs were performed in general accordance with ASTM Designation: D1586, Standard Method for Penetration Testing and Split-barrel Sampling of Soils (ASTM, 2006). The SPT consists of driving a 2-inch outside-diameter split-spoon sampler a distance of 18 inches into the bottom of the borehole with an automatic 140-pound hammer falling 30 inches. The number of blows required for the last 12 inches of penetration is termed the Standard Penetration Resistance (N-value). The N-value is an empirical parameter that provides a means for

evaluating the relative density of granular soils and the stiffness of cohesive soils. The N-values are plotted on the boring logs

A.2 GROUNDWATER

We encountered groundwater in the sonic boring at about 194 feet depth, as detected the groundwater in the sonic samples; drilling activities prohibited measurement of groundwater. In addition, we encountered a perched groundwater table from 31 to 33 feet depth. See Section 5.4 for additional details.

A.3 REFFERENCE

ASTM International (ASTM), 2006, Annual Book of Standards-Construction, v. 4.08, soil and rock, (I): D 420 – D 5611: West Conshohocken, Pa.

Shannon & Wilson, Inc. (S&W), uses a soil identification system modified from the Unified Soil Classification System (USCS). Elements of the USCS and other definitions are provided on this and the following pages. Soil descriptions are based on visual-manual procedures (ASTM D2488) and laboratory testing procedures (ASTM D2487), if performed.

S&W INORGANIC SOIL CONSTITUENT DEFINITIONS

CONSTITUENT[2]	FINE-GRAINED SOILS (50% or more fines)[1]	COARSE-GRAINED SOILS (less than 50% fines)[1]
Major	***Silt, Lean Clay, Elastic Silt,*** or ***Fat Clay***[3]	***Sand*** or ***Gravel***[4]
Modifying (Secondary) Precedes major constituent	30% or more coarse-grained: ***Sandy*** or ***Gravelly***[4]	More than 12% fine-grained: ***Silty*** or ***Clayey***[3]
Minor Follows major constituent	15% to 30% coarse-grained: ***with Sand*** or ***with Gravel***[4]	5% to 12% fine-grained: ***with Silt*** or ***with Clay***[3]
	30% or more total coarse-grained *and* lesser coarse-grained constituent is 15% or more: ***with Sand*** or ***with Gravel***[5]	15% or more of a second coarse-grained constituent: ***with Sand*** or ***with Gravel***[5]

[1]All percentages are by weight of total specimen passing a 3-inch sieve.
[2]The order of terms is: *Modifying Major with Minor*.
[3]Determined based on behavior.
[4]Determined based on which constituent comprises a larger percentage.
[5]Whichever is the lesser constituent.

MOISTURE CONTENT TERMS

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

STANDARD PENETRATION TEST (SPT) SPECIFICATIONS

Hammer:	140 pounds with a 30-inch free fall. Rope on 6- to 10-inch-diam. cathead 2-1/4 rope turns, > 100 rpm NOTE: If automatic hammers are used, blow counts shown on boring logs should be adjusted to account for efficiency of hammer.
Sampler:	10 to 30 inches long Shoe I.D. = 1.375 inches Barrel I.D. = 1.5 inches Barrel O.D. = 2 inches
N-Value:	Sum blow counts for second and third 6-inch increments. Refusal: 50 blows for 6 inches or less; 10 blows for 0 inches.

NOTE: Penetration resistances (N-values) shown on boring logs are as recorded in the field and have not been corrected for hammer efficiency, overburden, or other factors.

PARTICLE SIZE DEFINITIONS

DESCRIPTION	SIEVE NUMBER AND/OR APPROXIMATE SIZE
FINES	< #200 (0.075 mm = 0.003 in.)
SAND Fine Medium Coarse	 #200 to #40 (0.075 to 0.4 mm; 0.003 to 0.02 in.) #40 to #10 (0.4 to 2 mm; 0.02 to 0.08 in.) #10 to #4 (2 to 4.75 mm; 0.08 to 0.187 in.)
GRAVEL Fine Coarse	 #4 to 3/4 in. (4.75 to 19 mm; 0.187 to 0.75 in.) 3/4 to 3 in. (19 to 76 mm)
COBBLES	3 to 12 in. (76 to 305 mm)
BOULDERS	> 12 in. (305 mm)

RELATIVE DENSITY / CONSISTENCY

COHESIONLESS SOILS		COHESIVE SOILS	
N, SPT, BLOWS/FT.	RELATIVE DENSITY	N, SPT, BLOWS/FT.	RELATIVE CONSISTENCY
< 4	Very loose	< 2	Very soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium dense	4 - 8	Medium stiff
30 - 50	Dense	8 - 15	Stiff
> 50	Very dense	15 - 30	Very stiff
		> 30	Hard

WELL AND BACKFILL SYMBOLS

Bentonite Cement Grout	Surface Cement Seal
Bentonite Grout	Asphalt or Cap
Bentonite Chips	Slough
Silica Sand	Inclinometer or Non-perforated Casing
Perforated or Screened Casing	Vibrating Wire Piezometer

PERCENTAGES TERMS [1, 2]

Trace	< 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

[1]Gravel, sand, and fines estimated by mass. Other constituents, such as organics, cobbles, and boulders, estimated by volume.

[2]Reprinted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

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SOIL DESCRIPTION AND LOG KEY

May 2014 51-1-10087-003

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FIG. A-1
Sheet 1 of 3

2013_BORING_CLASS1 51-1-10087-003.GPJ SWNEW.GDT 5/19/14

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)
(Modified From USACE Tech Memo 3-357, ASTM D2487, and ASTM D2488)

MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL		TYPICAL IDENTIFICATIONS
COARSE-GRAINED SOILS *(more than 50% retained on No. 4 sieve)*	Gravels *(more than 50% of coarse fraction retained on No. 4 sieve)*	Gravel *(less than 5% fines)*	GW		Well-Graded Gravel; Well-Graded Gravel with Sand
			GP		Poorly Graded Gravel; Poorly Graded Gravel with Sand
		Silty or Clayey Gravel *(more than 12% fines)*	GM		Silty Gravel; Silty Gravel with Sand
			GC		Clayey Gravel; Clayey Gravel with Sand
	Sands *(50% or more of coarse fraction passes the No. 4 sieve)*	Sand *(less than 5% fines)*	SW		Well-Graded Sand; Well-Graded Sand with Gravel
			SP		Poorly Graded Sand; Poorly Graded Sand with Gravel
		Silty or Clayey Sand *(more than 12% fines)*	SM		Silty Sand; Silty Sand with Gravel
			SC		Clayey Sand; Clayey Sand with Gravel
FINE-GRAINED SOILS *(50% or more passes the No. 200 sieve)*	Silts and Clays *(liquid limit less than 50)*	Inorganic	ML		Silt; Silt with Sand or Gravel; Sandy or Gravelly Silt
			CL		Lean Clay; Lean Clay with Sand or Gravel; Sandy or Gravelly Lean Clay
		Organic	OL		Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
	Silts and Clays *(liquid limit 50 or more)*	Inorganic	MH		Elastic Silt; Elastic Silt with Sand or Gravel; Sandy or Gravelly Elastic Silt
			CH		Fat Clay; Fat Clay with Sand or Gravel; Sandy or Gravelly Fat Clay
		Organic	OH		Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
HIGHLY-ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor		PT		Peat or other highly organic soils (see ASTM D4427)

NOTE: No. 4 size = 4.75 mm = 0.187 in.; No. 200 size = 0.075 mm = 0.003 in.

NOTES

1. Dual symbols *(symbols separated by a hyphen, i.e., SP-SM, Sand with Silt)* are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart. Graphics shown on the logs for these soil types are a combination of the two graphic symbols (e.g., SP and SM).

2. Borderline symbols *(symbols separated by a slash, i.e., CL/ML, Lean Clay to Silt; SP-SM/SM, Sand with Silt to Silty Sand)* indicate that the soil properties are close to the defining boundary between two groups.

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SOIL DESCRIPTION AND LOG KEY

May 2014 51-1-10087-003

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FIG. A-1
Sheet 2 of 3

2013_BORING_CLASS2 51-1-10087-003.GPJ SWNEW.GDT 5/19/14

GRADATION TERMS

Poorly Graded	Narrow range of grain sizes present or, within the range of grain sizes present, one or more sizes are missing (Gap Graded). Meets criteria in ASTM D2487, if tested.
Well-Graded	Full range and even distribution of grain sizes present. Meets criteria in ASTM D2487, if tested.

CEMENTATION TERMS[1]

Weak	Crumbles or breaks with handling or slight finger pressure
Moderate	Crumbles or breaks with considerable finger pressure
Strong	Will not crumble or break with finger pressure

PLASTICITY[2]

DESCRIPTION	VISUAL-MANUAL CRITERIA	APPROX. PLASITICTY INDEX RANGE
Nonplastic	A 1/8-in. thread cannot be rolled at any water content.	< 4
Low	A thread can barely be rolled and a lump cannot be formed when drier than the plastic limit.	4 to 10
Medium	A thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. A lump crumbles when drier than the plastic limit.	10 to 20
High	It take considerable time rolling and kneading to reach the plastic limit. A thread can be rerolled several times after reaching the plastic limit. A lump can be formed without crumbling when drier than the plastic limit.	> 20

ADDITIONAL TERMS

Mottled	Irregular patches of different colors.
Bioturbated	Soil disturbance or mixing by plants or animals.
Diamict	Nonsorted sediment; sand and gravel in silt and/or clay matrix.
Cuttings	Material brought to surface by drilling.
Slough	Material that caved from sides of borehole.
Sheared	Disturbed texture, mix of strengths.

PARTICLE ANGULARITY AND SHAPE TERMS[1]

Angular	Sharp edges and unpolished planar surfaces.
Subangular	Similar to angular, but with rounded edges.
Subrounded	Nearly planar sides with well-rounded edges.
Rounded	Smoothly curved sides with no edges.
Flat	Width/thickness ratio > 3.
Elongated	Length/width ratio > 3.

[1]Reprinted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.
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ACRONYMS AND ABBREVIATIONS

ATD	At Time of Drilling
Diam.	Diameter
Elev.	Elevation
ft.	Feet
FeO	Iron Oxide
gal.	Gallons
Horiz.	Horizontal
HSA	Hollow Stem Auger
I.D.	Inside Diameter
in.	Inches
lbs.	Pounds
MgO	Magnesium Oxide
mm	Millimeter
MnO	Manganese Oxide
NA	Not Applicable or Not Available
NP	Nonplastic
O.D.	Outside Diameter
OW	Observation Well
pcf	Pounds per Cubic Foot
PID	Photo-Ionization Detector
PMT	Pressuremeter Test
ppm	Parts per Million
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
rpm	Rotations per Minute
SPT	Standard Penetration Test
USCS	Unified Soil Classification System
q_u	Unconfined Compressive Strength
VWP	Vibrating Wire Piezometer
Vert.	Vertical
WOH	Weight of Hammer
WOR	Weight of Rods
Wt.	Weight

STRUCTURE TERMS[1]

Interbedded	Alternating layers of varying material or color with layers at least 1/4-inch thick; singular: bed.
Laminated	Alternating layers of varying material or color with layers less than 1/4-inch thick; singular: lamination.
Fissured	Breaks along definite planes or fractures with little resistance.
Slickensided	Fracture planes appear polished or glossy; sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps that resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay.
Homogeneous	Same color and appearance throughout.

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SOIL DESCRIPTION AND LOG KEY

May 2014 51-1-10087-003

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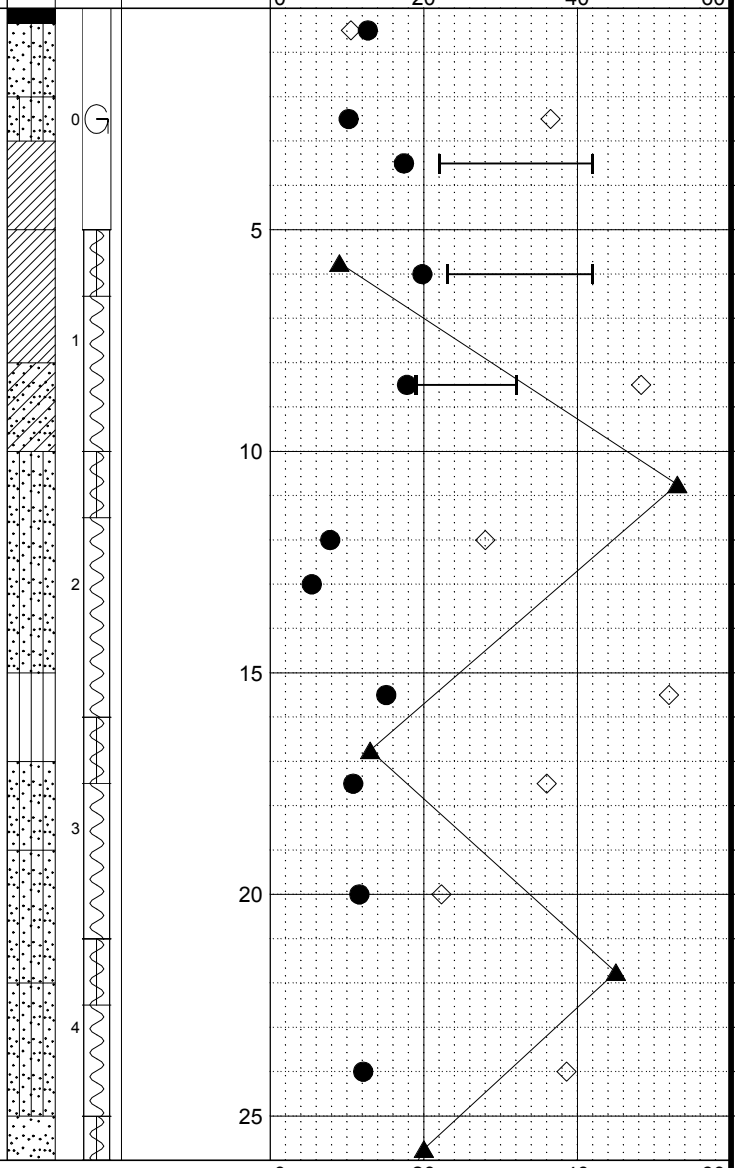
FIG. A-1
Sheet 3 of 3

2013_BORING_CLASS3 51-1-10087-003.GPJ SWNEW.GDT 5/19/14

Total Depth:	200 ft.	Latitude:	34.10931 °	Drilling Method:	Sonic Core	Hole Diam.:	6 in.
Top Elevation:	385.5 ft.	Longitude:	-117.9862 °	Drilling Company:	Cascade Drilling	Rod Diam.:	2 5/8 in.
Vert. Datum:	NAVD88	Station:	N/A	Drill Rig Equipment:	600T Sonic	Hammer Type:	Automatic
Horiz. Datum:	N/A	Offset:	N/A	Other Comments:	Asphalt Parking Lot		

Elevation, ft.	SOIL DESCRIPTION *Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.*	Depth, ft.
385.2	4" thick asphalt pavement.	0.3
	Brown, *Poorly Graded Sand with Silt and Gravel (SP-SM);* moist.	
383.5	Fill (af)	2.0
	Brown, *Silty Sand (SM);* moist.	
382.5	Fill (af)	3.0
	Gray to brown, *Sandy Lean Clay (CL);* moist; pockets of crushed brick.	
380.5	Fill (af)	5.0
	Gray to brown, *Lean Clay with Sand (CL);* moist; low plasticity.	
	Fill (af)	
377.5	Red to brown, *Clayey Sand (SC);* moist; variable amounts of sand.	8.0
	Fill (af)	
375.5	Brown, *Silty Sand with Gravel (SM);* moist; crushed concrete or asphalt; layers of crushed brick.	10.0
	Fill (af)	
370.5	Brown, *Sandy Silt (ML);* moist; crushed concrete or asphalt; layers of crushed brick.	15.0
	Fill (af)	
368.5	Dark brown to black, *Silty Sand (SM);* moist; likely crushed asphalt.	17.0
	Fill (af)	
366.5	Brown, *Silty Sand with Gravel (SM);* moist; variable silt content.	19.0
	Fill (af)	
363.5	Dark brown, *Silty Sand (SM);* moist; low plasticity to nonplastic fines.	22.0
	Fill (af)	
360.5	Brown, *Poorly Graded Sand with Gravel (SP);* moist.	25.0
	Fill (af)	

CONTINUED NEXT SHEET



LEGEND

- * Sample Not Recovered
- Grab Sample
- 2.0" O.D. Split Spoon Sample
- Soil Core (as in Sonic Core Borings)
- Ground Water Level ATD

Plastic Limit — Liquid Limit
Natural Water Content
◇ % Fines (<0.075mm)
● % Water Content

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

Irwindale Speedway Redevelopment
Lindom Company - Irwindale Outlet Partners
Irwindale, California

LOG OF SONIC CORE B-1

May 2014 51-1-10087-003

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 1 of 8

REV 3

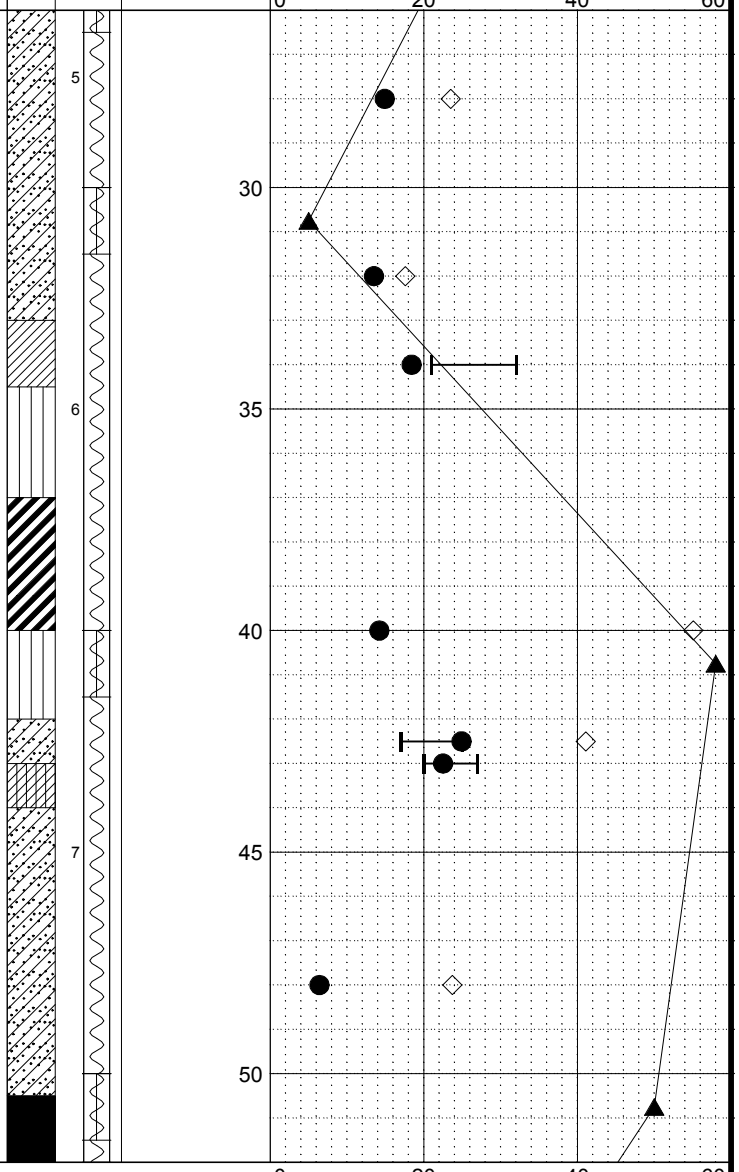
MASTER_LOG_E_MC 51-1-10087-003.GPJ SHAN_WIL.GDT 5/20/14 Log: JZB Rev: DGF Typ: LOL

Total Depth:	200 ft.	Latitude:	34.10931 °	Drilling Method:	Sonic Core	Hole Diam.:	6 in.
Top Elevation:	385.5 ft.	Longitude:	-117.9862 °	Drilling Company:	Cascade Drilling	Rod Diam.:	2 5/8 in.
Vert. Datum:	NAVD88	Station:	N/A	Drill Rig Equipment:	600T Sonic	Hammer Type:	Automatic
Horiz. Datum:	N/A	Offset:	N/A	Other Comments:	Asphalt Parking Lot		

Elevation, ft.	SOIL DESCRIPTION *Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.*	Depth, ft.
359.5	Dark brown, *Clayey Sand with Gravel (SC);* moist. Fill (af) - Perched groundwater observed from 31 to 33 feet.	26.0
352.5	Brown, *Lean Clay with Sand (CL);* moist. Fill (af)	33.0
351.0	Dark brown, *Sandy Silt (ML);* moist; low to medium plasticity. Fill (af)	34.5
348.5	Brown, *Sandy Fat Clay (CH);* moist. Fill (af)	37.0
345.5	Dark gray, *Sandy Lean Silt to Sandy Lean Clay (ML/CL);* moist. Fill (af)	40.0
343.5	Dark brown, *Clayey Sand (SC);* moist; low to medium plasticity. Fill (af)	42.0
342.5		43.0
341.5	Dark brown, *Clayey Sand or Silty Sand (CL-ML);* moist; low to medium plasticity. Fill (af)	44.0
	Light brown to brown, *Clayey Sand (SM);* moist; variable amounts of silt. Fill (af)	
335.0	Concrete and brick debris. Fill (af)	50.5

CONTINUED NEXT SHEET

Symbol | Samples | Ground Water



LEGEND

- * Sample Not Recovered
- Grab Sample
- 2.0" O.D. Split Spoon Sample
- Soil Core (as in Sonic Core Borings)
- Ground Water Level ATD

Plastic Limit — Natural Water Content — Liquid Limit

◇ % Fines (<0.075mm)

● % Water Content

NOTES

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2. Groundwater level, if indicated above, is for the date specified and may vary.
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Irwindale Speedway Redevelopment
Lindom Company - Irwindale Outlet Partners
Irwindale, California

LOG OF SONIC CORE B-1

May 2014 51-1-10087-003

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 2 of 8

Log: JZB Rev: DGF Typ: LOL

MASTER_LOG_E_MC 51-1-10087-003.GPJ SHAN_WIL.GDT 5/20/14

REV 3

Total Depth:	200 ft.	Latitude:	34.10931 °	Drilling Method:	Sonic Core	Hole Diam.:	6 in.
Top Elevation:	385.5 ft.	Longitude:	-117.9862 °	Drilling Company:	Cascade Drilling	Rod Diam.:	2 5/8 in.
Vert. Datum:	NAVD88	Station:	N/A	Drill Rig Equipment:	600T Sonic	Hammer Type:	Automatic
Horiz. Datum:	N/A	Offset:	N/A	Other Comments:	Asphalt Parking Lot		

Elevation, ft.	SOIL DESCRIPTION *Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.*	Depth, ft.	Samples
333.5	Crushed concrete powder.	52.0	
332.5	Fill (af)	53.0	
	Dark brown, *Silty Sand with Gravel (SM);* moist; layers of crushed brick. Fill (af)		8
	- Layers of crushed asphalt		
	- Layers of powdered concrete		
321.5	Dark brown, *Poorly Graded Sand with Silt and Gravel (SP-SM);* moist; layers of crushed brick. Fill (af)	64.0	9
317.5	Crushed brick with 1 to 2-inches intact blocks of brick. Fill (af) - End of drilling on April 21, 2014 at 70 feet.	68.0	
315.5	Brown, *Silty Sand with Gravel (SM);* moist; low plasticity; asphalt or base material present. Fill (af)	70.0	10
309.5	Light gray to gray, *Poorly Graded Gravel with Sand (GP);* moist; crushed concrete. Fill (af)	76.0	

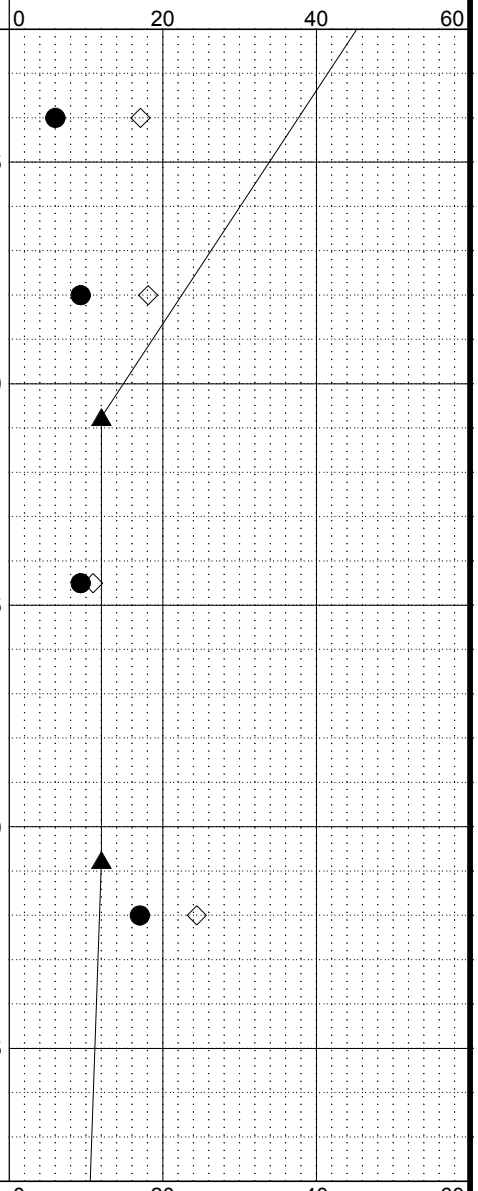
CONTINUED NEXT SHEET

Symbol

Ground Water

PENETRATION RESISTANCE (blows/foot)

▲ Hammer Wt. & Drop: *140 lbs / 30 inches*



LEGEND

- * Sample Not Recovered
- Grab Sample
- 2.0" O.D. Split Spoon Sample
- Soil Core (as in Sonic Core Borings)
- Ground Water Level ATD

Plastic Limit — Natural Water Content — Liquid Limit

◇ % Fines (<0.075mm)

● % Water Content

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
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Irwindale Speedway Redevelopment
Lindom Company - Irwindale Outlet Partners
Irwindale, California

LOG OF SONIC CORE B-1

May 2014 51-1-10087-003

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 3 of 8

REV 3

MASTER_LOG_E_MC 51-1-10087-003.GPJ SHAN_WIL.GDT 5/20/14 Log: JZB Rev: DGF Typ: LOL

Total Depth:	200 ft.	Latitude:	34.10931 °	Drilling Method:	Sonic Core	Hole Diam.:	6 in.
Top Elevation:	385.5 ft.	Longitude:	-117.9862 °	Drilling Company:	Cascade Drilling	Rod Diam.:	2 5/8 in.
Vert. Datum:	NAVD88	Station:	N/A	Drill Rig Equipment:	600T Sonic	Hammer Type:	Automatic
Horiz. Datum:	N/A	Offset:	N/A	Other Comments:	Asphalt Parking Lot		

Elevation, ft.	SOIL DESCRIPTION (Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.)	Depth, ft.
307.5	Intact concrete.	78.0
306.5	Fill (af)	79.0
	Powdered concrete.	
305.5	Fill (af)	80.0
	Dark brown to black, *Silty Sand with Gravel (SM);* moist; low to medium plasticity; possible asphalt presence. Fill (af)	
302.5	Brown, *Sandy Fat Clay (CH);* moist; medium to high plasticity; trace organics. Fill (af)	83.0
299.5	Dark brown, *Poorly Graded Sand with Silt and Gravel (SP-SM);* moist.	86.0
298.5	Fill (af)	87.0
297.5	Powdered concrete. Fill (af)	88.0
296.5	Dark brown, *Poorly Graded Sand with Gravel and Silt (SP-SM);* moist.	89.0
295.5	Fill (af)	90.0
	Crushed concrete. Fill (af)	
	Dark brown, *Silty Sand with Gravel (SM);* moist. Fill (af)	
292.5	Crushed concrete with some powder. Fill (af)	93.0
291.0	Dark brown, *Poorly Graded Sand with Gravel and Silt (SP-SM);* moist.	94.5
289.5	Fill (af)	96.0
	Crushed concrete.	
288.5	Fill (af)	97.0
288.0	Dark brown, *Poorly Graded Sand with Gravel and Silt (SP-SM);* moist.	97.5
287.5	Fill (af)	98.0
286.5	Gray, *Poorly Graded Gravel (GP) with Sand;* possible crushed concrete. Fill (af)	99.0
284.5	Dark brown, *Poorly Graded Sand with Gravel and Silt (SP-SM);* moist. Fill (af)	101.0
	Crushed concrete. Fill (af)	

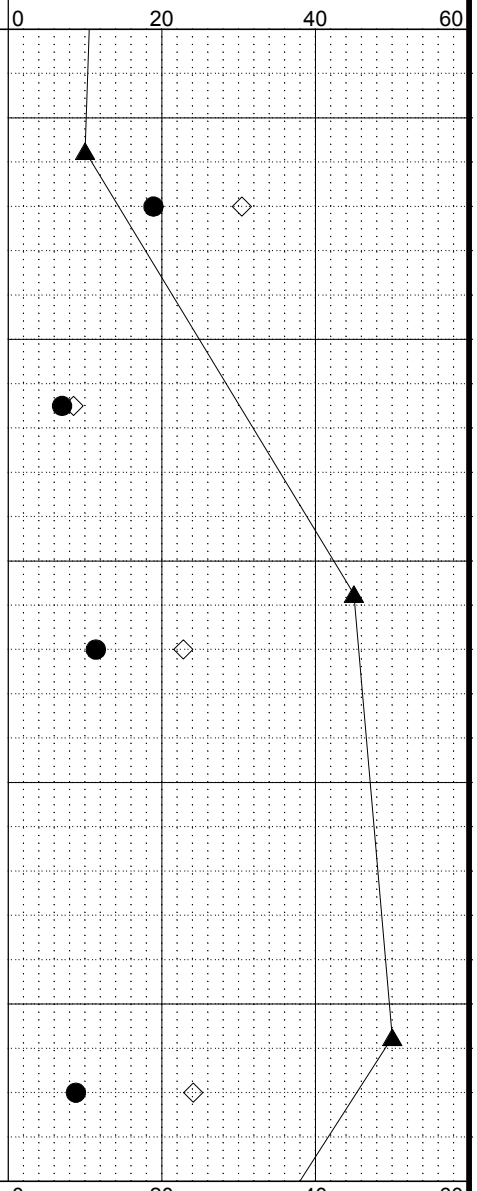
CONTINUED NEXT SHEET

Samples: 11, 12

Ground Water Depth, ft.

PENETRATION RESISTANCE (blows/foot)

▲ Hammer Wt. & Drop: 140 lbs / 30 inches



LEGEND

- * Sample Not Recovered
- Grab Sample
- 2.0" O.D. Split Spoon Sample
- Soil Core (as in Sonic Core Borings)
- Ground Water Level ATD

Plastic Limit ⊢●⊣ Liquid Limit
Natural Water Content

◇ % Fines (<0.075mm)
● % Water Content

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

Irwindale Speedway Redevelopment
Lindom Company - Irwindale Outlet Partners
Irwindale, California

LOG OF SONIC CORE B-1

May 2014 51-1-10087-003

SHANNON & WILSON, INC.
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FIG. A-1
Sheet 4 of 8

REV 3

MASTER_LOG_E_MC 51-1-10087-003.GPJ SHAN_WIL.GDT 5/20/14 Log: JZB Rev: DGF Typ: LOL

Total Depth:	200 ft.	Latitude:	34.10931 °	Drilling Method:	Sonic Core	Hole Diam.:	6 in.
Top Elevation:	385.5 ft.	Longitude:	-117.9862 °	Drilling Company:	Cascade Drilling	Rod Diam.:	2 5/8 in.
Vert. Datum:	NAVD88	Station:	N/A	Drill Rig Equipment:	600T Sonic	Hammer Type:	Automatic
Horiz. Datum:	N/A	Offset:	N/A	Other Comments:	Asphalt Parking Lot		

Elevation, ft.	SOIL DESCRIPTION *Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.*	Depth, ft.
	Dark brown, *Lean Silt (ML);* moist; layers of crushed concrete. Fill (af)	
279.5	Dark brown, *Silty Gravel with Sand (GM);* moist; layers of crushed concrete. Fill (af) - Tires, shredded.	106.0
276.5	Gray, *Clayey Sand with Gravel (SC);* possible crushed concrete. Fill (af)	109.0
275.0	Dark brown, *Silty Gravel with Sand (GP);* moist; layers of shredded tires. Fill (af)	110.5
267.5	Gray to brown, *Poorly Graded Gravel with Sand (GP);* moist. Fill (af) -SPT tests discontinued at 120-feet because driller could not advance casing below the layer of shredded tires.	118.0
264.5	Shredded tires. Fill (af)	121.0

CONTINUED NEXT SHEET

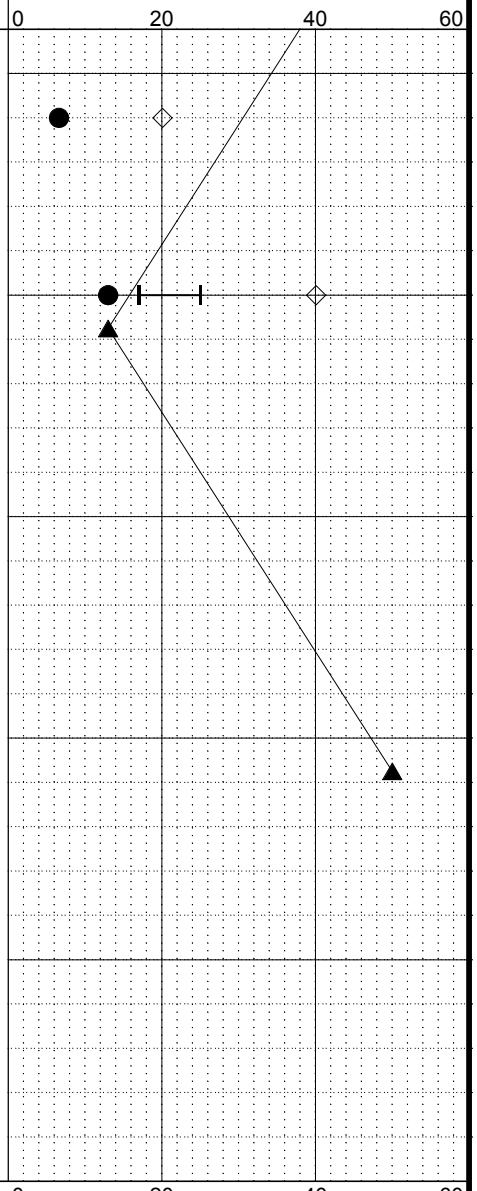
Symbol

Samples: 13, 14, 15

Ground Water

PENETRATION RESISTANCE (blows/foot)

▲ Hammer Wt. & Drop: 140 lbs / 30 inches



LEGEND

- * Sample Not Recovered
- Grab Sample
- 2.0" O.D. Split Spoon Sample
- Soil Core (as in Sonic Core Borings)
- Ground Water Level ATD

Plastic Limit ⊢●⊣ Liquid Limit
Natural Water Content

◇ % Fines (<0.075mm)
● % Water Content

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

Irwindale Speedway Redevelopment
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Irwindale, California

LOG OF SONIC CORE B-1

May 2014 51-1-10087-003

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Geotechnical and Environmental Consultants

FIG. A-1
Sheet 5 of 8

REV 3

MASTER_LOG_E_MC 51-1-10087-003.GPJ SHAN_WIL.GDT 5/20/14 Log: JZB Rev: DGF Typ: LOL

Total Depth:	200 ft.	Latitude:	34.10931 °	Drilling Method:	Sonic Core	Hole Diam.:	6 in.
Top Elevation:	385.5 ft.	Longitude:	-117.9862 °	Drilling Company:	Cascade Drilling	Rod Diam.:	2 5/8 in.
Vert. Datum:	NAVD88	Station:	N/A	Drill Rig Equipment:	600T Sonic	Hammer Type:	Automatic
Horiz. Datum:	N/A	Offset:	N/A	Other Comments:	Asphalt Parking Lot		

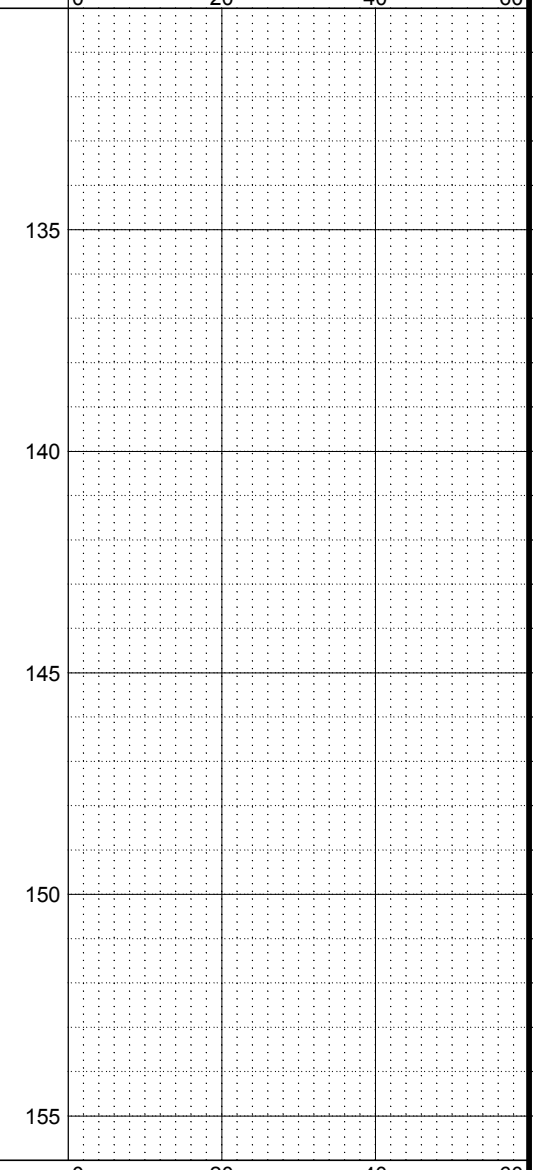
Elevation, ft.	SOIL DESCRIPTION *Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.*	Depth, ft.	Samples
254.5	Dark brown to black, *Silty Gravel with Sand (GM);* moist; shredded tires. Fill (af)	131.0	16
	- Layer of Clean Gravel		
242.5	Brown to dark brown, *Poorly Graded Gravel with Sand and Silt (GP-GM);* moist; layers of crushed brick and concrete; layers of shredded tires. Fill (af)	143.0	17
	-End of drilling on April 22, 2014 at 147 feet.		18
232.5	Crushed concrete. Fill (af)	153.0	
231.5	Brown to Dark Brown, *Silty Gravel with Sand (GP);* moist; layers of crushed brick and asphalt. Fill (af)	154.0	

CONTINUED NEXT SHEET

Ground Water

PENETRATION RESISTANCE (blows/foot)

▲ Hammer Wt. & Drop: 140 lbs / 30 inches



LEGEND

- * Sample Not Recovered
- Grab Sample
- 2.0" O.D. Split Spoon Sample
- Soil Core (as in Sonic Core Borings)
- Ground Water Level ATD

Plastic Limit ⊢●⊣ Liquid Limit
Natural Water Content

◇ % Fines (<0.075mm)
● % Water Content

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
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Irwindale Speedway Redevelopment
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Irwindale, California

LOG OF SONIC CORE B-1

May 2014 51-1-10087-003

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FIG. A-1
Sheet 6 of 8

REV 3

MASTER_LOG_E_MC 51-1-10087-003.GPJ SHAN_WIL.GDT 5/20/14 Log: JZB Rev: DGF Typ: LOL

Total Depth:	200 ft.	Latitude:	34.10931 °	Drilling Method:	Sonic Core	Hole Diam.:	6 in.
Top Elevation:	385.5 ft.	Longitude:	-117.9862 °	Drilling Company:	Cascade Drilling	Rod Diam.:	2 5/8 in.
Vert. Datum:	NAVD88	Station:	N/A	Drill Rig Equipment:	600T Sonic	Hammer Type:	Automatic
Horiz. Datum:	N/A	Offset:	N/A	Other Comments:	Asphalt Parking Lot		

Elevation, ft.	SOIL DESCRIPTION *Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.*	Depth, ft.	Samples
227.5	Shredded tires. Fill (af)	158.0	
225.5	Brown, *Silty Gravel with Sand (GM);* moist; layers of crushed brick and concrete. Fill (af)	160.0	19
218.5	Powdered concrete. Fill (af)	167.0	
215.5	Brown to dark brown, *Well Graded Sand with Silt (SW);* moist. Alluvium (Qa)	170.0	20
208.5	Light brown to brown, *Well Graded Sand with Gravel and Silt (SW);* moist. Alluvium (Qa)	177.0	

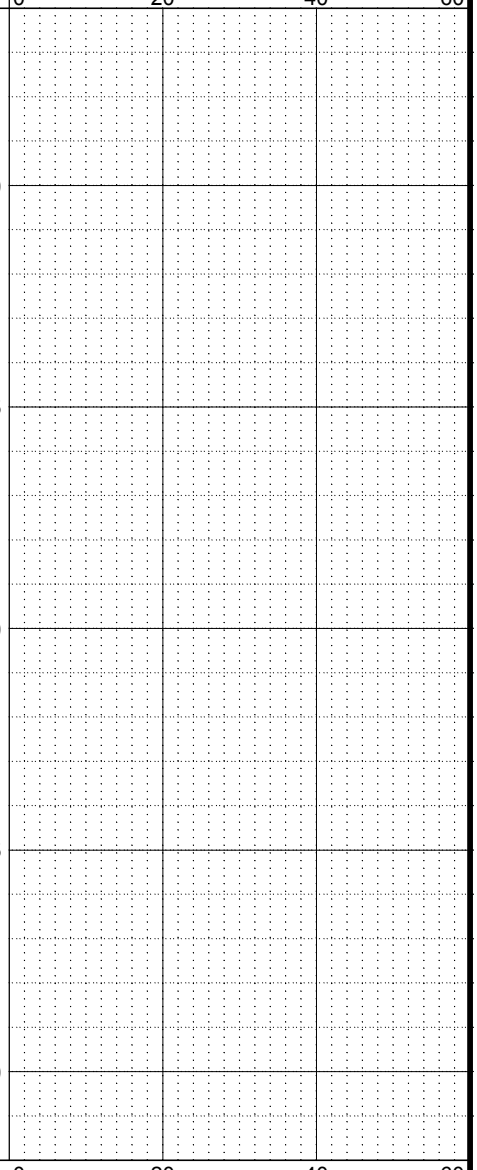
CONTINUED NEXT SHEET

Symbol

Ground Water

PENETRATION RESISTANCE (blows/foot)

▲ Hammer Wt. & Drop: 140 lbs / 30 inches



LEGEND

- * Sample Not Recovered
- Grab Sample
- 2.0" O.D. Split Spoon Sample
- Soil Core (as in Sonic Core Borings)
- Ground Water Level ATD

Plastic Limit ⊢●⊣ Liquid Limit
Natural Water Content

◇ % Fines (<0.075mm)
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LOG OF SONIC CORE B-1

May 2014 51-1-10087-003

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FIG. A-1
Sheet 7 of 8

REV 3

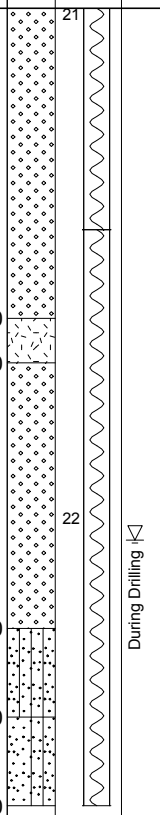
MASTER_LOG_E_MC 51-1-10087-003.GPJ SHAN_WIL.GDT 5/20/14 Log: JZB Rev: DGF Typ: LOL

Total Depth:	200 ft.	Latitude:	34.10931 °	Drilling Method:	Sonic Core	Hole Diam.:	6 in.
Top Elevation:	385.5 ft.	Longitude:	-117.9862 °	Drilling Company:	Cascade Drilling	Rod Diam.:	2 5/8 in.
Vert. Datum:	NAVD88	Station:	N/A	Drill Rig Equipment:	600T Sonic	Hammer Type:	Automatic
Horiz. Datum:	N/A	Offset:	N/A	Other Comments:	Asphalt Parking Lot		

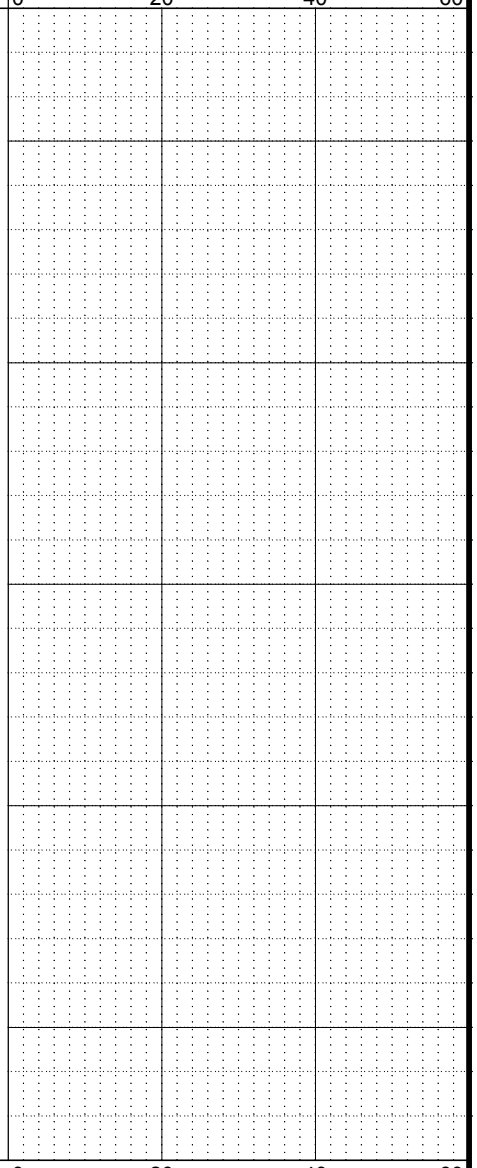
Elevation, ft.	SOIL DESCRIPTION *Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.*	Depth, ft.
196.5	Granite Cobble.	189.0
195.5	Light brown to brown, *Well Graded Sand with Gravel to Gravel with Sand (SW / GW);* wet. Alluvium (Qa)	190.0
	-Encountered Groundwater at 194 feet depth.	
189.5	Brown, *Silty Sand with Gravel (SM);* wet. Alluvium (Qa)	196.0
187.5	Brown, *Sand with Gravel and Silt (SP-SM);* wet. Alluvium (Qa)	198.0
185.5	-End of Sonic Core on April 23, 2014 at 200 feet.	200.0

Total Depth 200 feet.
Perched Groundwater at 31 feet depth.
Static Groundwater at 194 feet depth.
Drilling Start April 21, 2014.
Drilling End April 23, 2014.
Cased Hole from 0 to 120 feet depth.
Grouted Hole on April 24, 2014.

Symbol | Samples | Ground Water



PENETRATION RESISTANCE (blows/foot)
▲ Hammer Wt. & Drop: *140 lbs / 30 inches*



LEGEND

- * Sample Not Recovered
- Grab Sample
- 2.0" O.D. Split Spoon Sample
- Soil Core (as in Sonic Core Borings)
- Ground Water Level ATD

Plastic Limit ⊢●⊣ Liquid Limit
Natural Water Content

◇ % Fines (<0.075mm)
● % Water Content

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2. Groundwater level, if indicated above, is for the date specified and may vary.
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Irwindale, California

LOG OF SONIC CORE B-1

May 2014 | 51-1-10087-003

SHANNON & WILSON, INC.
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FIG. A-1
Sheet 8 of 8

REV 3

MASTER_LOG_E_MC 51-1-10087-003.GPJ SHAN_WIL.GDT 5/20/14 Log: JZB Rev: DGF Typ: LOL

APPENDIX B

LAW/CRANDALL EXPLORATORY BORINGS

APPENDIX B

LAW/CRANDALL EXPLORATORY BORINGS

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B-5	Boring B-5
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B-7	Boring B-7
B-8	Boring B-8
B-9	Boring B-9
B-10	Boring B-10

JOB 70131-8-0070.0001 DATE 3/9/1998 F.T. SM DR. JP O.E. MWH CHKD

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING 1

DATE DRILLED: February 13, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 377**

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.		
375		7.0	115	12	4	■	ML-SM	FILL - SANDY SILT and SILTY SAND - fine, about 30% Gravel, some pieces of asphalt concrete (to 30" in size), greyish brown
		--	--	<5	4	■		
	5	6.6	131	170	6	■		
370		6.7	124	<5	2	■		Rock gad used Pieces of brick and wood
	10	5.5	111	1000+	2	■		
365		7.0	120	650	3	■		END OF BORING AT 14½'.

NOTE: Water not encountered. No caving.

* Number of blows required to drive the Crandall sampler 12 inches using a 1600 pound hammer falling 12 inches.

** Elevations refer to topographic survey; see Figure 1.

*** O.V.A. Gastechtor Model No. 1238 used.

LOG OF BORING

LAW/CRANDALL

Fig. B-1

BORING 2

DATE DRILLED: February 13, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 379

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.		
		7.7	120	75	12	■	ML-SM	FILL - SANDY SILT and SILTY SAND - fine, about 35% Gravel, pieces of asphalt, greyish brown
375		5.3	109	75	4	■		
	5	8.4	114	440	14	■		
		5.2	114	195	1	■		Pieces of brick, wood and concrete (to 12" in size)
370	10	5.6	107	630	4	■		
365		5.9	94	150	3	■		
	15							END OF BORING AT 15'.

NOTE: Water not encountered. No caving.

B 70131-8-0070.0001 DATE 3/9/1998 F.T. SM DR. ___ O.E. MWH CHKD ___

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL

Fig. B-2

JOB 70131-8-0070.0001 DATE 3/9/1998 F.T. AR DR. JS O.E. MWH CHKD

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated.
It is not warranted to be representative of subsurface conditions at other locations and times:

BORING 3

DATE DRILLED: February 12, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 380

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.		
								3½" Asphalt Paving - 9" Base Course
		13.2	110	<5	2	■	ML	FILL - CLAYEY SILT - few Gravel, greenish grey
		12.0	116	100	3	■	SM-ML	FILL - SILTY SAND and SANDY SILT - fine, pieces of asphalt (to 3" in size), brick and concrete (to 8" in size), greyish brown
375	5	8.8	118	160	8	■		About 40% debris
		--	--		17	⊠		Sample not recovered
370	10	8.6	97	250	8	■		Metallic wire
		11.1	94	125	4	■		Greyish brown
365	15							Rock gad used. Rock auger used.

END OF BORING AT 15'.

NOTE: Water not encountered. Slight raveling from 6' to 9' (to 2½' in diameter).

LOG OF BORING

LAW/CRANDALL

Fig. B-3

BORING 4

DATE DRILLED: February 12, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 380

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.		
								4" Asphalt Paving - 9" Base Course
		10.7	115	<5	3	■	ML-SM	FILL - SANDY SILT and SILTY SAND - fine, few Gravel, brown
		6.4	118	25	7	■		About 40% Gravel
375	5							
		7.9	121	200	10	■		Greenish grey Odorous About 40% brick, wood and concrete (to 8" in size)
		15.9	105	575	9	■		Dark grey and brown
370	10							
		9.3	97	200	6	■		About 20% debris Dark grey
								Odorous
365	15	11.6	88	200	5	■		END OF BORING AT 15'.

NOTE: Water not encountered. Raveling from 6' to 15' (to 2½' in diameter).

JOB 70131-8-0070.0001 DATE 3/9/1998 F.T. AR DR. O.E. MWH CHKD

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL

Fig. B-4

JOB 70131-8-0070.0001 DATE 3/9/1998 F.T. SM DR. ___ O.E. MWH CHKD ___

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated.
It is not warranted to be representative of subsurface conditions at other locations and times.

BORING 5

DATE DRILLED: February 13, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 379

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.		
		--	--	<5	12	■	SM	FILL - SILTY SAND - fine, about 25% Gravel, brown
375		6.4	127	150	9	■		Brownish grey
	5	16.6	116	200	6	■	ML	FILL - CLAYEY SILT - few Gravel, brownish grey
		13.1	101	275	6	■	ML-SM	FILL - SANDY SILT and SILTY SAND - fine, some pieces of brick, asphalt, concrete, metallic wire and wood, brown and grey
370	10	11.2	102	<5	2	■		Dark grey
365		10.0	115	420	3	■		
	15	3.5	106	1000+	2	■		
360		8.0	97	360	6	■		
	20							END OF BORING AT 20'.

NOTE: Water not encountered. No caving.

LOG OF BORING

LAW/CRANDALL

Fig. B-5

JOB 70131-8-0070.0001 DATE 3/10/1998 F.T. SM DR. JB O.E. MWH CHKD

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated.
It is not warranted to be representative of subsurface conditions at other locations and times.

BORING 6

DATE DRILLED: February 13, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 381

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.		
380		15.6	112	<5	3	■	SM-ML	FILL - SILTY SAND and SANDY SILT - about 20% Gravel, brown (ENCOUNTERED HEAVY WATER SEEPAGE; MOVED BORING 12' EAST)
		17.7	110	<5	2	■	ML	FILL - CLAYEY SILT - greenish grey
	5							
375		19.8	111	<5	12	■	ML-SM	CLAYEY SILT and SILTY SAND - fine, about 15% Gravel, pieces of asphalt, wood, brick and concrete, brownish grey
		3.5	119	80	6	■		
	10	4.1	110	25	10	■		
370								
		--	--		10	▨		Rock gad used
		--	--		4	▨		Sample not recovered
		11.2	77	45	5	■		Sample not recovered
	15							
365		13.8	105	50	5	■		
		10.7	109	10	2	■		
	20							END OF BORING AT 20'.

NOTE: Water encountered at 3'. Boring abandoned, moved 12' east and redrilled.

LOG OF BORING

LAW/CRANDALL

Fig. B-6

BORING 7

DATE DRILLED: February 13, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 382

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.		
380		13.5	104	75	2	■	SM-CL	FILL - SILTY SAND and SANDY CLAY - fine, about 20% Gravel, some pieces of asphalt and concrete (to 24" in size), brown
		10.3	121	<5	2	■	SM-ML	FILL - SILTY SAND and CLAYEY SILT - pieces of asphalt, brown
	5	10.2	118	35	3	■		
375		10.8	125	415	6	■		Greyish brown
	10							
370								
		9.5	118	1000+	5	■		Dark grey
	15							END OF BORING AT 15'.

NOTE: Water not encountered. No caving.

JOB 70131-8-0070.0001 DATE 3/9/1998 F.T. SM DR. JS O.E. MWH CHKD

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated.
It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL

Fig. B-7

BORING 8

DATE DRILLED: February 12, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 381

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.	
							3½" Asphalt Paving - 7½" Base Course
380							SM FILL - SILTY SAND - fine, few Gravel, brown
		9.3	115	<5	5	■	
		8.1	116	50	3	■	Some pieces of brick and concrete (to 8" in size), few Gravel, brownish grey
	5						Some Clay
375		27.1	97	25	<1	■	Metallic wire
		8.1	120	100	9	■	
	10						
370		6.8	121	375	7	■	About 10% Gravel
							Piece of garden hose (3' in length)
	15	5.5	117	375	5 for 10"	■	Greenish grey
							END OF BORING AT 15'.

NOTE: Water not encountered. No caving.

JOB 70131-8-0070.0001 DATE 3/9/1998 F.T. AR DR. JB O.E. MWH CHKD

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated.
It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL

Fig. B-8

JOB 70131-8-0070.0001 DATE 3/9/1998 F.T. AR DR. O.E. MWH CHKD

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated.
It is not warranted to be representative of subsurface conditions at other locations and times.

BORING 9

DATE DRILLED: February 12, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 384

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.		
		26.3	103	<5	5	■	SM-CL	3" Asphalt Paving - 8" Base Course FILL - SILTY SAND and SILTY CLAY - fine, pieces of brick and concrete (to 6" in size), few Gravel, mottled grey and brown
380		26.1	94	<5	4	■	SM-ML	FILL - SILTY SAND and SANDY SILT - fine, brownish grey
	5	2.3	111	<5	3	■		Few Gravel, brown Brick fragment (6" in size)
		0.0	112	<5	1	■		About 15% Gravel and Cobbles
375								
	10	10.0	110	50	1	■		Metallic wire About 10% concrete (to 8" in size) Gad used. Rock auger used. Pieces of asphalt
370		7.3	91	150	3	■		Brownish grey
	15	7.4	110	50	5	■		About 35% brick and concrete (to 6" in size) Gad, rock auger, rock bucket used

END OF BORING AT 17½'.

NOTE: Water not encountered. Raveling to 2½' in diameter.

LOG OF BORING

LAW/CRANDALL

Fig. B-9

BORING 10

DATE DRILLED: February 12, 1998
EQUIPMENT USED: 24" - Diameter Bucket
ELEVATION: 383

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	BLOW COUNT* (blows/ft.)	SAMPLE LOC.		
								3½" Asphalt Paving - 8" Base Course
		22.9	95	<5	3	■	ML-SM	FILL - CLAYEY SILT and SILTY SAND - fine, few Gravel, some pieces of asphalt, concrete (to 18" in size) and glass, brownish grey
380		11.3	114	<5	2	■		
	5	10.0	109	400	5	■		Rock bucket used Dark grey
375		15.2	108	250	4	■		About 10% Cobbles and concrete (to 6" in size)
	10	18.4	110	100	2	■	ML	FILL - SANDY SILT and CLAYEY SILT - few Gravel, pieces of brick and concrete, greenish grey
370		19.9	109	100	2	■		
	15	14.4	115	1000+	3	■		
365							SM	FILL - SILTY SAND - fine, odorous, brown

(BORING TERMINATED AT 19' DUE TO LARGE CONCRETE)

NOTE: Water not encountered. No caving.

JOB 70131-8-0070.0001 DATE 3/9/1998 F.T. AR DR. JB O.E. MWH CHKD

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated.
It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL

Fig. B-10

APPENDIX C

LABORATORY TESTING

APPENDIX C

LABORATORY TESTING

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FIGURES

C-1 Plasticity Chart
C-2 Grain Size Distribution (4 sheets)

APPENDIX C

LABORATORY TESTING

C.1 GENERAL

This appendix contains descriptions of the procedures and the results of the geotechnical laboratory tests performed for the project. Samples recovered from the boring were tested to evaluate the basic index and engineering properties of the subsurface soils. Geotechnical laboratory testing of recovered soils included visual classifications, water content determinations, grain size analyses and fines content, and Atterberg limits. The laboratory testing was performed in general accordance with ASTM International (ASTM) standard test procedures.

C.2 VISUAL CLASSIFICATION

Each soil and bedrock sample recovered from the boring was visually classified. The soil samples were classified using a system based on the ASTM Designation: D 2487, Standard Test Method for Classification of Soil for Engineering Purposes, and ASTM Designation: D 2488, Standard Recommended Practice for Description of Soils (Visual-Manual Procedure) (ASTM, 2007). These ASTM standards generally use the Unified Soil Classification System. Sample classifications have been incorporated into the soil and bedrock descriptions on the boring logs presented in Appendix A.

C.3 GRAIN SIZE ANALYSES

The grain size distribution of selected samples was determined using a mechanical sieve in general accordance with the ASTM D422-63 (2007), Standard Test Method for Particle-Size Analysis of Soils (ASTM, 2007). This test is useful for classifying soils, for providing correlation with soil properties, and for evaluating liquefaction potential.

Grain size analysis could be influenced by sample type and drilling method. The sample type or the inside diameter of the sampler, impacts the maximum particle size that can be sampled. Sonic core can obtain maximum particle sizes up to 3 to 4 inches; by comparison, the largest diameter particle that can be sampled by a 2-inch SPT sampler (1.375 inch I.D.) is approximately 1.3 inches, regardless of the maximum particle size of the soil unit being sampled. The drilling method could also potentially impact grain size analysis data.

Grain size analysis results are presented as grain size distribution curves in Figure C-1. Each gradation sheet provides the boring number, sample depth, and USCS group symbol. The

percent passing the No. 200 sieve (0.075 mm) is also shown on the exploration logs included in Appendix A.

C.4 ATTERBERG LIMITS

To aid in classifying the soils, tests to determine the Atterberg Limits and the percent fines determinations (percent passing the No. 200 sieve) were performed. The tests were performed in accordance with ASTM D 4318 (ASTM, 2007). The results of the tests are presented in Figure C-2 and in the grain size distribution tabular results for fine grained soils in Figure C-1.

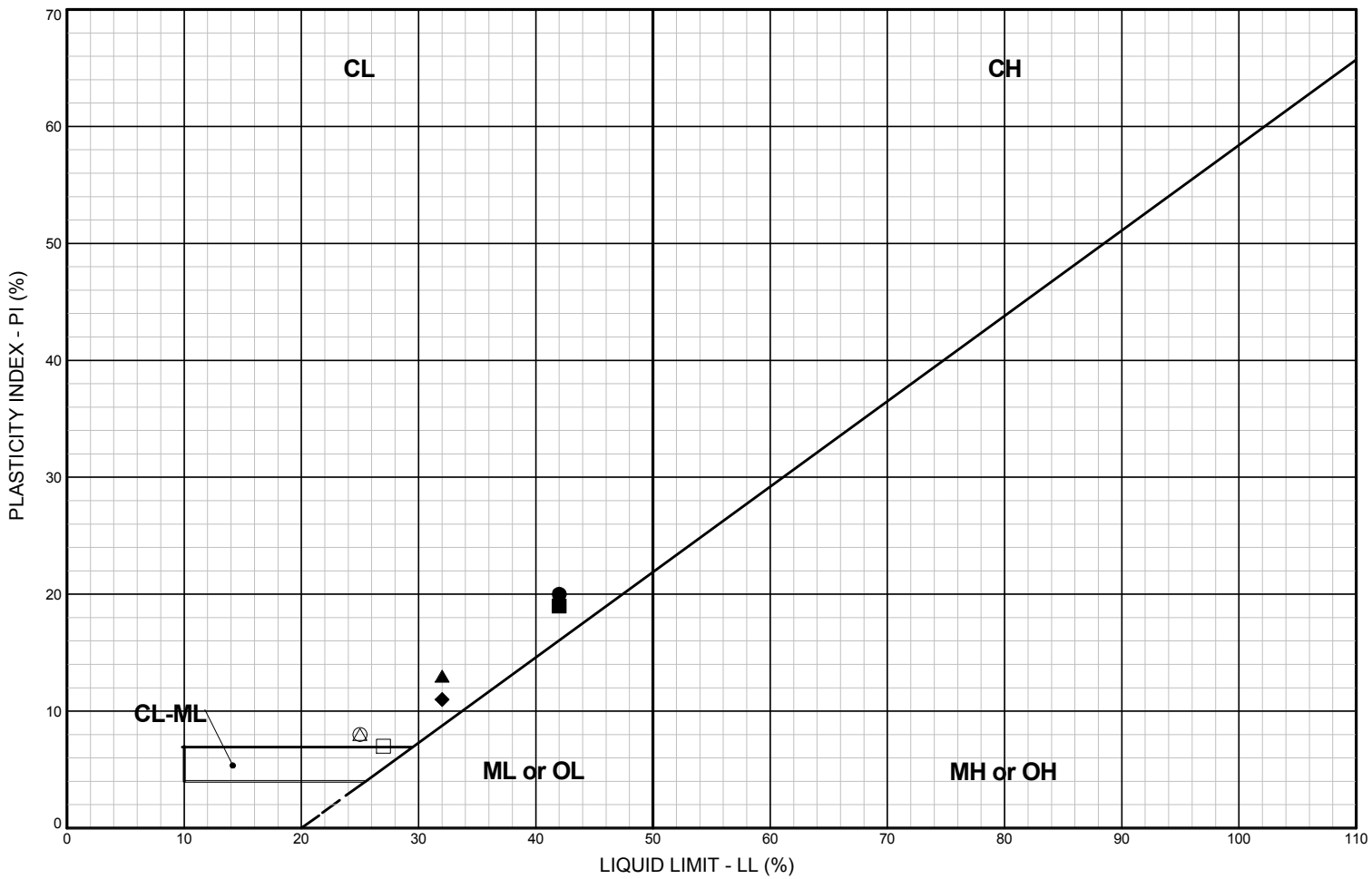
C.5 WATER CONTENT

The natural water contents of soil samples recovered from the borings were determined in general accordance with ASTM D2216-10, Standard Method of Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures (ASTM 2010). Comparison of natural water content of a soil with its index properties can be useful in characterizing soil unit weight, consistency, compressibility, and strength. Water contents are presented on the boring logs in Appendix A.

C.6 REFERENCES

ASTM International (ASTM), 2007, Annual book of standards, construction, v. 4.08, soil and rock (I): D 420 – D 5876: West Conshohocken, Penn., ASTM International, 1 v.

ASTM International (ASTM), 2010, Annual book of standards, construction, v. 4.08, soil and rock (I): D 420 – D 5876: West Conshohocken, Penn., ASTM International, 1 v.



LEGEND

CL: Low plasticity inorganic clays; sandy and silty clays

CH: High plasticity inorganic clays

ML or OL: Inorganic and organic silts and clayey silts of low plasticity

MH or OH: Inorganic and organic silts and clayey silts of high plasticity

CL-ML: Silty clays and clayey silts

BORING AND SAMPLE NO.	DEPTH (feet)	U.S.C.S. SYMBOL	SOIL CLASSIFICATION	LL %	PL %	PI %	NAT. W.C. %	PASS. #200, %
● B-1, S-0	3.5	CL	Sandy Lean Clay	42	22	20	17.4	
■ B-1	6.0	CL	Lean Clay with Sand	42	23	19	19.8	
▲ B-1, S-1	8.5	SC	Clayey Sand	32	19	13	17.8	48.3
◆ B-1, S-6	34.0	CL	Lean Clay with Sand	32	21	11	18.4	
○ B-1, S-7	42.5	SC	Clayey Sand	25	17	8	24.9	41.1
□ B-1, S-7	43.0	SC-SM	Clayey Sand or Silty Sand	27	20	7	22.5	
△ B-1, S-14	110.0	SC	Clayey Sand with Gravel	25	17	8	13.0	40.1

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PLASTICITY CHART

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FIG. C-1

FIG. C-1

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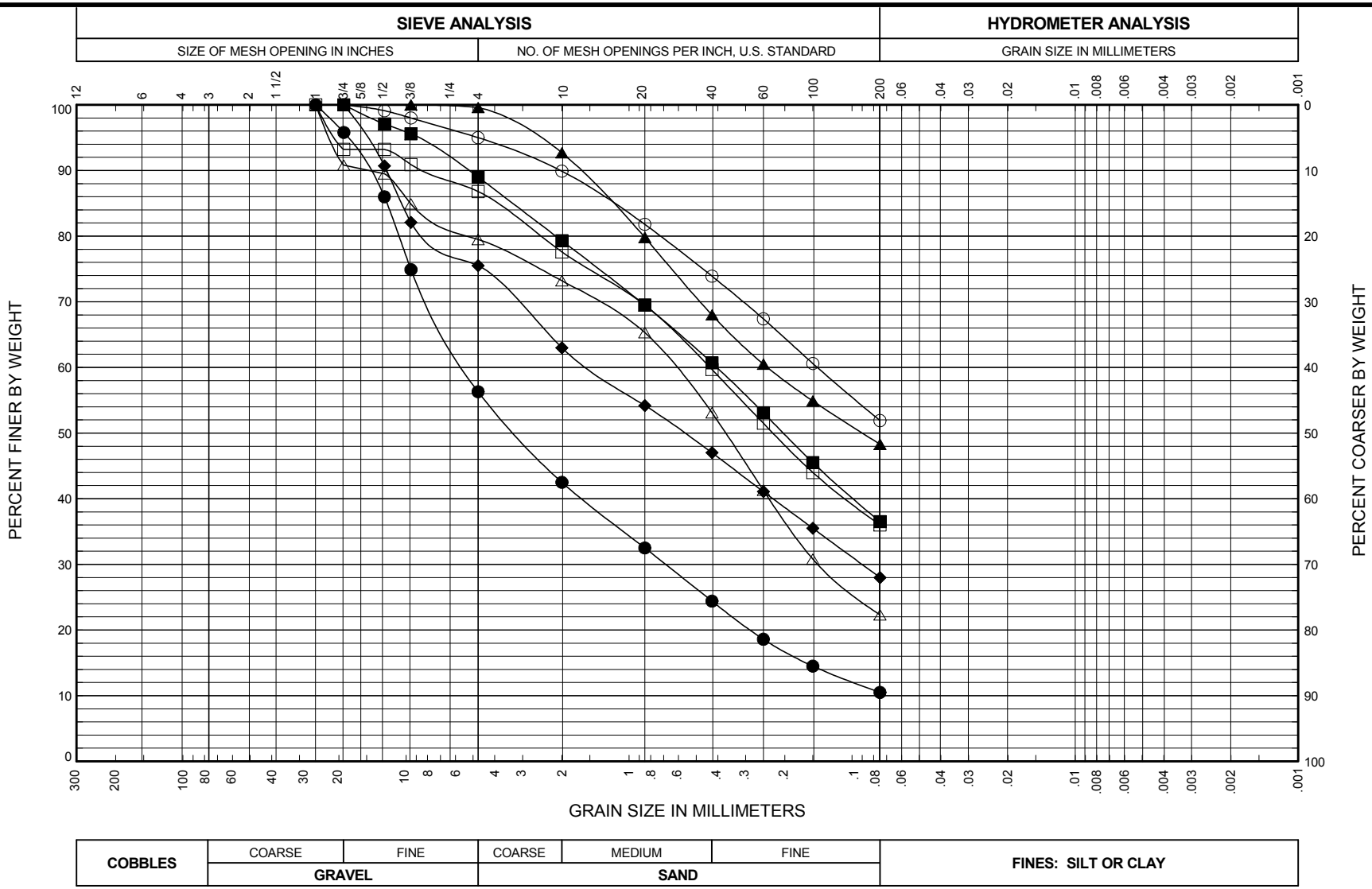

BORING AND SAMPLE NO.	DEPTH (feet)	U.S.C.S. SYMBOL	SAMPLE DESCRIPTION	FINES %	NAT. W.C. %	LL %	PL %	PI %
● B-1, S-0	0.5	SP-SM	Poorly Graded Sand with Silt and Gravel	10.5	12.7			
■ B-1, S-0	2.5	SM	Silty Sand	36.5	10.2			
▲ B-1, S-1	8.5	SC	Clayey Sand	48.3	17.8	32	19	13
◆ B-1, S-2	12.0	SM	Silty Sand with Gravel	28.0	7.8			
○ B-1, S-2	15.5	ML	Sandy Silt	51.9	15.1			
□ B-1, S-3	17.5	SM	Silty Sand	36.0	10.8			
△ B-1, S-3	20.0	SM	Silty Sand with Gravel	22.3	11.6			

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GRAIN SIZE DISTRIBUTION

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FIG. C-2
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FIG. C-2

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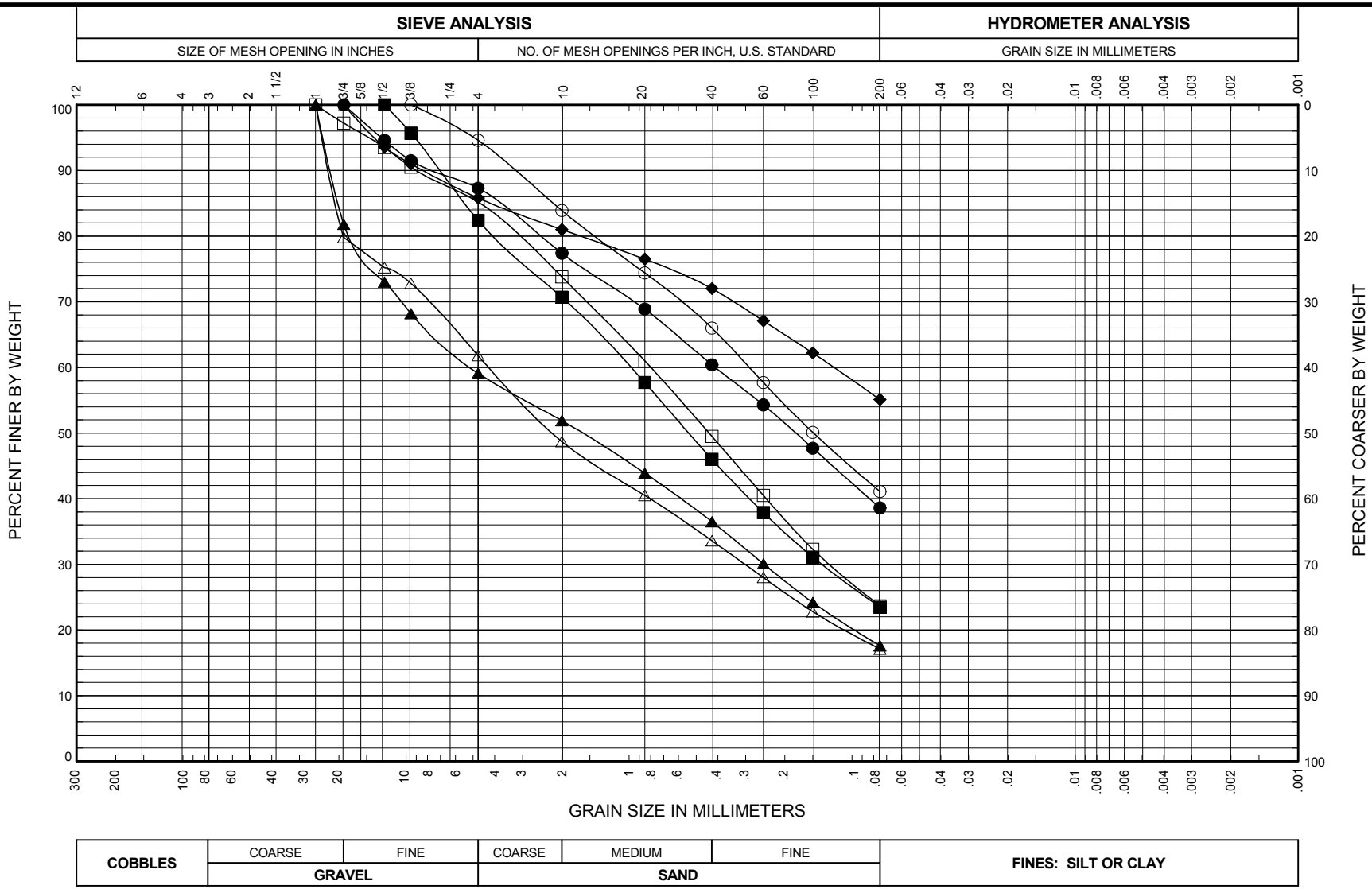

BORING AND SAMPLE NO.	DEPTH (feet)	U.S.C.S. SYMBOL	SAMPLE DESCRIPTION	FINES %	NAT. W.C. %	LL %	PL %	PI %
● B-1, S-4	24.0	SM	Silty Sand	38.6	12.1			
■ B-1, S-5	28.0	SM	Silty Sand with Gravel	23.5	14.9			
▲ B-1, S-6	32.0	SC	Clayey Sand with Gravel	17.6	13.5			
◆ B-1, S-7	40.0	ML	Sandy Silt	55.1	14.2			
○ B-1, S-7	42.5	SC	Clayey Sand	41.1	24.9	25	17	8
□ B-1, S-7	48.0	SC	Clayey Sand	23.7	6.4			
△ B-1, S-8	54.0	SM	Silty Sand with Gravel	17.1	6.0			

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FIG. C-2
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FIG. C-2

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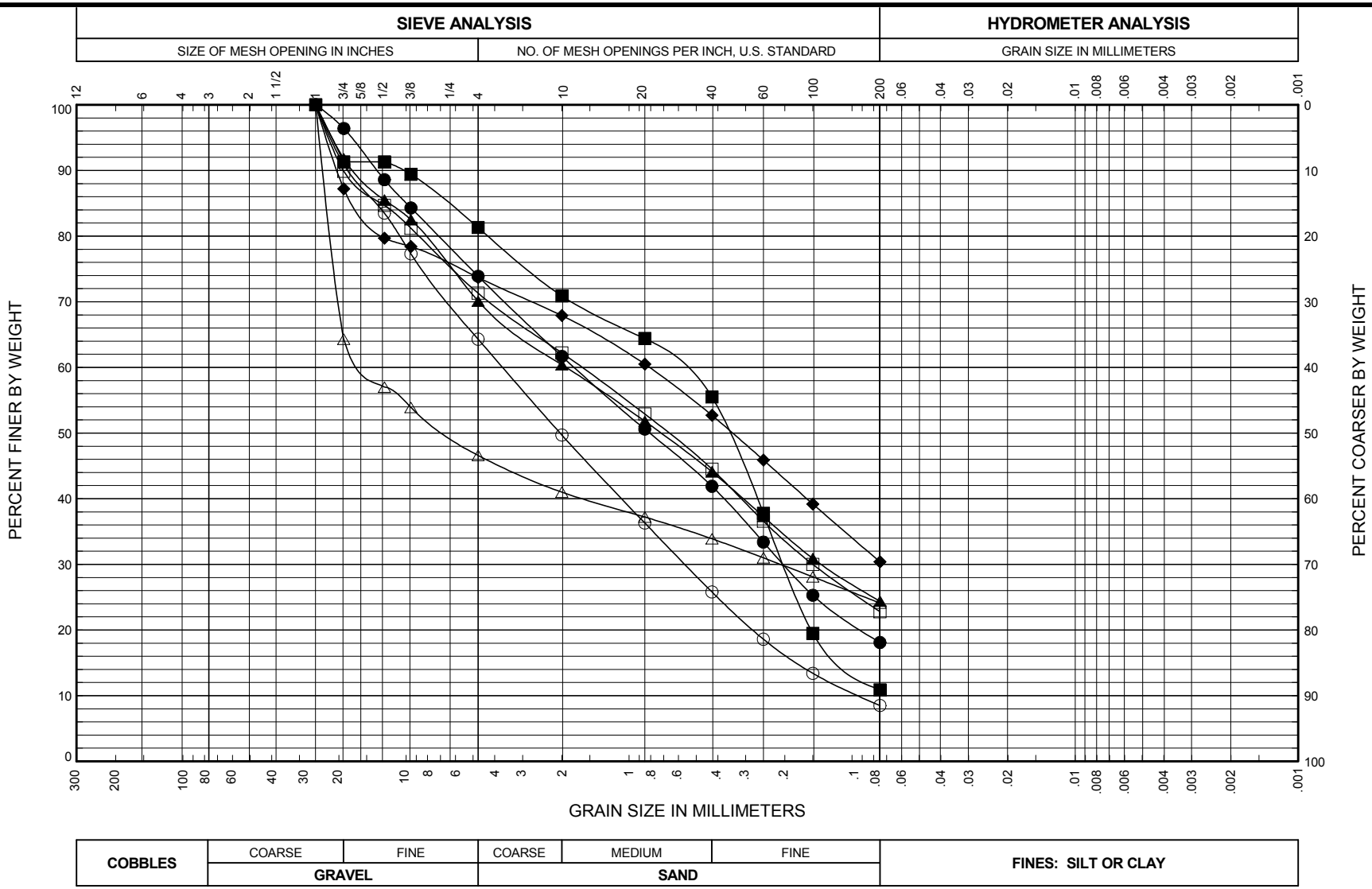

BORING AND SAMPLE NO.	DEPTH (feet)	U.S.C.S. SYMBOL	SAMPLE DESCRIPTION	FINES %	NAT. W.C. %	LL %	PL %	PI %
● B-1, S-8	58.0	SM	Silty Sand with Gravel	18.1	9.3			
■ B-1, S-9	64.5	SP-SM	Poorly Graded Sand with Silt and Gravel	10.9	9.3			
▲ B-1, S-10	72.0	SM	Silty Sand with Gravel	24.4	17.0			
◆ B-1, S-11	82.0	SM	Silty Sand with Gravel	30.4	18.9			
○ B-1, S-11	86.5	SP-SM	Poorly Graded Sand with Silt and Gravel	8.5	7.0			
□ B-1, S-12	92.0	SM	Silty Sand with Gravel	22.8	11.4			
△ B-1, S-13	102.0	GM	Silty Gravel with Sand	24.1	8.8			

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FIG. C-2
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FIG. C-2

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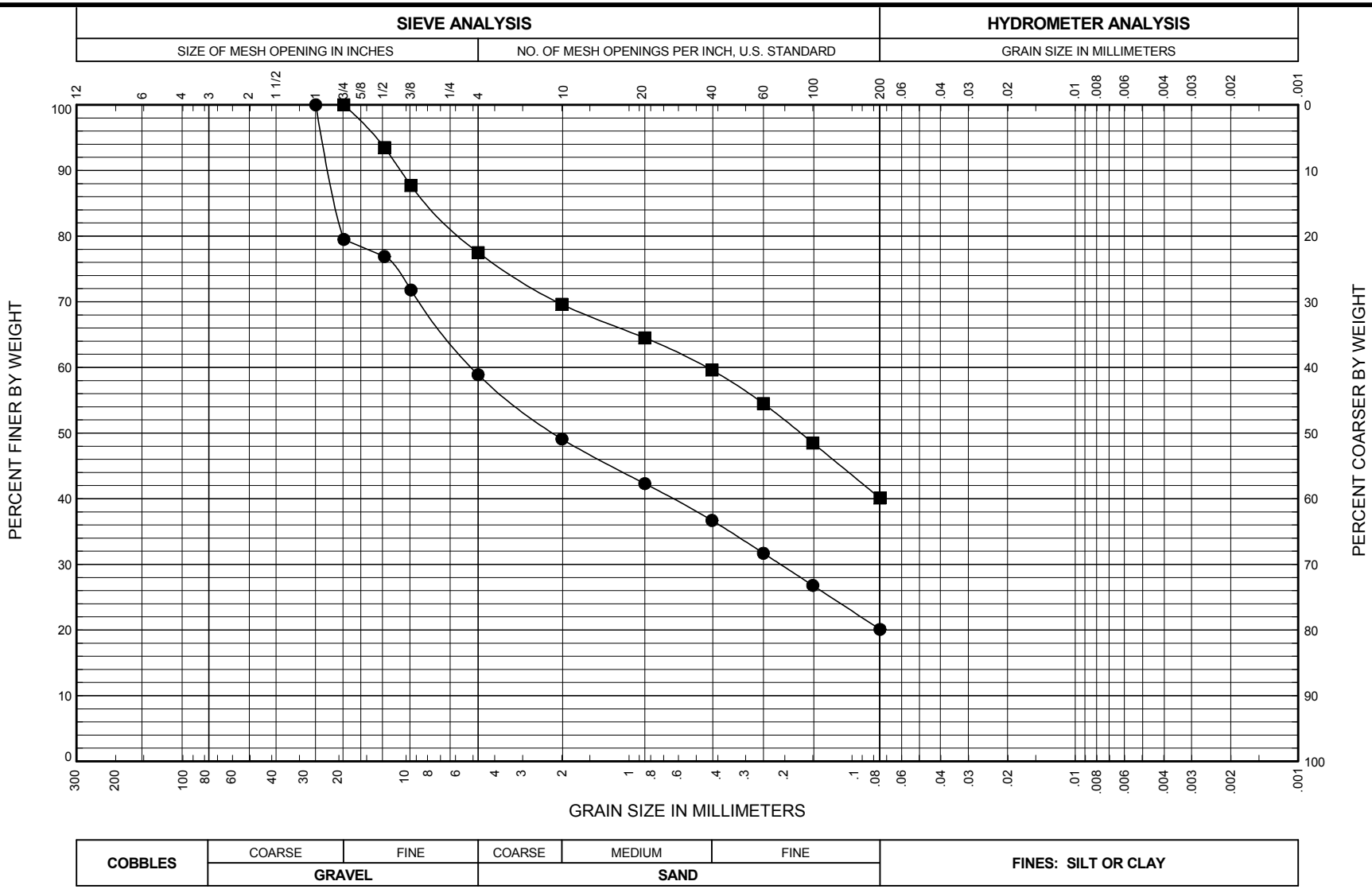

BORING AND SAMPLE NO.	DEPTH (feet)	U.S.C.S. SYMBOL	SAMPLE DESCRIPTION	FINES %	NAT. W.C. %	LL %	PL %	PI %
● B-1, S-13	106.0	GM	Silty Gravel with Sand	20.1	6.6			
■ B-1, S-14	110.0	SC	Clayey Sand with Gravel	40.1	13.0	25	17	8

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FIG. C-2
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FIG. C-2

APPENDIX D

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors, which were considered in the development of the report, have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

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Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

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Final boring logs developed by the consultant are based on interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

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The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

Preliminary Geotechnical Review
Proposed Irwindale Speedway Redevelopment
Irwindale, Caliornia

Shannon & Wilson, Inc.

May 8, 2013

Preliminary Geotechnical Review
Proposed Irwindale Speedway
Redevelopment
Irwindale, California

May 8, 2013

SHANNON & WILSON, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Excellence. Innovation. Service. Value.

Since 1954.

Submitted To:
Mr. Christopher Atkinson
Lindom Company
420 East 3rd Street, Suite 906
Los Angeles, CA 90013

By:
Shannon & Wilson, Inc.
664 West Broadway
Glendale, CA 91204

51-1-10087-001

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALASKA
CALIFORNIA
COLORADO
FLORIDA
MISSOURI
OREGON
WASHINGTON
WISCONSIN

May 8, 2013

Mr. Christopher Atkinson
Lindom Company
420 East 3rd Street, Suite 906
Los Angeles, California 90013

RE: PRELIMINARY GEOTECHNICAL REVIEW, PROPOSED IRWINDALE SPEEDWAY REDEVELOPMENT, IRWINDALE, CALIFORNIA

Dear Mr. Atkinson:

We are pleased to submit this preliminary geotechnical review of the existing speedway property located at 500 Speedway Drive. We met with you and Messrs. Michael Lock and Paul Hacunda of J.R. Miller & Associates on site on April 30, 2013 to review conditions along the east, north, and west portions of the speedway parcel. The initial site reconnaissance was coordinated through James Van Beveren of Shannon & Wilson, who worked as the geotechnical engineer on Irwindale Speedway project in 1998 while at LAW/Crandall and also reviewed this letter.

As part of our review, we were provided with a copy of the following report: Report of Geotechnical Investigation, Proposed Speedway Facility, 13300 East Live Oak Avenue, Irwindale, California, by Law/Crandall, dated March 10, 1998. We also reviewed J.R. Miller & Associates letter dated May 3, 2013.

During our reconnaissance we performed a cursory observation of the existing support buildings including the administration building, two concession/restroom buildings, maintenance and driving school facility building, east maintenance building, and parking lot pavements. In addition, we made a limited reconnaissance of the grandstand foundation connections.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, express or implied, is made as to the professional advice included in this letter.

664 WEST BROADWAY
GLENDALE, CALIFORNIA 91204
818-543-4560 FAX: 818-543-4565
TDD 1-800-833-6388
www.shannonwilson.com

Our review is discussed in greater detail in the following sections.

PROJECT BACKGROUND

We understand that the existing raceway property will be redeveloped into a proposed outlet mall with a similar layout per the site map for the PARAGON Outlets in Livermore, California. Based on the drawing provided, there will be approximately 600,000 square feet of building area. While we have not seen site specific plans for the Irwindale site, we have assumed a similar size and layout for the proposed project. You provided us with the Livermore Lease Plan of that site during our reconnaissance. The proposed plan does not indicate specific building heights, but we have assumed that the layout will follow typical outlet mall construction of single story retail stores, possibly of steel frame or masonry construction. Therefore we have assumed that the anticipated column loads would be in the range of up to about 100 kips and wall loads would be on the order of 3 kips per lineal foot.

SCOPE OF SERVICES

Our services consisted of the following main tasks:

- Review of existing geotechnical data from the report prepared by Law/Crandall dated March 10, 1998.
- Site reconnaissance on April 30, 2013 to observe the site conditions relative to potential building and parking area pavement conditions.
- Preparation of a letter summarizing our preliminary conclusions and observations including site photos of the observed portions of the property.

EXISTING DEVELOPMENT

The existing development is composed of a NASCAR ½-mile asphalt-paved and banked speedway with support buildings. Based on Google Earth, the property, including parking lots, appears to be approximately 1,000 feet by 2,700 feet, and about 62 acres in area. The existing site was originally used as an open pit mine for concrete aggregate, sand and gravel. It was backfilled with construction debris and other landfill waste up to 200 feet deep, prior to the development for the speedway (Law/Crandall, 1998). We understand the landfill was designated for inert (i.e. non-decomposable) waste. The speedway was first opened in March 1999 (Wikipedia, 2013). Previous geotechnical work at the site includes reports by Law/Crandall

(1998) and Mission Geosciences (1997). According to J.R. Miller & Associates (JRM&A) the support buildings completed for the speedway development are supported on reinforced concrete mat foundations ranging from 18 inches to 24 inches thick.

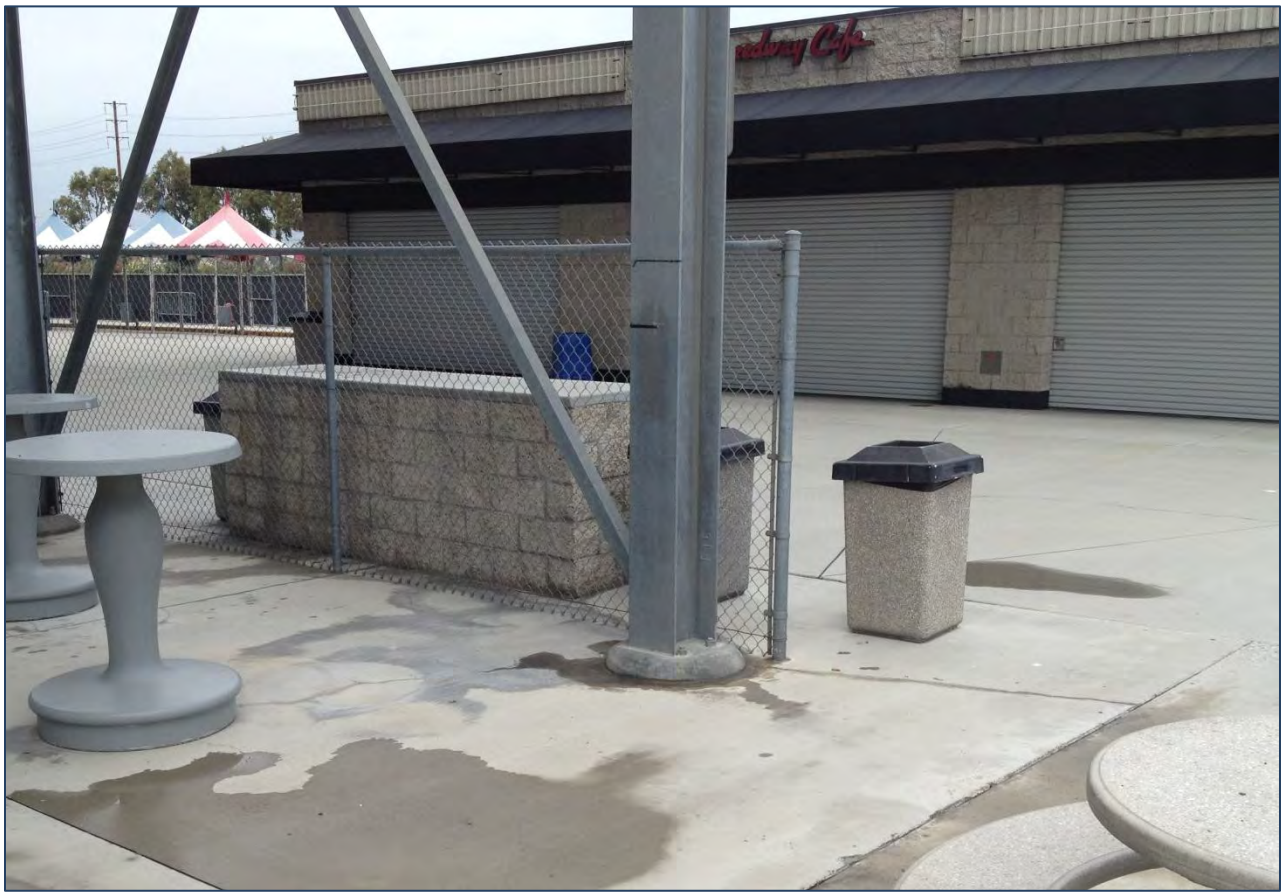
LAW/CRANDALL RECOMMENDATIONS

In their investigation and report dated March 30, 1998, Law/Crandall found that the site was underlain by approximately 200 feet of uncertified fill, consisting of soil and inert construction waste. They recommended that if provisions could be made to tolerate and allow for future settlement, the structures could be supported on reinforced concrete mat foundations underlain by a blanket of rigid compacted fill. They discussed the potential for on-going settlement and the need for continuing maintenance.

OBSERVATIONS

Grandstands

We observed the connection between the grandstand vertical supports and the foundation elements at select locations (see photograph below). There was no obvious visual evidence of cracks or fractures of the concrete foundations or concrete pavement surrounding the foundations we observed.



Photograph 1 – View of north-central grandstand leg and attachment to foundation pedestal. View to northwest.

East Concessions Building

We observed the east concessions building's four outer sides. There was minor distress at the connection between the concrete pavement on the south side of the building and the concrete apron extending out from the food service windows and eastern side of the building. We noted evidence of grinding of the apron at specific points indicating vertical offset between the pavement and building apron. We also noted the presence of methane observation well boxes along the southern boundary of the building.

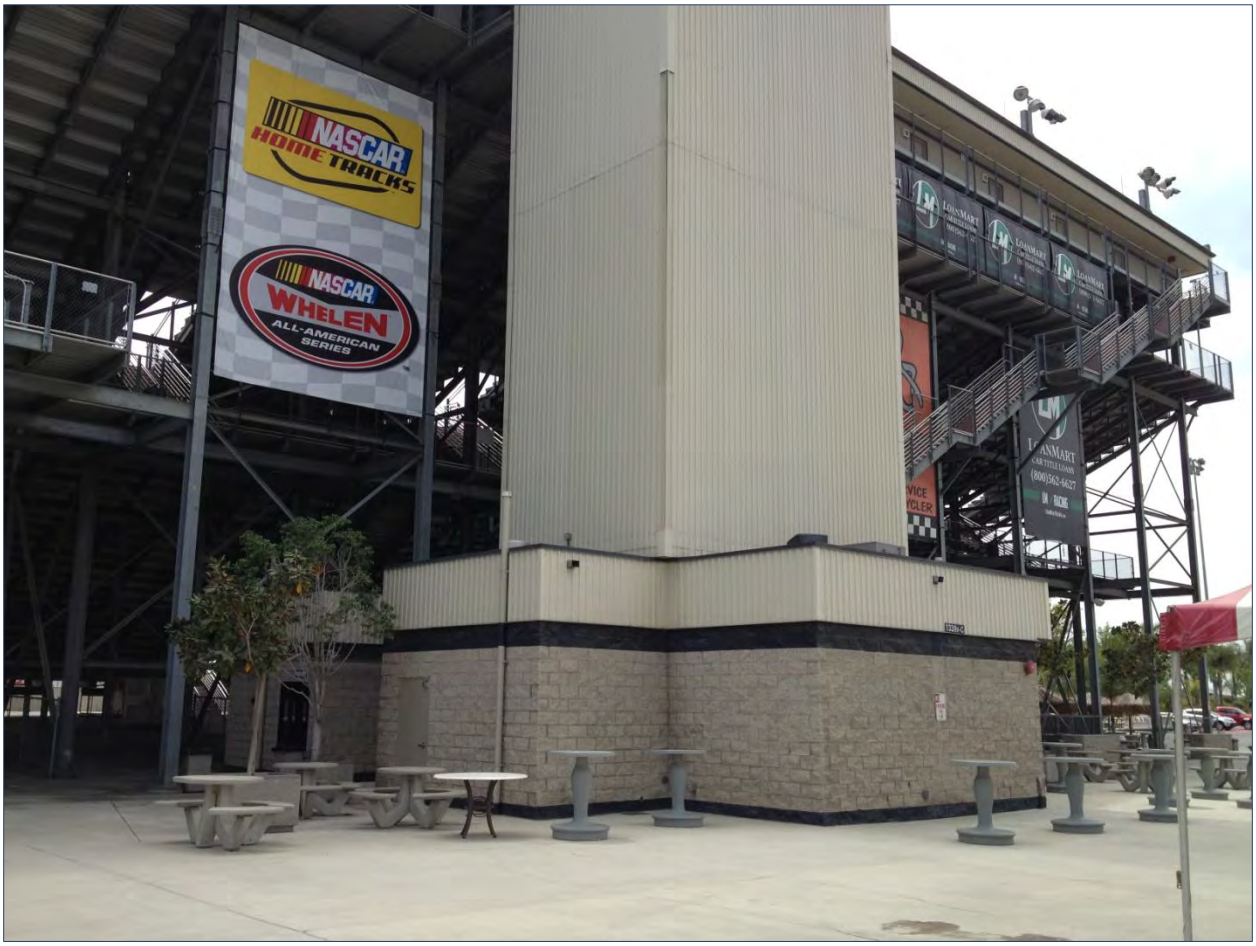
Photograph 2 – View of east end of east refreshments building. View to west.

West Concessions Building

We observed all four sides of the west concessions building noting distress along the pavement/apron joint on the south side of the building. In general, the building walls appear to be intact, with no observed evidence of fractures or cracks extending from corners of door frames or windows.

Elevator

We briefly observed the base of the elevator tower building, which is connected to the grandstands. We did not observe noticeable cracks or deformations in the ground area surrounding the elevator. We were not able to observe the interior shaft.



Photograph 3 – Base of the grandstand elevator. View to the southwest.

East Maintenance "Swapmeet" Building

The east maintenance building is located east of Speedway Drive. Based on a conversation with maintenance personnel, it is our understanding that this building was originally constructed

before the speedway (sometime prior to 1994 based on Google Earth imagery) and was covered with concrete masonry unit (CMU) block during the speedway construction. It was reported that this building functioned as the swapmeet headquarters.

During our site reconnaissance we noted some cracking of the concrete pavement on the west side of the building near a grade/elevation change (see photograph below). Observation of the south, east, and north walls of the building did not reveal obvious cracking of the CMU block walls.

Photograph 4 – East maintenance (swapmeet) building, with indications of cracking along pavement on southwest corner of building. View to north.

Administration Building

We also observed the administration building located on the east end of the race track. A number of small windows are located on the north side of the building and there were no cracks observed extending from the windows. We also observed the eastern, southern and western outside portions of the building. This building also appears to have been originally constructed before the speedway (sometime prior to 1994 based on Google Earth imagery). There was a very slight misalignment of a steel framed door on the south side of the building. There were no apparent cracks extending from the door frame into the CMU blocks or mortar at this location.

Photograph 5 – View of east end of track fence and administration building in the distance. Ticket windows are located on the north side of building. View to south.

Maintenance and Driving School Facility Building

We observed the south and west sides of the maintenance and driving school facility building located northwest of the speedway in the western parking lot area. In the areas observed, we did not see cracks or fractures to the building extending from the corners of the doors or windows. The higher vehicle maintenance doorways are covered by metal siding (see photograph below), making indications of distress such as CMU block cracking or fracturing difficult to evaluate during our reconnaissance; however, no cracking was observed.

Photograph 6 – View of the west side of the maintenance and driving school building. Note top of building is covered by metal siding. View to east.

West Parking Lot

We walked the west parking lot area between the west concessions building and maintenance and driving school facility building and observed minor separation of the pavement along both linear and irregular cracks up to approximately 2 inches in width. In some cases these cracks had been filled with a tar-like substance. The cracks appeared to be separating in a horizontal direction with little or no observable vertical offset. The linear cracks may have formed along previous pavement joints or along utility trenches, and may be the result of asphalt shrinkage.

CONCLUSIONS

Existing Development

The concession buildings, administration office, and maintenance and driving school facility buildings appear to be functioning with no observed distress to the walls or immediately adjacent exterior floors. Indications of typical settlement distress such as cracks extending from window or door opening corners were not readily observed during our site walk and reconnaissance. There were indications of possible mortar replacement between CMU blocks in isolated locations on the two concession buildings. It was not determined if the buildings or mat foundations have rotated or tilted.

We noted minor indications of vertical offset in the pavement areas adjacent to the concession buildings where the concrete pavement abuts the concrete building apron. The east maintenance (swapmeet) building exhibited cracking of the pavement adjacent to the building. It is not clear as to when this building was constructed or what type of foundation underlies the building. Areal settlements may have occurred on site, but because of the spacing of the facilities, the settlements may not be especially obvious.

Typical pavement distress included cracks up to approximately 2 inches wide, extending over 50 feet in length, were noted in the central, eastern and western parking lot areas. The cause of the separations is not known at this time, but the deformation appeared to be related to horizontal movement, as little vertical offset was noted.

Future Development

Based on the observations made during our reconnaissance and experience with similar types of projects in southern California, we have the following comments and recommendations:

1. Although it is our opinion that individual elements of the project could be designed to accept the resulting settlement, the project should be discussed with the governing building and safety agency to get their preliminary approval of the design as was done with the speedway project.
2. The project should be designed with the assumption of long-term settlement. We believe that if provisions are made for continuation of the settlement and on-going maintenance, it is probable the proposed outlet mall buildings can be supported in a similar manner on the existing fill assuming that similar mat type foundations are used, and that the building loads are relatively light and evenly distributed. The building structures should be designed to accommodate potential total and differential settlement, by physical separation between mat foundation sections and building walls.
3. Utilities, including sewer and stormdrains should be designed to accommodate potential settlement of the fill. Typical minimum gradients for water and waste flow should be increased to accommodate potential settlement. Additional consideration should also be given to using flexible utility connections at building entrances, as well as flexible pavements.
4. Infiltration of storm water or surface landscape water should not be allowed into the subsurface materials nearby or immediately adjacent to the proposed buildings as this will increase the settlement. In addition, surface grades should be designed to promote sheeting and drainage of water to off-site storm drains.
5. A methane consultant should be retained to provide recommendations addressing the functioning of the existing methane observation wells.
6. A thorough geotechnical evaluation including subsurface explorations should be completed for the proposed development to address site specific uses once a preliminary design plan is completed for the property.

Shannon & Wilson, Inc. has prepared the enclosed "Important Information About Your Geotechnical/Environmental Report" to assist you and others in understanding the use and limitations of our letter.

SHANNON & WILSON, INC.

PROFESSIONAL GEOLOGIST No. 5789
DEAN G. FRANCUCH
No. 1842
CERTIFIED ENGINEERING GEOLOGIST
Exp: 03/31/14
STATE OF CALIFORNIA

5/8/13

Dean G. Francuch, C.E.G.
Associate

LICENSED PROFESSIONAL ENGINEER
NITIKHUN NITICHAIVORRAKUL
C 80842
EXP 03/31/15
STATE OF CALIFORNIA

5/8/13

Nicky Nitichaivorrakul, P.E.
Principal Professional

DGF/JVB/NXN/dgf

Enc: Important Information About Your Geotechnical/Environmental Report

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 51-1-10087-001

Date: May 8, 2013
To: Lindom Company
Attn: Mr. Christopher Atkinson

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors, which were considered in the development of the report, have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

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ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

Final Report
Geotechnical Inspection Services
Speedway Facility
13300 East Live Oak Avenue, Irwindale, California

LAW Crandall

March 19, 1999

LAW Crandall
LAWGIBB Group Member

FINAL REPORT
GEOTECHNICAL INSPECTION SERVICES
SPEEDWAY FACILITY

13300 EAST LIVE OAK AVENUE
IRWINDALE, CALIFORNIA

Prepared for:

IRWINDALE SPEEDWAY

Irwindale, California

March 19, 1999
Project 70144-8-0183

LAW Crandall
LAWGIBB Group Member

March 19, 1999

Mr. Robert DeFazio
Irwindale Speedway
13300 East Live Oak Avenue
Irwindale, California 91706

Subject: **Final Report of Geotechnical Inspection Services**
Proposed Speedway Facility
13300 East Live Oak Avenue
Irwindale, California
Law/Crandall Project 70144-8-0183

Dear Mr. DeFazio:

SUMMARY

We have completed geotechnical inspection services at the site of the subject site. This final report provides:

- A formal record of our observation and testing of the compacted fill placed to grade the site.
- Confirmation of our observation and approval of the foundation excavations.
- A formal record of our observation and testing of the compacted asphalt paving placed in the parking lot.

The location of the site is shown in relation to the adjacent Live Oak Avenue on the attached Plot Plan. The observation work was performed periodically as requested between April 1, 1998 and January 4, 1999. We performed a geotechnical investigation of the site and submitted our recommendations in a report dated March 10, 1998 (our Job No. 70131-8-0070), and in supplemental letter dated August 14, 1998.

A Division of Law Engineering and Environmental Services, Inc.
200 Citadel Drive
Los Angeles, CA 90040-1554
323-889-5300 • Fax 323-721-6700

This final report is limited to the earthwork performed through January 4, 1999, the date of our last observation and/or testing of the soil-related and asphalt paving work for the project. The fill and asphalt paving, at the locations and elevations tested by us, were compacted to at least the specified degree of compaction. Also, the foundation excavations extended into satisfactory soils.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional opinions included in this report. The scope of our services did not include surveying or the responsibility for job safety. The soil-related and asphalt paving work was performed to the limits and at the locations indicated by stakes and hubs set by others.

OBSERVATION AND TESTING OF COMPACTED FILL

This section describes our observation and testing of compacted fill placed as part of the project earthwork.

LOCATIONS

The earthwork for the project consisted of placing compacted fill to grade the site and provide support for the building foundations, as well as subgrade support for the track, adjacent walks and slabs, curbs and gutters, and for parking lot paving. The grading work included placing compacted soils as backfill against block walls, around footings, and in trenches for storm drain, sewer, and electrical line installations. Also, base course was placed and compacted in the paving areas.

FILL MATERIALS

The materials used for the required filling consisted of on-site silty sand/sandy silt with gravel and clayey silt with gravel, and imported crushed aggregate base and crushed miscellaneous base materials.

COMPACTION SPECIFICATIONS

The specifications required that the fill be compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D1557-91 method of compaction. The base course was to be compacted to at least 95% of the maximum density.

Compaction tests were performed on representative samples of the soils to establish the maximum dry densities. The tests were performed in general accordance with the specified ASTM Designation D1557-91 method of compaction, which uses a 1/30-cubic-foot mold in which each of five layers of soil is compacted by 25 blows of a 10-pound hammer falling 18 inches. The results of the compaction tests were used in establishing the degree of compaction achieved during the placing of the fill.

PLACEMENT AND COMPACTION OF FILL

After the site was stripped and cleared, existing fill and disturbed soils were excavated and replaced as compacted fill for foundation support of the following structures:

- Grandstands
- 2 Concession Buildings
- Restroom Building
- Driving School Building
- Administration Building

The excavations were extended to a depth of at least 5 feet to allow for the placement of 5 feet of properly compacted fill beneath the mat foundations. The excavations also extended to a lateral distance of at least 5 feet beyond the buildings in plan.

In the non-building areas, the upper 1 to 2 feet of the existing fill soils were removed and replaced as properly compacted fill. Following excavating, the exposed soils were scarified to a depth of 6 inches, brought to near-optimum moisture content, and rolled with heavy compaction equipment. The required fill materials were then placed in loose lifts approximately 8 inches in thickness, brought to

near-optimum moisture content, and compacted with scrapers, blades, loaders, a vibratory sheepsfoot roller, and a water truck.

Areas to receive backfill were first cleared of construction debris and loose soils; the required backfill soils were then placed in loose lifts 8 to 12 inches in thickness, brought to near-optimum moisture content, and compacted with a loader, a backhoe with wheel attachment, and hand-guided impact compactors.

FIELD DENSITY TESTING

Sand-cone field density tests were performed to establish the degree of compaction achieved during the placement of the fill. The tests were performed in general accordance with the ASTM Designation D1556 sand-cone field density testing. Where a test indicated less than the required compaction, the soils were reworked and retested until at least the specified degree of compaction resulted.

Test data are given in attached table, Test Results. The Plot Plan shows the approximate locations of the tests.

INTERIM REPORT

An interim report on the compacted fill placed to grade the building areas to provide support for foundations and slab on-grade and for subgrade support of track areas was issued on October 5, 1998. Also, we submitted a County of Los Angeles Engineered Grading Statement for rough grading of the site on October 22, 1998.

OBSERVATION OF FOUNDATION EXCAVATIONS

The following foundation design recommendations were presented in our geotechnical investigation report and supplemental letter:

> *Mat foundations with a minimum edge thickness of 18 inches, and underlain by at least 5 feet of properly compacted fill may be designed to impose a net-dead-plus live load pressure of 1,500 pounds per square foot. A one-third increase in the bearing value may be used for wind or seismic loads. The recommended bearing value is a net value, and the weight of concrete in the mat can be taken as 50 pounds per cubic foot; the weight of any soil backfill can be neglected when determining the downward loads.*
>
> *Spread footings for the elevator foundations carried at least 7 feet below the lowest adjacent grade can be designed to impose a net dead-plus-live load pressure of 2,600 pounds per square foot.*

After completion of the building area filling, excavations were made for mat foundations to support the Grandstands. Excavations were also made for crash wall footings. Our field technician observed and probed the excavations to confirm that the soils were properly compacted fills as recommended for foundation support. At the time of our observation, loose soils had been removed from the excavations. After observations indicated satisfactory conditions, written notice of our approval was left at the job site for the information of responsible parties. Our field technician also observed and probed the subgrade for mat foundations of Administration, Restroom, Driving School, and Concession Buildings, to confirm that the soils were compacted as we recommended.

OBSERVATION AND TESTING OF ASPHALT PAVING

As requested, our field technician observed the asphalt paving placed in the parking lot and performed ASTM Designation D2922-81 nuclear gage in-place density tests to establish the degree of compaction achieved. The asphalt paving was to be compacted to at least 95% of the maximum density. The asphalt paving on the track was tested by others.

The asphalt concrete consisted of ¾-inch aggregate using AR4000 asphalt cement. At the time of delivery, the temperature of the asphalt ranged from 290° to 310° Fahrenheit. A value of 149 pounds per cubic foot was used for the maximum density.

The nuclear gage in-place density test results are given in the attached table; the approximate locations of the tests are shown on the Plot Plan.

In providing professional geotechnical observation and testing services associated with the development of the project, we have employed accepted engineering and testing procedures and made a reasonable effort to evaluate that the soil-related work was carried out in general compliance with the project plans and specifications. Although our observation did not reveal obvious deficiencies, we do not guarantee the contractor's work, nor do the services performed by our firm relieve the contractor of responsibility in the event of subsequently discovered defects in the contractor's work.

Respectfully submitted,

LAW/CRANDALL
A Division of Law Engineering and Environmental Services, Inc.

for Jerry Haffley
Resource Manager

James L. Van Beveren
Principal Engineer
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REGISTERED PROFESSIONAL ENGINEER
JAMES L. VAN BEVEREN
No. 652
Exp. 6/30/01
GEOTECHNICAL
STATE OF CALIFORNIA

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Attachments (2)
(4 copies submitted)

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
1	80	9.1	124	130	95	
2	83	12.8	123	130	95	
3	82	18.6	108	119	91	
4	84½	12.0	122	130	94	
5	85½	14.4	122	130	94	
6	84	13.6	114	119	96	
7	86	13.1	123	130	95	
8	87	8.9	122	130	94	
9	88	12.0	113	119	95	
10	83	15.6	108	119	91	
11	82½	11.5	126	130	97	
12	82	12.7	126	130	97	
13	85½	6.6	118	130	91	
14	83	11.2	120	130	92	
15	77	13.7	111	119	93	
16	79	12.9	125	130	96	
17	84	10.6	119	130	92	
18	78½	8.1	121	130	93	
19	80	11.0	122	130	94	
20	82	10.4	117	130	90	
21	85	12.3	124	130	95	
22	83½	12.0	127	130	98	
23	74½	12.3	117	130	90	
24	87	16.2	125	130	96	
25	79½	13.7	123	130	95	
26	75	12.8	118	130	91	
27	85	9.7	125	130	96	
28	82½	15.1	117	130	90	
29	73	14.4	123	130	95	
30	85	14.0	125	130	96	
31	74	14.6	120	130	92	
32	88	13.8	116	119	97	
33	72	15.1	119	130	92	
34	85½	14.4	120	130	92	
35	73½	11.0	122	130	94	
36	87	10.8	128	130	98	
37	88	12.3	119	130	92	
38	78	10.4	120	130	92	
39	80	12.8	117	130	90	
40	70	13.0	118	130	91	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
41	89	13.4	120	130	92	
42	72	10.4	125	130	96	
43	90	13.0	117	130	90	
44	67	10.2	125	130	96	
45	89	14.3	120	130	92	
46	70½	13.0	120	130	92	
47	71	11.3	120	130	92	
48	80	11.8	122	130	94	
49	82	15.4	117	130	90	
50	70½	12.0	119	130	92	
51	69	4.3	118	130	91	
52	73	11.2	120	130	92	
53	76	CAB	130	142	92	
54	79	8.9	118	130	91	
55	72	10.8	119	130	92	
56	78	12.0	121	130	93	
57	74	10.7	121	130	93	
58	80	12.8	128	130	98	
59	73	13.9	120	130	92	
60	70	12.0	121	130	93	
61	71½	10.1	121	130	93	
62	69	16.2	119	130	92	
63	54½	9.6	121	130	93	
64	71½	14.0	120	130	92	
65	74	15.8	113	119	95	
66	73	13.0	120	130	92	
67	66	10.7	128	130	98	
68	75	13.0	121	130	93	
69	81	13.0	117	130	90	
70	78	12.8	117	130	90	
71	79½	14.4	118	130	91	
72	71½	10.1	121	130	93	
73	73½	11.0	120	130	92	
74	75½	11.3	118	130	91	
75	84	16.3	108	119	91	
76	74½	10.5	111	119	93	
77	74	9.7	121	130	93	
78	76½	16.4	109	119	92	
79	73½	12.3	117	130	90	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
80	77	11.7	123	130	95	
81	75	13.5	120	130	92	
82	78½	13.3	121	130	93	
83	80	12.2	117	130	90	
84	78	14.8	120	130	92	
85	78	12.7	123	130	95	
86	79½	12.0	121	130	93	
87	81	9.1	121	130	93	
88	72½	10.2	125	130	96	
89	74½	11.3	123	130	95	
90	73½	14.8	117	130	90	
91	84	10.2	123	130	95	
92	77½	8.7	129	130	99	
93	82	14.0	117	130	90	
94	83	14.3	121	130	93	
95	82½	12.8	119	130	92	
96	67	14.4	122	130	94	
97	81	16.5	118	130	91	
98	84	13.0	124	130	95	
99	69½	12.6	122	130	94	
100	72	13.3	120	130	92	
101	77	5.7	123	130	95	
102	78	12.0	121	130	93	
103	78	9.5	118	130	91	
104	78	5.2	119	130	92	
105	78	11.9	120	130	92	
106	78	11.5	121	130	93	
107	75	12.0	122	130	94	
108	78½	12.3	118	130	91	
109	76	10.6	125	130	96	
110	78	8.1	122	130	94	
111	75½	15.1	124	130	95	
112	77½	10.4	123	130	95	
113	78	7.9	115	130	88 Δ	115
114	87	15.1	108	119	91	
115	78	10.1	121	130	93	
116	78	CAB	138	140	99 ΔΔ	
117	78	CAB	138	140	99 ΔΔ	
118	80	CAB	138	141	98 ΔΔ	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
119	80	CAB	133	136	98 ΔΔ	
120	78	9.1	118	130	91	
121	78	10.8	120	130	92	
122	84	11.6	125	130	96	
123	78	13.7	119	130	92	
124	81	11.7	119	130	92	
125	74½	8.3	120	130	92	
126	71	15.1	117	130	90	
127	78	12.0	120	130	92	
128	81	10.0	119	130	92	
129	80	18.6	109	119	92	
130	81	11.0	122	130	94	
131	84	12.0	119	130	92	
132	81	8.4	127	130	98	
133	81	8.9	123	130	95	
134	76½	12.0	127	130	98	
135	79	9.7	128	130	98	
136	79	12.0	118	130	91	
137	73	12.1	122	130	94	
138	73	11.0	119	130	92	
139	71½	8.8	125	130	96	
140	72	11.3	120	130	92	
141	70	13.0	119	130	92	
142	72	12.6	122	130	94	
143	81½	12.0	120	130	92	
144	78½	9.5	119	130	92	
145	76	10.5	124	130	95	
146	76	13.2	118	130	91	
147	74	11.4	118	130	91	
148	69	12.0	120	130	92	
149	72	15.2	108	119	91	
150	72	13.2	119	130	92	
151	71	15.6	119	130	92	
152	70	13.9	121	130	93	
153	72	15.0	114	119	96	
154	71	13.8	111	119	93	
155	71½	11.4	120	130	92	
156	85	12.1	119	130	92	
157	87	9.3	119	130	92	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
158	77	13.6	122	130	94	
159	78½	13.0	122	130	94	
160	71	9.1	118	130	91	
161	73	12.0	127	130	98	
162	72	11.7	114	130	88 Δ	163
163	72	12.0	119	130	92	
164	81	11.1	118	130	91	
165	80	5.4	120	130	92	
166	82	11.7	120	130	92	
167	68	9.1	122	130	94	
168	71½	12.3	117	130	90	
169	72½	14.2	121	130	93	
170	74	11.0	116	130	89 Δ	171
171	74	11.4	117	130	90	
172	73	6.6	122	130	94	
173	73	11.3	124	130	95	
174	73	10.2	127	130	98	
175	78	13.0	121	130	93	
176	82	5.7	120	130	92	
177	74	7.4	120	130	92	
178	71½	CAB	135	140	96 ΔΔ	
179	75½	CAB	131	138	95 ΔΔ	
180	74	CAB	144	144	100 ΔΔ	
181	77	10.7	122	130	94	
182	78	9.7	121	130	93	
183	77½	10.7	120	130	92	
184	77	12.9	119	130	92	
185	77½	14.1	118	130	91	
186	77½	13.7	118	130	91	
187	78	14.4	120	130	92	
188	83	10.0	125	130	96	
189	60	6.8	123	130	95	
190	63½	12.0	118	130	91	
191	83	10.9	123	130	95	
192	66	10.5	118	130	91	
193	68	10.2	126	130	97	
194	69½	10.7	121	130	93	
195	71	9.9	121	130	93	
196	78	8.4	120	130	92	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
197	73	9.4	121	130	93	
198	74½	11.7	123	130	95	
199	74	9.4	119	130	92	
200	75	6.4	125	130	96	
201	76½	11.0	118	130	91	
202	77	11.7	120	130	92	
203	75	10.7	122	130	94	
204	78½	11.9	119	130	92	
205	76½	9.7	119	130	92	
206	77	12.0	120	130	92	
207	78	13.0	118	130	91	
208	80½	9.5	112	130	86 Δ	210
209	78	6.6	122	130	94	
210	80½	10.8	121	130	93	
211	80½	12.0	119	130	92	
212	80	9.1	121	130	93	
213	78½	9.4	123	130	95	
214	74	11.3	118	130	91	
215	76	10.8	119	130	92	
216	81	12.8	117	130	90	
217	86	13.7	117	130	90	
218	89	12.3	118	130	91	
219	86	11.9	123	130	95	
220	77	7.8	119	130	92	
221	77½	8.5	122	130	94	
222	90	12.0	117	130	90	
223	87	15.8	118	130	91	
224	87	10.7	121	130	93	
225	77	6.3	119	130	92	
226	76½	10.8	122	130	94	
227	77	9.9	124	130	95	
228	78	12.0	117	130	90	
229	78	9.1	122	130	94	
230	79	13.5	121	130	93	
231	79½	9.4	123	130	95	
232	80	10.9	124	130	95	
233	80½	11.7	120	130	92	
234	81	9.1	123	130	95	
235	81½	6.3	122	130	94	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
236	80½	10.0	127	130	98	
237	79½	8.9	124	130	95	
238	79	10.4	121	130	93	
239	77½	9.4	121	130	93	
240	84	9.9	123	130	95	
241	83	7.1	129	130	99	
242	77½	10.0	121	130	93	
243	85	14.8	117	130	90	
244	83	10.3	120	130	92	
245	83	12.0	117	130	90	
246	89	8.0	124	130	95	
247	85	10.0	122	130	94	
248	87	15.1	118	130	91	
249	87½	12.0	120	130	92	
250	79	13.7	120	130	92	
251	80½	12.0	122	130	94	
252	83½	10.6	121	130	93	
253	78	8.1	119	130	92	
254	80	10.0	124	130	95	
255	80½	6.6	114	130	88 Δ	277
256	89½	13.0	114	130	88 Δ	278
257	88½	12.6	118	130	91	
258	79	12.0	118	130	91	
259	80	11.1	119	130	92	
260	76½	12.0	126	130	97	
261	76	12.2	125	130	96	
262	85½	14.8	120	130	92	
263	87	14.2	118	130	91	
264	81½	10.7	121	130	93	
265	78½	12.0	123	130	95	
266	77½	13.0	117	130	90	
267	88	11.0	121	130	93	
268	78	11.7	121	130	93	
269	86½	13.8	120	130	92	
270	85½	19.1	114	119	96	
271	88	10.4	120	130	92	
272	89	7.5	114	130	88 Δ	273
273	89	10.1	120	130	92	
274	81	13.0	119	130	92	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
275	83	11.3	119	130	92	
276	83½	11.1	120	130	92	
277	90½	13.9	117	130	90	
278	89½	12.7	120	130	92	
279	83½	13.2	120	130	92	
280	83	14.0	118	130	91	
281	81½	10.8	122	130	94	
282	82	19.1	112	119	94	
283	81½	10.2	121	130	93	
284	81	8.0	122	130	94	
285	76½	13.4	120	130	92	
286	85	6.2	128	130	98	
287	85½	4.9	121	130	93	
288	86	5.6	126	130	97	
289	91	7.8	116	130	89 Δ	291
290	76	12.0	119	130	92	
291	91	10.7	117	130	90	
292	82½	12.0	124	130	95	
293	78½	13.2	117	130	90	
294	78½	14.3	119	130	92	
295	79½	13.4	117	130	90	
296	79½	10.7	120	130	92	
297	79	9.7	124	130	95	
298	78	12.0	120	130	92	
299	71	CMB	135	140	96 ΔΔ	
300	75½	CMB	130	131	99 ΔΔ	
301	77	CMB	131	134	98 ΔΔ	
302	73	CMB	133	137	97 ΔΔ	
303	85	CMB	131	137	96 ΔΔ	
304	78	CMB	132	136	97 ΔΔ	
305	77½	CMB	132	133	99 ΔΔ	
306	79½	CMB	135	138	98 ΔΔ	
307N	85½	AC	145	149	97 ΔΔ	
308N	81½	AC	142	149	95 ΔΔ	
309N	77½	AC	148	149	99 ΔΔ	
310N	77	AC	144	149	97 ΔΔ	
311N	78	AC	148	149	99 ΔΔ	
312N	78	AC	143	149	96 ΔΔ	
313	87½	CMB	140	140	100 ΔΔ	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
314	85½	CMB	135	139	97 ΔΔ	
315N	79	AC	144	149	97 ΔΔ	
316N	79	AC	148	149	99 ΔΔ	
317N	79	AC	143	149	96 ΔΔ	
318N	79	AC	147	149	99 ΔΔ	
319N	79½	AC	144	149	97 ΔΔ	
320N	79½	AC	143	149	96 ΔΔ	
321N	79½	AC	145	149	97 ΔΔ	
322N	79½	AC	143	149	96 ΔΔ	
323N	80½	AC	144	149	97 ΔΔ	
324N	80½	AC	141	149	95 ΔΔ	
325N	80½	AC	147	149	99 ΔΔ	
326N	80½	AC	146	149	98 ΔΔ	
327N	82½	AC	146	149	98 ΔΔ	
328N	82½	AC	144	149	97 ΔΔ	
329N	82½	AC	147	149	99 ΔΔ	
330N	81½	AC	142	149	95 ΔΔ	
331N	82½	AC	144	149	97 ΔΔ	
332N	83	AC	142	149	95 ΔΔ	
333N	83½	AC	146	149	98 ΔΔ	
334N	83½	AC	143	149	96 ΔΔ	
335N	84	AC	147	149	99 ΔΔ	
336N	83	AC	143	149	96 ΔΔ	
337N	86	AC	144	149	97 ΔΔ	
338N	85½	AC	143	149	96 ΔΔ	
339N	87½	AC	145	149	97 ΔΔ	
340N	88½	AC	144	149	97 ΔΔ	
341N	86½	AC	146	149	98 ΔΔ	
342N	90½	AC	144	149	97 ΔΔ	
343N	93	AC	142	149	95 ΔΔ	
344N	92½	AC	144	149	97 ΔΔ	
345N	91½	AC	142	149	95 ΔΔ	
346N	90½	AC	143	149	96 ΔΔ	
347N	88	AC	145	149	97 ΔΔ	
348N	89½	AC	143	149	96 ΔΔ	
349N	88½	AC	145	149	97 ΔΔ	
350N	87½	AC	143	149	96 ΔΔ	
351N	86½	AC	147	149	99 ΔΔ	
352N	86½	AC	144	149	97 ΔΔ	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
353N	86½	AC	143	149	96 ΔΔ	
354N	85½	AC	142	149	95 ΔΔ	
355N	85	AC	141	149	95 ΔΔ	
356N	89½	AC	140	149	94 ΔΔ	
357N	90½	AC	142	149	95 ΔΔ	
358N	89½	AC	142	149	95 ΔΔ	
359	83½	9.4	119	130	92	
360	84	11.4	119	130	92	
361	84	11.1	121	130	93	
362	79	13.9	120	130	92	
363	79	12.6	117	130	90	
364	79	11.1	117	130	90	
365	80	10.5	119	130	92	
366	74	12.9	120	130	92	
367	80½	8.6	117	130	90	
368	81½	6.6	126	130	97	
369	81	7.4	125	130	96	
370	81	7.0	121	130	93	
371	78½	8.3	119	130	92	
372	81	12.3	119	130	92	
373	80½	13.8	119	130	92	
374	79½	12.3	118	130	91	
375	79	12.9	118	130	91	
376N	82	AC	142	149	95 ΔΔ	
377N	82	AC	142	149	95 ΔΔ	
378N	82	AC	142	149	95 ΔΔ	
379N	81½	AC	142	149	95 ΔΔ	
380N	81½	AC	142	149	95 ΔΔ	
					ΔΔ	
381N	81½	AC	142	149	95 ΔΔ	
382N	86½	AC	142	149	95 ΔΔ	
383N	85½	AC	143	149	96 ΔΔ	
384N	84½	AC	142	149	95 ΔΔ	
385N	83	AC	144	149	97 ΔΔ	
386N	82	AC	142	149	95 ΔΔ	
387N	81	AC	142	149	95 ΔΔ	
388N	81	AC	144	149	97 ΔΔ	
389N	82	AC	142	149	95 ΔΔ	
390N	81½	AC	142	149	95 ΔΔ	
					ΔΔ	
391N	82½	AC	142	149	95 ΔΔ	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
392N	82	AC	142	149	95 ΔΔ	
393N	81½	AC	142	149	95 ΔΔ	
394N	80½	AC	143	149	96 ΔΔ	
395N	80	AC	142	149	95 ΔΔ	
396N	80	AC	142	149	95 ΔΔ	
397N	80	AC	143	149	96 ΔΔ	
398N	78½	AC	142	149	95 ΔΔ	
399N	78	AC	142	149	95 ΔΔ	
400	73	12.0	117	130	90	
401	78½	CMB	142	142	100 ΔΔ	
402	81½	CMB	143	143	100 ΔΔ	
403	80½	CMB	143	143	100 ΔΔ	
404	78½	CMB	138	141	98 ΔΔ	
405	78½	CMB	141	143	99 ΔΔ	
406	79	CMB	139	140	99 ΔΔ	
407	78½	CMB	140	142	99 ΔΔ	
408	78	CMB	137	141	97 ΔΔ	
409N	77½	AC	145	149	97 ΔΔ	
410N	77	AC	144	149	97 ΔΔ	
411N	76½	AC	146	149	98 ΔΔ	
412N	77½	AC	144	149	97 ΔΔ	
413N	78	AC	143	149	96 ΔΔ	
414N	79	AC	145	149	97 ΔΔ	
415N	78	AC	142	149	95 ΔΔ	
416N	79	AC	143	149	96 ΔΔ	
417N	79½	AC	142	149	95 ΔΔ	
418N	79½	AC	145	149	97 ΔΔ	
419N	81	AC	144	149	97 ΔΔ	
420N	80½	AC	142	149	95 ΔΔ	
					ΔΔ	
421N	81	AC	145	149	97 ΔΔ	
422N	80	AC	144	149	97 ΔΔ	
423N	82	AC	142	149	95 ΔΔ	
424N	81½	AC	144	149	97 ΔΔ	
425N	80	AC	150	149	101 ΔΔ	
426N	81	AC	146	149	98 ΔΔ	
427N	80	AC	145	149	97 ΔΔ	
428N	80	AC	144	149	97 ΔΔ	
429N	79	AC	146	149	98 ΔΔ	
430N	78	AC	144	149	97 ΔΔ	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
431N	78	AC	144	149	97 ΔΔ	
432N	77	AC	141	149	95 ΔΔ	
433N	76	AC	147	149	99 ΔΔ	
434N	79	AC	144	149	97 ΔΔ	
435N	79	AC	146	149	98 ΔΔ	
436N	78½	AC	145	149	97 ΔΔ	
437N	78	AC	148	149	99 ΔΔ	
438N	78½	AC	147	149	99 ΔΔ	
439N	80	AC	145	149	97 ΔΔ	
440N	78	AC	143	149	96 ΔΔ	
441N	80	AC	146	149	98 ΔΔ	
442N	80	AC	145	149	97 ΔΔ	
443N	79	AC	143	149	96 ΔΔ	
444N	80	AC	146	149	98 ΔΔ	
445N	80	AC	145	149	97 ΔΔ	
446N	80½	AC	146	149	98 ΔΔ	
447N	81	AC	145	149	97 ΔΔ	
448N	81½	AC	147	149	99 ΔΔ	
449N	81½	AC	147	149	99 ΔΔ	
450N	80½	AC	144	149	97 ΔΔ	
451N	80	AC	142	149	95 ΔΔ	
452N	82½	AC	143	149	96 ΔΔ	
453N	86	AC	145	149	97 ΔΔ	
454N	83	AC	142	149	95 ΔΔ	
455N	87½	AC	145	149	97 ΔΔ	
456N	88	AC	144	149	97 ΔΔ	
457N	85½	AC	147	149	99 ΔΔ	
458N	83	AC	145	149	97 ΔΔ	
459N	82	AC	148	149	99 ΔΔ	
460N	83	AC	146	149	98 ΔΔ	
461N	84½	AC	144	149	97 ΔΔ	
462N	80½	AC	145	149	97 ΔΔ	
463N	79	AC	145	149	97 ΔΔ	
464N	77½	AC	148	149	99 ΔΔ	
465N	77½	AC	146	149	98 ΔΔ	
466N	77	AC	144	149	97 ΔΔ	
467N	76½	AC	145	149	97 ΔΔ	
468N	83½	AC	142	149	95 ΔΔ	
469N	83	AC	145	149	97 ΔΔ	
470N	84	AC	147	149	99 ΔΔ	

Test Results

Test Number	Elevation (ft.)	Moisture Content (% of Dry Wt.)	Dry Density (lbs/cu. ft.)	Maximum Dry Density (lbs/cu. ft.)	Percent Compaction	Retest Number
471N	83	AC	145	149	97 ΔΔ	
472N	83	AC	143	149	96 ΔΔ	
473N	83	AC	146	149	98 ΔΔ	
474N	83½	AC	145	149	97 ΔΔ	
475N	83	AC	143	149	96 ΔΔ	
476N	83	AC	145	149	97 ΔΔ	
477N	83	AC	144	149	97 ΔΔ	
478N	84½	AC	146	149	98 ΔΔ	

Notes: Elevations refer to job datum.
Δ Indicates area reworked and retested.
ΔΔ Indicates 95% compaction required.
CAB Indicates crushed aggregate base material; wet density values used in calculations.
CMB Indicates crushed miscellaneous base material; wet density values used in calculations.
AC Indicates asphalt concrete.
N Indicates nuclear gage density test.

Report of Geotechnical Investigation
Proposed Speedway Facility
13300 East Live Oak Avenue
Irwindale, California

LAW Crandall

March 10, 1998

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING
AND ENVIRONMENTAL SERVICES, INC.

REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED SPEEDWAY FACILITY

13300 EAST LIVE OAK AVENUE
IRWINDALE, CALIFORNIA

Prepared for:

IRWINDALE SPEEDWAY

Irwindale, California

March 10, 1998

Project 70131-8-0070

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING
AND ENVIRONMENTAL SERVICES, INC.

AMEC

March 10, 1998

Mr. Robert DeFazio
Irwindale Speedway
13300 East Live Oak Avenue
Irwindale, California 91706

Subject: **Report of Geotechnical Investigation**
Proposed Speedway Facility
13300 East Live Oak Avenue
Irwindale, California
Law/Crandall Project 70131-8-0070

Dear Mr. DeFazio:

We are pleased to submit the results of our geotechnical investigation for the proposed Irwindale Speedway to be constructed at 13300 East Live Oak Avenue in Irwindale, California. This investigation was conducted in general accordance with our proposal dated October 10, 1997 and authorized by Mr. James E. Williams on January 21, 1998. The scope of our services was planned with Mr. Victor Ciulla.

The results of our investigation and design recommendations are presented in this report. Please note that you or your representative should submit copies of this report to the appropriate governmental agencies for their review and approval prior to obtaining a building permit.

It has been a pleasure to be of professional service to you. Please call if you have any questions or if we can be of further assistance.

Sincerely,

LAW/CRANDALL

REGISTERED PROFESSIONAL ENGINEER
MICHAEL W. HAN
No. 54974
Exp.6-30-00
CIVIL
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Principal Engineer
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enggeo\98-Proj\80070\doc\00701R01.doc/MH:swb
(10 copies submitted)

cc: (1) Associated Engineers
Attn: Mr. Curt Ingrahm

200 CITADEL DRIVE • LOS ANGELES, CA 90040-1554
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REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED IRWINDALE SPEEDWAY

13300 EAST LIVE OAK AVENUE
IRWINDALE, CALIFORNIA

Prepared for:

IRWINDALE SPEEDWAY

Irwindale, California

Law/Crandall

Los Angeles, California

March 10, 1998

Project 70131-8-0070

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SUMMARY

We have completed our geotechnical investigation of the site of the proposed Irwindale Speedway at 13300 Live Oak Avenue in Irwindale, California. Our subsurface explorations, engineering analyses, and foundation design recommendations are summarized below.

The site is part of the former Nu-Way Landfill. The landfill was placed in a former sand and gravel quarry; the fill is reportedly up to 200 feet deep. We explored the soil conditions by drilling ten borings to depths of 15 to 20 feet below the existing grade. The fill soils consist of silty sand, clayey silt, and sandy silt and contains asphalt concrete, brick fragments, concrete, plastic, metallic wire, and wood to the depth explored. The fill soils are firm at present moisture content; however, the fill soils become considerably more compressible when wet.

To supplement our geotechnical analyses, we also reviewed reports by others conducted at the site. The geotechnical recommendations in this report were developed in part using information from other investigations.

The existing fill soils are not suitable for direct support of the proposed structures. The proposed structures can be supported on a mat foundation underlain by 5 feet of properly compacted fill. Alternatively, the bleachers could be supported on drilled cast-in-place concrete piles. If the bleachers are supported on drilled piling, we recommend provisions be made to permit releveling the connection between the top of the pile and the bleacher support.

The on-site soils, less debris and organic matter, are suitable for use as compacted fill.

SCOPE

This report provides foundation design information for the proposed Irwindale Speedway. The locations of the proposed speedway and our exploration borings are shown in Figure 1, Plot Plan.

This investigation was authorized to determine the static physical characteristics of the soils at the site and to provide recommendations for foundation design, floor slab support, and grading for the development. We were to evaluate the existing soil and groundwater conditions at the site and develop recommendations for the following:

- A feasible foundation design system along with the necessary design parameters, including the estimated settlement due to the expected loadings.
- Subgrade preparation and floor slab support.
- Design of minor retaining walls.
- Subgrade preparation and design of asphalt paving.
- Grading, including site preparation, excavation and slopes, the placing of compacted fill, and quality control measures relating to earthwork.
- Mitigate surface moisture infiltration into the landfill

The scope of this investigation did not include geologic or seismic studies for the site. Accordingly, our conclusions and recommendations are for static loading conditions only; however, this does not imply that there is a geologic or seismic hazard affecting the site. Also, the assessment of general site environmental conditions for the presence of contaminants in the soils and groundwater of the site was beyond the scope of this investigation.

We were provided with a copy of a Preliminary Geotechnical Investigation report by Mission Geoscience, Inc., dated April 7, 1997 for our review.

Our recommendations are based on the results of our field explorations, laboratory tests, and appropriate engineering analyses. The results of the field explorations and laboratory tests, which form the basis of our recommendations, are presented in the Appendix.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for Irwindale Speedway and their design consultants to be used solely in the design of the proposed facility. The report has not been prepared for use by other parties, and may not contain sufficient information for purposes of other parties or other uses.

PROJECT DESCRIPTION

The proposed Irwindale Speedway will be constructed on an approximately 36-acre site west of the Irwindale Swapmeet. The speedway will consist of a one-half mile paved track enclosing a one-third mile paved track. The facilities will also have a 7,000 seat grandstand, 2 concession buildings, a maintenance and driving school building and a restroom building.

The buildings will be one-story in height and will have concrete block walls and metal roofs. Maximum wall loads will be on the order of 2,000 pounds per lineal foot. The grandstands will be galvanized metal construction with aluminum interlocking decks. Maximum column loads will be on the order of 40,000 pounds.

The track will be banked requiring the placing of some compacted fill on the curves. The interior of the track will be excavated up to 14 feet below the existing grade.

SITE CONDITIONS

The site is located at 13300 East Live Oak Avenue in Irwindale, California. The site is divided to two portions by a chain link fence extending from Live Oak Avenue to the south end of the site.

The east portion of the site is currently paved and used as a parking lot for the swapmeet. The ground surface is relatively level; the paved surface appeared to be in good condition. There are existing light pole bases at the paved area. Various underground utilities may cross the site.

The west portion of the site is not paved. The southwest portion of the site is vacant and covered with vegetation. At the time of our site reconnaissance, standing water was observed in a depressed area near our exploration Boring 1, indicating settlement of the landfill materials.

EXPLORATIONS AND LABORATORY TESTS

We explored the soil conditions beneath the site by drilling ten borings to depths of 15 to 20 feet below the existing grade at the locations shown on Figure 1. Details of the explorations and the logs of the borings are presented in the Appendix.

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to determine the pertinent engineering properties of the foundation soils. The following tests were performed:

- Moisture content and dry density determinations.
- Direct shear.
- Consolidation.
- Compaction and California Bearing Ratio.

All testing was done in general accordance with applicable ASTM specifications. Details of the laboratory testing program and test results are presented in the Appendix.

SOIL CONDITIONS

Fill soils were found in all of our borings; the fill is known to be on the order of 200 feet deep. The fill soils consist of silty sand, clayey silt, and sandy silt and contain asphalt concrete, brick fragments, concrete, metallic wire, and wood to the depth explored. The existing fill soils are firm at present moisture content; however, the fill soils become considerably more compressible when wet.

OVA readings were taken on each undisturbed sample; the results are shown on the boring logs. The OVA readings indicate that some (hydrocarbon) contamination is present in the soils.

Water was encountered in Boring 6 at a depth of 3 feet below the existing grade. The boring was subsequently terminated, the drill rig moved 12 feet and the boring was redrilled. Prior borings by Mission Geoscience, Inc. did not encounter water to their 100-foot depth explored.

LIQUEFACTION

The soils consist of silt, and silty sand fill to a depth of about 200 feet and contain large amounts of landfill debris. Water is at least 100 feet below the ground surface. Accordingly, because of the great depth to water, the risk of liquefaction is very low.

RECOMMENDATIONS

GENERAL

The existing fill has not been well compacted and is not considered suitable for direct support of foundations. Ordinarily, to provide good support with minimal settlement for structures such as these, foundations should be carried through the fill into the underlying natural soils. However, because the fill is up to 200 feet deep, footings would be deep and costly. Furthermore, the existing fill is still settling and would impose high downdrag loads on such deep foundations.

The proposed speedway structures may be supported on a mat foundation underlain by at least 5 feet of fill compacted to 90%. Alternately, the bleachers could be supported on drilled cast-in-place concrete piles. If drilled piles are used, over-excavation of the fill soils would not be needed.

Because the site is a former landfill with a great depth of fill, the site has a potential for continued long-term settlement. Structures supported on the surface of the landfill, as discussed in this report, will settle with the landfill, regardless of the type of near-surface foundation. Releveling of the structures may be required in the future as a result of this settlement.

Drainage of surface water will be important in minimizing water infiltration into the landfill, which will aggravate the settlement. We recommend that greater than normal slopes be designed for paved surfaces and area drains be provided for all unpaved surfaces.

MAT FOUNDATION

Bearing Value

Mat foundations with a minimum edge thickness of 18 inches, and underlain by at least 5 feet of properly compacted fill may be designed to impose a net dead-plus-live load pressure of 1,500 pounds per square foot. A one-third increase in the bearing value may be used for wind or seismic loads. The recommended bearing value is a net value, and the weight of concrete in the mat can be taken as 50 pounds per cubic foot; the weight of any soil backfill can be neglected when determining the downward loads.

Settlement

We estimate that the settlement of the proposed structures, supported on a mat foundation in the manner recommended, will be less than 1 inch. However, the existing fill is still settling, and long term settlement should be anticipated.

Lateral Resistance

Lateral loads can be resisted by soil friction and by the passive resistance of the soils. A coefficient of friction of 0.4 may be used between the mat foundation and the floor slab and the supporting soils. The passive resistance of the fill soils can be assumed to be equal to the pressure developed by a fluid with a density of 200 pounds per cubic foot. A one-third increase in the passive value can be used for wind or seismic loads. The frictional resistance and the passive resistance of the soils can be combined without reduction in determining the total lateral resistance.

CAST-IN-PLACE CONCRETE PILES

As an alternative to the mat foundation, the bleachers could be supported on drilled cast-in-place concrete piles. If drilled piles are used, over-excavation of the fill would not be necessary.

Drilled Pile Capacities

The downward and upward capacities of 18- and 24-inch-diameter drilled cast-in-place concrete piles are presented as a function of penetration below pile cap on Figure 2, Drilled Pile Capacities. Dead plus live load capacities are shown; a one-third increase in the capacities may be used for wind or seismic loads. The capacities presented are based on the strength of the soils; the compressive and tensile strength of the pile sections should be checked to verify the structural capacity of the piles.

Piles in groups should be spaced at least 2½ diameters on centers. If the piles are so spaced, no reduction in the downward capacities need be considered due to group action.

Settlement

We estimate the settlement of the proposed bleachers, supported on drilled piling in the manner recommended, will be less than one inch. Differential settlement between adjacent columns is expected to be about ¼ inch or less. However, long term settlement is still anticipated due to consolidation of the deeper fill. If the bleachers are supported on drilled piling, we recommend provisions be made to permit releveling the connection between the top of the pile and the bleacher support. We suggest an allowance for one-foot of releveling.

Lateral Loads

Lateral loads can be resisted by the piles, by soil friction and by the passive resistance of the soils. The soils adjacent to a 24-inch-diameter pile, at least 20 feet long, can resist horizontal loads imposed at the top of the pile of up to 12,000 pounds. The lateral resistance of other sizes of piles

ABOUT 3' DEEP

may be assumed to be proportional to the diameter. A deflection of ¼ inch was used in determining this capacity.

In calculating the bending moment in a pile, the lateral load imposed at the top of the pile may be multiplied by a moment arm of 5 feet. For design, it may be assumed that the maximum bending moment will occur near the top of the pile and that the moment will decrease to zero at a depth of 15 feet below the pile cap. The lateral capacity and reduction in the bending moment are based in part on the assumption that any required backfill adjacent to the pile caps and grade beams will be properly compacted.

A coefficient of friction of 0.4 can be used between any slabs on grade and the supporting soils. The passive resistance of the fill soils can be assumed to be equal to the pressure developed by a fluid with a density of 200 pounds per cubic foot. A one-third increase in the passive value can be used for wind or seismic loads. The frictional resistance and the passive resistance of the soils can be combined without reduction in determining the total lateral resistance.

Installation

All drilled pile excavations should be observed by personnel of our firm. Depending on the type of drilling equipment used by the contractor, some caving and raveling will occur within the pile shafts during drilling. Precautions should be taken during the installation of the piles to reduce caving and raveling.

Closely spaced piles should be drilled and filled alternately, with the concrete permitted to set at least eight hours before drilling an adjacent hole. Pile excavations should be filled with concrete as soon after drilling and inspection as possible; the holes should not be left open overnight. The concrete should be placed with special equipment so that the concrete is not allowed to fall freely more than 5 feet and to prevent concrete from striking the walls of the excavations.

SITE COEFFICIENT AND SEISMIC ZONATION

The site coefficient, S, can be determined as established in the Earthquake Regulations under Section 1628 of the Uniform Building Code (UBC), 1994 edition, or Section 1629 of the UBC, 1997 edition, for seismic design of the proposed speedway. Based on a review of the local soil and geologic conditions, the site may be classified as Soil Profile S_2 as specified in the 1994 code (corresponding to a site coefficient, S, of 1.2). The site is located within UBC Seismic Zone 4.

CONCRETE SLAB ON GRADE SUPPORT

If the subgrade is prepared as recommended in the following section on grading, any concrete slabs can be supported on grade.

Construction activities and exposure to the environment can cause deterioration of the prepared subgrade. Therefore, we recommend our that our field representative observe the condition of the final subgrade soils immediately prior to slab-on-grade construction, and, if necessary, perform further density and moisture content tests to determine the suitability of the final prepared subgrade.

If vinyl or other moisture-sensitive floor covering is planned, we recommend that floor slabs in those areas be underlain by a capillary break consisting of a vapor-retarding membrane over a 4-inch-thick layer of gravel. A 2-inch-thick layer of sand should be placed between the gravel and the membrane to decrease the possibility of damage to the membrane. We suggest the following gradation for the gravel:

Sieve Size	Percent Passing
¾"	90 - 100
No. 4	0 - 10
No. 100	0 - 3

A low-slump concrete should be used to minimize possible curling of the slab. A 2-inch-thick layer of coarse sand can be placed over the vapor retarding membrane to reduce slab curling. If this sand bedding is used, care should be taken during the placement of the concrete to prevent displacement of the sand. The concrete slab should be allowed to cure properly before placing vinyl or other moisture-sensitive floor covering.

RETAINING WALLS

Lateral Earth Pressure

For design of cantilevered retaining walls, where the surface of the backfill is level, it can be assumed that drained soils will exert a lateral pressure equal to that developed by a fluid with a density of 30 pounds per cubic foot. In addition to the recommended earth pressure, the walls should be designed to resist any applicable surcharges due to storage or traffic loads.

In addition to the recommended earth pressure, retaining walls adjacent to areas subject to vehicular traffic should be designed to resist a uniform lateral pressure of 100 pounds per square foot, acting as a result of an assumed 300 pounds per square foot surcharge behind the walls due to normal vehicular traffic. If the traffic is kept back at least 10 feet from the walls, the traffic surcharge can be neglected.

Drainage

Retaining walls should be designed to resist hydrostatic pressures or be provided with a drain pipe or weepholes. The drain could consist of a 4-inch-diameter perforated pipe placed with perforations down at the base of the wall. The pipe should be sloped at least 2 inches in 100 feet and surrounded by filter gravel. The filter gravel should meet the requirements of Class 2 Permeable Material as defined in the current State of California, Department of Transportation, Standard Specifications.

If Class 2 Permeable Material is not available, ¾-inch crushed rock or gravel separated from the on-site soils by an appropriate filter fabric can be used. The crushed rock or gravel should have less than 5% passing a No. 200 sieve.

PAVING

To provide support for paving, the subgrade soils should be prepared as recommended in the following section on grading. Compaction of the subgrade, including trench backfills, to at least 90%, and achieving a firm, hard, and unyielding surface will be important for paving support. The preparation of the paving area subgrade should be done immediately prior to placement of the base course. Proper drainage of the paved areas should be provided since this will reduce moisture infiltration into the subgrade and increase the life of the paving.

To provide data for design of asphaltic paving, two California Bearing Ratio (CBR) tests were performed on selected samples of the upper soils. The tests results, which indicate CBR values of 5 and 27 at 90% compaction, are presented in the Appendix.

The required paving and base thicknesses will depend on the expected wheel loads and volume of traffic (Traffic Index or TI). Assuming that the paving subgrade will consist of the on-site or comparable soils compacted to at least 90% as recommended, the minimum recommended paving thicknesses are presented in the following table.

Paving Thickness

Traffic Use	Traffic Index	Asphaltic Concrete (inches)	Base Course (inches)
Light Automobile Parking	4	3	4
Light Truck and Driveway	5	4	6
Heavy Truck	7	4	10

The asphalt paving sections were determined using the Caltrans design method. We can determine the recommended paving and base course thicknesses for other Traffic Indices if required. Careful inspection is recommended to verify that the recommended thicknesses or greater are achieved, and that proper construction procedures are followed.

The base course should conform to requirements of Section 26 of State of California Department of Transportation Standard Specifications (Caltrans), latest edition, or meet the specifications for untreated base as defined in Section 200-2 of the latest edition of the Standard Specifications for Public Works Construction (Green Book). The base course should be compacted to at least 95%.

GRADING

The existing fill soils are not uniformly well compacted The existing fill soils were not observed and tested during placement and are not considered suitable for support of foundations or paving or floor slabs on grade. After removing the existing paving, the existing fill should be excavated to the following depths:

Mats	–	5 feet below bottom of mat.
Paving	–	1 foot below bottom of paving and base.
Track	–	2 feet below bottom of paving and base.
Slab on Grade	–	2 feet below bottom of floor slab.

The excavation should extend at least 5 feet beyond the mats in plan.

Site Preparation

After the site is cleared and the upper existing fill soils excavated to the depth indicated, the exposed soils should be carefully observed for the removal of all unsuitable deposits. Next, the exposed soils should be scarified to a depth of 6 inches, brought to near-optimum moisture content, and rolled with heavy compaction equipment. At least the upper 6 inches of the exposed soils should be compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D1557-91 method of compaction.

Excavations and Temporary Slopes

Where excavations are deeper than about 4 feet, the sides of the excavations should be sloped back at 1:1 (horizontal to vertical) or shored for safety. Unshored excavations should not extend below a plane drawn at 1½:1 (horizontal to vertical) extending downward from any adjacent existing footings.

Excavations should be observed by personnel of our firm so that any necessary modifications based on variations in the soil conditions can be made. All applicable safety requirements and regulations, including OSHA regulations, should be met.

Compaction

Any required fill may be placed in loose lifts not more than 8 inches thick and compacted. The fill should be compacted to at least 90% of the maximum density obtainable by the ASTM Designation D1557-91 method of compaction. The moisture content of the on-site soils at the time of compaction should vary no more than 2% below or above optimum moisture content.

A shrinkage of 20% should be used for the on-site materials. That is, it may be assumed that 1.20 cubic yards of excavated material will be required for 1.00 cubic yards of compacted fill.

Backfill

All required backfill should be mechanically compacted in layers; flooding should not be permitted. Proper compaction of backfill will be necessary to minimize settlement of the backfill and to minimize settlement of overlying slabs and paving. Backfill should be compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D1557-91 method of compaction. The on-site soils can be used in the compacted backfill. The exterior grades should be sloped to drain away from the foundations to prevent ponding of water.

Material for Fill

The on-site soils, less any debris or organic matter, can be used in required fills. Cobbles larger than 4 inches in diameter should not be used in the fill. Any required import material should consist of relatively non-expansive soils with an expansion index of less than 35. The imported materials should contain sufficient fines (binder material) so as to be relatively impermeable and result in a stable subgrade when compacted. All proposed import materials should be approved by our personnel prior to being placed at the site.

GEOTECHNICAL OBSERVATION

The reworking of the upper soils and the compaction of all required fill should be observed and tested during placement by a representative of our firm. This representative should perform at least the following duties:

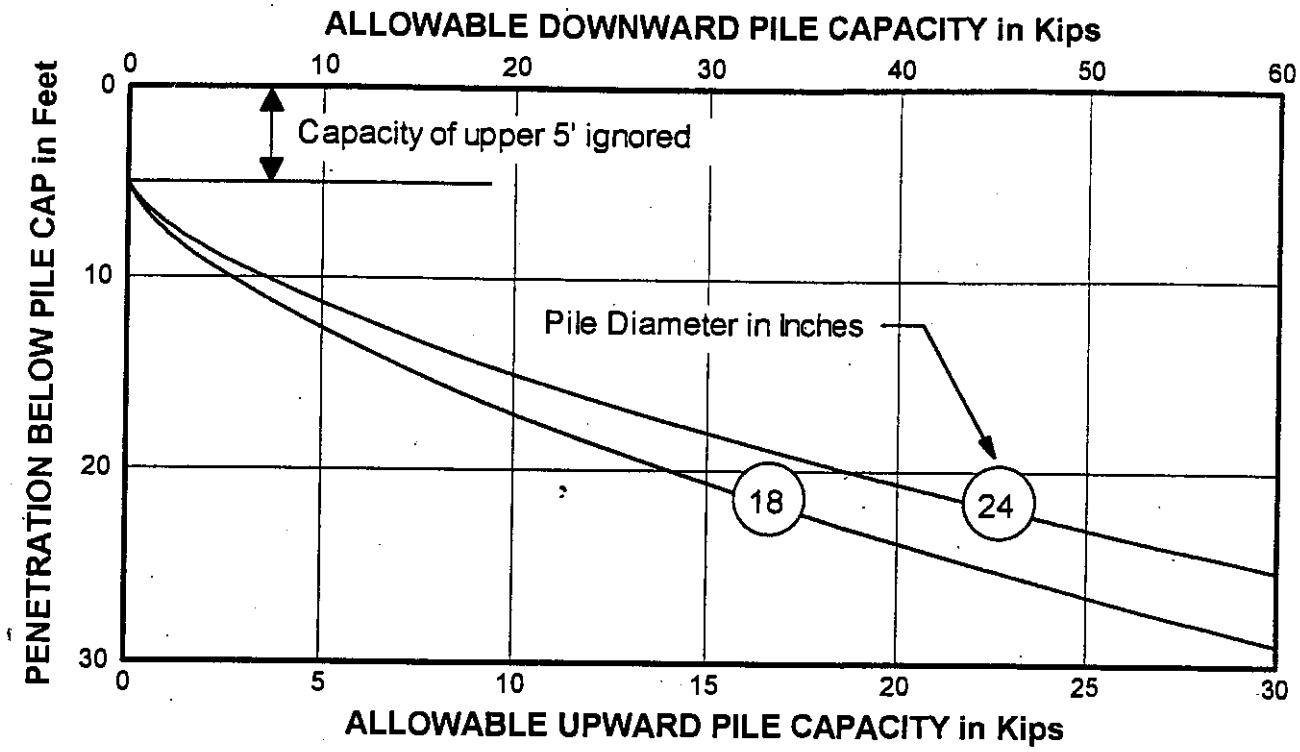
- Observe the clearing and grubbing operations for proper removal of all unsuitable materials.
- Observe the exposed subgrade in areas to receive fill and in areas where excavation has resulted in the desired finished subgrade. The representative should also observe proofrolling and delineation of areas requiring overexcavation.
- Evaluate the suitability of on-site and import soils for fill placement; collect and submit soil samples for required or recommended laboratory testing where necessary.
- Observe the fill and backfill for uniformity during placement.
- Test backfill for field density and compaction to determine the percentage of compaction achieved during backfill placement.
- Observe the drilling and pouring of the piles to verify that the desired diameter and depth are obtained.
- Observe and probe foundation materials to confirm that suitable bearing materials are present at the design foundation depths.

The governmental agencies having jurisdiction over the project should be notified prior to commencement of grading so that the necessary grading permits can be obtained and arrangements can be made for required inspection(s). The contractor should be familiar with the inspection requirements of the reviewing agencies.

BASIS FOR RECOMMENDATIONS

The recommendations provided in this report are based upon our understanding of the project and on our interpretation of the data collected during our subsurface explorations. We have made our recommendations based upon experience with similar subsurface conditions under similar loading conditions. The recommendations apply to the specific project discussed in this report; therefore, any change in the structure configuration, loads, location, or the site grades should be provided to us so that we can review our conclusions and recommendations and make any necessary modifications.

The recommendations provided in this report are also based upon the assumption that the necessary geotechnical observations and testing during construction will be performed by representatives of our firm. The field observation services are considered a continuation of the geotechnical investigation and essential to verify that the actual soil conditions are as expected. This also provides for the procedure whereby the client can be advised of unexpected or changed conditions that would require modifications of our original recommendations. In addition, the presence of our representative at the site provides the client with an independent professional opinion regarding the geotechnically related construction procedures. If another firm is retained for the geotechnical observation services, our professional responsibility and liability would be limited to the extent that we would not be the geotechnical engineer of record.



(1) The indicated values refer to the total of dead plus live loads; a one-third increase may be used when considering wind or seismic loads.

(2) Piles in groups should be spaced a minimum of 2-1/2 diameters on centers, and should be drilled and filled alternately with the concrete permitted to set at least 8 hours before drilling an adjacent hole.

(3) The indicated values are based on the strength of the soils; the actual pile capacities may be limited to lesser values by the strength of the piles.

DRILLED PILE CAPACITIES

LAW/CRANDALL

FIGURE 2

JOB 70131.80070.0001 DATE 3/3/98 DR MWH OE MWH CHKD VB

Preliminary Geotechnical Investigation
Irwindale Speedway Site/Former Nu-View Landfill
400 East Live Oak Avenue
Irwindale, California

Mission Geoscience

April 7, 1997

MISSION GEOSCIENCE, INC.

LOS ANGELES
SAN FRANCISCO
NEW YORK
ATLANTA
WASHINGTON
DALLAS
HOUSTON

ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

April 7, 1997

IRWINDALE SPEEDWAY, LLC
c/o Mr. Michael J. Hoppe, Jr.
18301 Von Karman Avenue, Suite 1170
Irvine, California, 92715-0110

RE: ***Preliminary Geotechnical Investigation***
IRWINDALE SPEEDWAY SITE/ Former Nu-Way Landfill
400 East Live Oak Avenue
Irwindale, California
MISSION Project No. 97-138

Dear Mr. Hoppe:

In accordance with your request and authorization, Mission Geoscience, Inc. (MISSION) has completed a Preliminary Geotechnical Investigation of the proposed Irwindale Speedway located at 400 East Live Oak Avenue in the City of Irwindale, California (SITE). MISSION's investigation at this time was limited only to an investigation of the shallow fill cover soils, in order to preliminarily assess the potential general geotechnical and environmental constraints of this fill on the proposed construction.

INTRODUCTION

The approximate 43-acre SITE is the westerly portion of a former 85-acre sand and gravel pit that was mined to an approximate 200-foot depth. The mined-out pit was later operated by Nu-Way Industries as a landfill. Between 1968, when the landfill commenced operation, and 1990, when it ceased waste acceptance, the Nu-Way landfill was permitted by the regulatory agencies to accept (and reportedly only accepted) inert, non-putrescent (non-decomposable) wastes including construction debris. The landfill debris was reportedly covered with several feet of imported "clean fill soils". MISSION understands that a source of a significant percentage of this fill cover material was "tunnel muck" imported from the excavation of the Los Angeles Metro Rail tunnels, in 1992 and 1993.

Because of the limitation of only inert materials by the Los Angeles Regional Water Quality Control Board (LARWQCB) in this landfill, Nu-Way was excused from the "typical" landfill closure construction regulatory requirements of CCR Title 23 Chapter 15. The alternative landfill "cap" approved in 1991 by the LARWQCB consists of a six-inch thickness of aggregate base topped by four inches of asphaltic concrete pavement. As reported in the 1991 landfill Closure

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Report prepared by Law/Crandall, this cap has been constructed in a zone extending from the landfill's east boundary at Freeway I-605 westward, and presently covers only the easterly half of the subject SITE.

PURPOSE

As stated in MISSION's proposal to the Irwindale Speedway LLC (ISLLC), the purpose of this preliminary geotechnical investigation was to determine the thickness of, and classify soil and reportedly inert waste materials within, the existing fill cover overlying the landfill waste. The fill cover was reportedly imported and placed in accordance with the 1991 "Closure and Post Maintenance Plan" for the Nu-Way Landfill, prepared by Law/Crandall, Inc., dated December 2, 1991. In addition, MISSION's investigation was undertaken to discern the feasibility of the proposed "balanced earthwork" excavations for the Speedway, based on the observed nature and physical properties of this upper 20 feet of existing landfill cover material, because this is the maximum depth preliminarily anticipated to be encountered during construction.

SITE INVESTIGATION

MISSION prepared a project specific Work Plan, which included the proposed boring procedures, boring locations and depths. This Work Plan was submitted to, and approved by, the Los Angeles Regional Water Quality Control Board (LARWQCB) on March 20, 1997. The LARWQCB approval for this exploration program is included in Attachment A. MISSION prepared a boring location plan, based on the track configuration and the proposed exploration objectives discussed in the March 11, 1997 meeting with the client at the SITE. Locations of 14 borings were selected based on an approximate grid pattern distributed across the 43-acre SITE. These locations were marked on plans with boring coordinates, and issued to the project Civil Engineer, Kenneth A. Wilch & Associates, on March 12, 1997. Subsequently, MISSION received several revisions to the proposed Speedway track and facility configuration, along with proposed borings relocations suggested by the client, so that six of the boring locations were ultimately placed in the areas of proposed structures.

Field Exploration Program

MISSION subcontracted a CME-75 drill rig, equipped with 8-inch diameter hollow stem augers to drill the borings on the SITE. The field exploration was completed on March 20, 21, and 24, 1997. MISSION's project geologist directed the field operations, logged the materials recovered, and labeled and packaged all samples. Fourteen geotechnical borings were drilled at the locations staked in the field, which were in the locations faxed to MISSION on a plan prepared by The MP Group, dated February 8, 1997. This plan has been used in the preparation of the attached Geotechnical Map (see Figure 1). Borings MB-04 and MB-06 were slightly relocated in the field because they conflicted with the location of current on-SITE improvements.

Borings were advanced to a depth of 20 feet below ground surface (bgs), with samples being recovered at approximate five-foot depth increments. Boring MB-03 encountered refusal and was terminated at 15 feet bgs. Samples were collected in 2½-inch ID modified-California samplers fitted with one-inch high brass rings, driven by a standard drive weight.

Both "undisturbed" ring samples as well as bagged bulk samples of the drill cuttings were collected from selected intervals, labeled, packaged, and shipped to the MISSION's geotechnical laboratory for storage and laboratory analysis.

Visual and olfactory evidence of petroleum hydrocarbons (PHCs) were noted within fill cover samples collected in borings MB-07 and MB-08, located within the design fill area along the western margin of the proposed speedway and the western SITE boundary. MISSION recommended to the ISLLC that it would be prudent to determine whether the PHCs encountered represented either *refined* fuel hydrocarbons or *naturally-occurring,* "unrefined" materials (e.g., crude oil), or a mixture of both. It has been verbally reported to the ISLLC by Nu-Way Industries that soils imported as fill cover included materials excavated from alignment(s) of the City of Los Angeles Metro Rail tunnels. Portions of the Metro Rail "Red Line" alignment occur adjacent to and within areas of historic petroleum production (wells, cellars, surface impoundments) and crude oil seeps within the Los Angeles City Oil Field. Such features could reasonably be expected to be the original sources of PHCs in the imported fill soils at the SITE.

Following discussions and approval from ISLLC representatives, MISSION advanced four additional exploratory borings in the vicinity of MB-07 and MB-08, in order to preliminarily evaluate the physical limits of the hydrocarbon-impacted soils, and to collect undisturbed soil samples for environmental laboratory analyses. These additional borings are illustrated on Figure 1, and are designated MB-07A, MB-08A, MB-08B, and MB-15. Logs of these additional borings are included within Attachment B.

Undisturbed soil samples for environmental analyses were collected within pre-cleaned, six-inch brass sleeves between depths of 5 and 20 feet below existing surface grade. All sampling was conducted in compliance with the soil sampling protocol recommended within the LARWQCB's "Interim Site Assessment and Cleanup Guidebook" (May, 1996). Split-spoon sampling equipment was decontaminated between each discrete sampling interval using a phosphate-free detergent wash followed by distilled water triple-rinse. Auger-stem flights were also steam-cleaned between each exploratory boring, within a designated adjacent paved area of the SITE to minimize the potential of rinsate discharge into the fill cover.

Site Conditions

The SITE is bounded on the north by East Live Oak Avenue. A five-foot high concrete masonry wall extends along this boundary. Access to the SITE is via two driveway entrances in the wall. The west boundary of the SITE is marked by a chain link fence. To the west of the SITE is the NorthWest Transportation Company freight distribution center whose structural components include a slab-on-grade foundation with stucco walls over wood framing. On the south, there is a chain link fence separating the SITE from the active Livingston Graham/Blue Diamond gravel

pit and an adjacent ready-mixed concrete batch plant. The east SITE boundary is not physically marked at this time, but is currently a part of the parking lot for the LA International Marketplace further to the east. The NorthWest Transportation Company property and the LA International Marketplace property also overlie portions of the former Nu-Way Landfill, but are presently separate parcels, subdivided from the subject SITE.

The easterly half of the SITE, east of a fabric-covered, chain-link fence, is asphalt paved. This fence extends the SITE width, from Live Oak Avenue on the north side, to the boundary with the Livingston Graham/Blue Diamond property to the south The asphalt pavement is marked with parking stripes as part of the LA International Marketplace. The paved surface, obviously subjected to only light traffic, and appeared to be in good condition. MISSION noted several, north-south aligned, rows of what appeared to be small-diameter natural gas valves, projecting through the paved surface. These were each painted a pale blue color, and spaced at regular intervals. There were also indications of buried electrical lines, and another utilities, possibly including water, beneath the pavement.

An asphalt paved strip extends along the north boundary of the SITE to about 200 feet south of the five-foot high, masonry wall on the Live Oak Avenue SITE boundary. The west half of this strip is presently operated by NorthWest Transportation Company as a "card-lock" truck fueling station with underground fuel storage tanks (USTs). The east half of this paved strip and the southwestern portion of the SITE is used by Nu-Way Industries as a waste transfer/recycling station. There are several trailers, temporary buildings, and other items in temporary storage on the SITE, all apparently related to this Nu-Way operation. The surface of the central portion of the SITE is soil-covered, relatively level to hummocky and moderately covered with grasses and sporadic shrubbery. The westerly half of this central, non-paved area is sparsely vegetated. The exposed soils in this central area suggest they are comprised of "man-made soil" and there is minor construction debris visible on the graded surface. There is a sub-grade structure having reinforced concrete retaining walls and floor in the northerly part of this non-paved area. This structure is actively used by Nu-Way Industries for top-loading of waste transfer trucks.

MISSION observed that the SITE elevation along the west boundary is about two feet greater in elevation than is the paved NorthWest Transportation Company site, adjacent to the west and north. This is indicative that the SITE cover fill layer (from the LA Metro) may have been placed on-SITE later in time than the completion of construction of the NorthWest facility.

Subsurface Conditions

Subsurface materials observed in samples and soil cuttings from the borings were classified in the field by MISSION's project geologist, based upon both *observed* and *interpreted* characteristics. The "interpreted" characteristics of the subsurface materials include odor, resistance of material to penetration by the drill rig, difficulty of sampling and sample recovery. Both characteristics were combined to present the descriptions of materials on the attached boring logs. Interpretations between recovered samples have been made based on observations of cuttings brought up to the surface by the drill augers.

The majority of borings were extended to the proposed 20-foot depth bgs, and were driven an additional 1.5 feet with the sample barrel. Drilling was often difficult, causing auger "chatter" and rig vibration, as expected because of the presence of concrete and asphalt debris. Materials in samples indicated the presence of fragments of concrete, asphalt, masonry, soil, lumber, metal, plastics and dry-wall (gypsum plaster) in the soil matrix. Lumber was often observed to be in an advanced stage of decomposition. Typically, the soil matrix was silty clay and clayey sands with gravel. Localized layers of sandy and clayey soils were also encountered. Subsurface conditions encountered in the widely-spaced borings, exhibited extremes in the heterogeneity of material. Consecutive samples in a boring, and often within the same sample barrel, revealed materials of widely different constituents. Furthermore, the firmness of materials, as noted by the resistance of the subsurface materials to penetration of the sampler, also provides an indicator of the material's heterogeneity.

"Blow Counts" on the boring logs should be interpreted in consideration of the materials being penetrated during the sampling. High blow counts are often related to encountering asphalt or concrete pieces. Low blow counts are indications of low density soils, or may indicate voids within the landfill mass.

Following review of the field logs, MISSION classified the subsurface materials encountered in the borings into the following three generalized groups: 1) Construction Debris; 2) Landfill Debris; and 3) Fill Soil Materials. A general description of the contents of each of these classification groups follows:

Construction Debris: Fill materials consisting of pieces, fragments or chips of concrete, brick and asphalt, often with a soil matrix; and associated construction materials such as gypsum plaster board (drywall) and lumber, etc. These materials are generally suitable for re-use as construction fill following at least some hand sorting, culling, selective wasting and crushing.

Landfill Debris: Decayed wood and putrescent materials, plastic fragments (e.g., PVC pipe), tire pieces and wire often intermixed with soil matrix, including organic-stained clays; typically emitting a very strong odor of decomposition or locally of petroleum hydrocarbons. These materials are generally unsuitable for reuse as earthwork construction materials.

Fill Soil Materials: Dominantly soil materials consisting of inorganic clays, silts, sands and gravels; occasionally mixed with pieces of concrete and brick. Generally suitable for use as construction fill and/or landfill clay cap following field identification. Some hand-sorting and segregation of deleterious materials and moisture conditioning, typical of normal earthwork construction practices will be required when placing these materials.

Figure 2 is a "generalized log of test borings", which provides a visual summary of the interpreted intervals depicting these three material groups encountered in the borings. This sketch is not intended to represent a lateral profile across the SITE, but merely an illustration of the vertical

variations of the occurrence of the three material groups encountered in the fourteen boring locations only.

Of these material groups, "Construction Debris" comprised a significant portion. This material group contains some wastes, such as lumber, that are unsuitable for re-use in structural fills due to their potential for decay, decomposition and collapse. Concentrations of some of the constituents within this material group would require processing to make them suitable for re-use, such as drywall and sheeting. Construction Debris also includes oversized materials, typically concrete and asphalt, which could be sized, sorted and/or crushed on-SITE, with some wasting, which would be suitable for re-use in structural fills.

The second group of materials "Landfill Debris" was found in five of the geotechnical borings at depths below 10 feet bgs (MB-01 at 0-8 feet, MB-04 at 20-21 feet, MB-07 at 10-21.5 feet, MB-08 at 14-20 feet and MB-12 at 20-21.5 feet). Due to the occurrence of putrescible material which would be subject to long-term decay resulting in settlement in this group, this material is not suitable for re-use in structural fills.

The third classification, "Fill Soil Materials" which comprises minor amounts of construction debris in a dominantly soil matrix, is generally usable as fill soil. Some processing, sorting and culling, as well as moisture conditioning, of these soils will be necessary prior to their re-use. It was noted that a fair proportion of the soil matrix of this group comprised clays, sandy clays and clayey sands. Based upon preliminary observations and testing during this investigation, these clays and sandy clays may generally be suitable for re-use as landfill cap materials beneath the proposed Speedway.

Geotechnical Laboratory Testing Program

Selected fill soil samples from the borings were tested in MISSION's geotechnical laboratory to aid in the classification of materials in this preliminary investigation. Tests performed included sample density and moisture content, grain size distribution, Atterberg (plasticity) limits for the fine-grained soils (i.e., silts and clays), as well as, optimum moisture/maximum density relationships.

Environmental Laboratory Testing Program

A total of nine soil samples were selected, based upon OVM field-screening and visual observations, for environmental laboratory analyses. All samples were analyzed off-SITE by Sierra Laboratories, Inc. of Laguna Hills, California, which is a facility approved by the ELAP accreditation program administered by the California Department of Health Services (DOHS).

All nine samples were analyzed via **EPA method 8015-modified** for total volatile petroleum hydrocarbons (TVPH, including gasoline, naphtha, jet fuel, kerosene) *and* for total extractable petroleum hydrocarbons (TEPH, including diesel, lubricating oil, waste oils, etc.). **Three** of these

nine samples were further characterized for **hydrocarbon chain distinction**. These analyses were conducted to clearly define unrefined (crude oil) versus refined hydrocarbons in the fill.

Three of the nine samples were also analyzed via **EPA method 8260** volatile organic compounds (VOCs), including chlorinated compounds and benzene. Additionally, **two** of these three samples were also tested for the potential leachability of VOCs through the soil via the EPA "Toxicity Characteristic Leaching Procedure" (TCLP) extraction and analysis (EPA method 1311 followed by EPA method 8240 for VOCs) .

Two of the samples were further analyzed for the presence of semivolatile organic compounds (SVOCs) via **EPA method 8270.**

Three samples were also selected and analyzed for the presence of the CCR Title 22-listed "CAM" metals (total of seventeen toxic metals per analysis). Such metals typically occur within additives to oil well drilling muds, and also occur complexed (chemically bonded) to organic materials within crude oils. **Two** of these samples were also analyzed for metals "leachability" using the "TCLP" extraction discussed above, followed by analyses using EPA methods 200.7 and 245.1 for sixteen CAM metals and mercury, respectively. **One** sample was further tested for leachability of metals using the CCR Title 22 Waste Extraction Test ("WET test") followed by analysis via EPA method 6010 for CAM metals.

Results of Environmental Analyses

Organic Constituents of Fill Cover

Table 1 summarizes the results of organic compound analysis from SITE soil samples. MISSION's exploratory program identified PHCs to be ostensibly restricted to soils within a depth interval of primarily 10 to 20 feet bgs, and exist only locally in discrete zones, rather than in a laterally-continuous horizon. This observation is consistent with their placement as part of imported fill soils, rather than discharges of petroleum wastes into the fill cover subsequent to its placement.

The maximum reported volatile PHC concentration (TVPH in Table 1) was 75 parts per million within the 20-foot-depth sample from boring MB-8A, which would typically not be considered to require remedial action per current LARWQCB criteria, assuming groundwater to be a drinking water source and historic depth to groundwater of 100 to 180 feet bgs. The maximum total PHC concentration (chiefly non-volatile constituents) was 410 parts per million reported within the 15-foot-depth sample in boring MB-7A. Current LARWQCB criteria for the historic depths to groundwater would also typically consider this concentration to be "non-actionable". Although low concentrations of PHCs were reported within samples collected from shallower depths, (i.e., 5 and 10 feet bgs), the reported concentrations could be reasonably explained as humic (e.g., wood) materials or asphaltic construction debris in the fill cover, rather than more "conventional" types of petroleum hydrocarbons, such as refined fuels or crude oil.

The results of the EPA 8015-modified "PHC chain distinction" analyses suggest that the majority of the PHCs reported are much "heavier" (i.e., higher number of carbon atoms per PHC molecule) than typical refined hydrocarbon fuels, such as gasoline, jet fuels or diesel fuel. The range of hydrocarbons reported in the samples is consistent with their origin as either waste oils, lubricating oils and crude oils. Chromatograms produced during the EPA 8015 laboratory analyses of selected samples are included in Attachment E, and are also consistent with a weathered, degraded crude oil or weathered lubricating oil nature of the PHCs, rather than refined hydrocarbon products. No semivolatile organic constituents were reported as extractable in any of the samples analyzed via EPA method 8270, other than indistinguishable "low" peaks, which would be consistent with a severely weathered crude oil or a "heavy" refined hydrocarbon product.

The only volatile organic compounds (VOCs) reported in the samples analyzed were low concentrations of benzene (maximum of 66 parts per billion) and 1,2,4-trimethylbenzene (maximum of 7.1 parts per billion) in two of the samples. No other VOCs otherwise "typical" of refined hydrocarbon fuels or solvents were reported in the samples. The occurrence of these compounds at these concentrations is consistent with their origin within crude oils rather than refined fuel or solvents. Leachability testing using the TCLP technique further confirms that these VOC compounds would not be expected to be soluble or mobile within the SITE soils, and thus would have a low likelihood of being able to migrate vertically to groundwater.

Inorganic Constituents

Table 2 summarizes the reported results of lab analyses for inorganic constituents in the fill cover soil samples. The results of laboratory testing for inorganic constituents suggest that low concentrations of CAM metals exist in the soils in the vicinity of boring MB-7, MB-7A and MB-8B. The reported concentrations are well within "background" concentrations for native soils in the SITE area.

PHC-impacted soils samples from the 20-foot depth in boring MB-8A, however, were also reported to contain elevated concentrations of copper, lead, nickel and zinc. The concentrations reported for copper, lead and zinc, in particular, exceed the respective current Total Threshold Limit Concentrations ("TTLC" values) for these metals, as established within CCR Title 22. As such, these concentrations are high enough to classify these soils at this depth as "hazardous waste", *if these soils were to be encountered and handled during the proposed SITE excavations.*

In order to evaluate whether the reported metals concentrations pose a potential threat to groundwater beneath the SITE, MISSION reviewed the results of the "leachability" analyses of this sample following both TCLP and WET test extractions. These leachability analyses suggest that lead is the only metal which has a potential to migrate from these soils at concentrations of potential concern. However, the low concentration of the soluble component of lead in the extract of this soil sample (at a reported concentrations of 20 milligrams per liter, approximately equivalent to parts per million) is considered to have a low potential to migrate vertically and adversely impact groundwater beneath the SITE under "normal" soil pH conditions (i.e., pH range of 4 to 12). The relatively low extractable lead component would be likely to sorb to soils and

waste within the 100- to 180-foot depth unsaturated interval beneath the fill cover, unless pH conditions were to drop below a value of 4.

CONCLUSIONS

The intent of this investigation was to assess the feasibility of the proposed Speedway excavations from only a preliminary geotechnical and environmental standpoint. This investigation should not be construed as a final geotechnical foundation investigation for the proposed structures or embankments, which should be performed prior to final design of those improvements. It is conceivable that results from future geotechnical investigations may indicate that geotechnical conditions at the SITE require corrective construction methods for those proposed improvements, which might make the proposed development more expensive. Based upon the results of this preliminary geotechnical investigation of shallow conditions, MISSION offers the following conclusions:

- In MISSION's opinion, the proposed Irwindale Speedway appears to be geotechnically and environmentally feasible with some significant constraints, including those discussed below.

- MISSION found a significant heterogeneity of materials in the borings, though none that would be unexpected in a landfill. Subsurface materials were classified in our boring logs and in Figure 2 as either "Construction Debris", "Landfill Debris", or "Fill Soil Materials". There is reasonable percentage of material on-SITE that can be processed for re-use within the proposed fill with a reasonable amount of effort.

- MISSION identified a relatively low percentage of the existing fill cover materials, which should not be reused in construction fill. The majority of material classified "Construction Debris" has potential for reuse as fill on-SITE. Material classified as "Landfill Debris" contains putrescible or otherwise environmentally undesirable components that make this debris unsuitable for re-use in the construction fill, based upon both the landfill's classification as only an "inert waste facility", and upon the potential for putrescible waste to settle upon decomposition. With the exception of boring MB-01, the minimum depth to the top of this debris was nine feet bgs. In boring MB-01, Landfill Debris was encountered at the surface.

  MISSION understands that the currently planned depth of excavation for the proposed Speedway tracks is 8 feet bgs. Therefore, it is possible that the current proposed track excavations will encounter limited zones of Landfill Debris. Additional capping, overexcavation and reprocessing, or off-SITE disposal of this Landfill Debris at a nearby non-hazardous waste facility, may be required.

- Results from laboratory tests on selected samples of the Fill Soil Materials encountered in the borings indicated a range from cohesive to granular soils. Some selective grading and stockpiling of excavated soil will be required to generate clayey soils for placing as a cap over Construction or Landfill Debris in the proposed area of overexcavation.

- Regardless of the "hazardous" classification for the lead, nickel, copper and zinc in the single soil sample in boring MB-8B as discussed above, all reported concentrations of organic and inorganic constituents in SITE fill cover soils are consistent with an origin as part of crude-oil and/or waste-oil-impacted soils imported onto the SITE. **None of the reported organic or inorganic constituents within the SITE fill cover soils are considered to be consistent with an origin as waste discharges on the SITE subsequent to import and placement of the fill.**

RECOMMENDATIONS

Based on the results from this preliminary investigation, MISSION recommends further evaluation of siting the proposed Irwindale Speedway on this SITE as follows:

- An additional review should be performed of vertical air photos, available reports and topographic survey maps of the SITE, and government documents (e.g., Division of Mines and Geology, Department of Public Works) to develop estimated historic depths and lateral limits of the quarry walls and mining levels, at various times prior to, and during, landfilling of the SITE. This should be performed to provide reliable estimates of total waste thickness so that additional drilling is not needed to penetrate through the entire thickness of waste, and thus avoid encountering the underlying groundwater.

- A detailed Geotechnical Foundation Investigation should be performed to characterize the SITE conditions in the locations of the various Speedway structures and the proposed racetracks. A Supplemental Work Plan for this additional investigation should be prepared and submitted for the approval by the LARWQCB. Based upon our preliminary understanding of the three main structures (the control tower, the grandstand and the administration building), the minor structures (concession stands, the maintenance building and the "west SITE boundary building") and the racetracks, exploration will be required to determine soil capacities, develop design recommendations, and design criteria for evaluation of alternative foundation types, foundation design, landfill cover, and SITE grading and paving. Total and differential settlement, and bearing capacity of soils for evaluation of shallow foundation alternatives, should be the prime considerations for the proposed structures. Soil volume availability and location, material type, constructability, permeability, and bearing capacity should be a prime consideration for the racetrack areas, including the landfill cover. This additional investigation should include:

    - Excavation of approximately 20 test pits with a backhoe to no less than the depth of proposed earthwork and borrow, to more comprehensively characterize the types and constituents and relative volume percentages of the various materials which have been identified in this present feasibility exploration. MISSION recommends using a large backhoe, such as a Caterpillar 245 truck hoe or equivalent, capable of excavating in these materials to at least the 30 feet depth and breaking through larger pieces of demolition debris. The pits should be photographed, surveyed, logged by a MISSION engineering geologist, and backfilled.

- Drilling approximately ten additional borings to depths between 30 and 100 feet in the locations of structures (five in the area of grandstand/control tower; two in the vicinity of administration building; plus three others) to characterize subsurface soil and waste conditions for geotechnical criteria for structures. Four of these borings should be deep, penetrating to depths no greater than 30 feet above the existing groundwater table, to evaluate deeper subsurface settlement potential in the vicinity of the significant proposed structures. A dual-wall rotary air percussion drill rig or equivalent should be utilized, which uses no drilling liquids that might otherwise potentially generate leachate, and which minimizes cross-contamination potential between various layers of the landfill waste.

- Performing geotechnical laboratory tests to characterize samples of the soil materials. Tests will include soil classification index properties, shear strength tests, consolidation and settlement criteria, and permeability of existing clay-rich soils to evaluate suitability for use as a cap in the racetrack areas.

- To balance the "loss" of SITE materials that may result from off-SITE disposal of some unsuitable Landfill Debris, and shrinkage of other SITE materials from densification during construction, the ISLLC's design grades for the Speedway should be flexible enough to accommodate adjustments as more detailed geotechnical information is gathered. As a means to address this issue, consideration should also be given to excavating and stockpiling clean fill material by lowering the existing SITE elevation by at least two feet in areas outside the proposed racetrack.

- MISSION recommends that the ISLLC seeks an indemnification for any CCR Title 22-listed constituents reported within soils or wastes of the existing SITE fill cover. Furthermore, the project civil engineer should consider shifting the location of the proposed structures away from the locations of "hazardous" soil constituents and/or petroleum-impacted fill soils encountered during this feasibility investigation, or which may potentially be encountered during the subsequent Foundation Investigation recommended herein.

- Because it is important that the ISLLC avoids the handling of soils or materials which may be classified as "hazardous waste" during the proposed Speedway excavations, and because such materials are most likely to be encountered only during excavations associated with the design cut areas of SITE grading, and during proposed building footing and/or utility trench excavations, MISSION recommends additional environmental sampling and laboratory analyses of fill soils from within these proposed construction areas of the SITE. This should be most conveniently and cost-effectively performed during the proposed subsequent phase of geotechnical investigation discussed above. Environmental sampling should include soils no deeper than the base of the fill cover, with laboratory analyses for PHCs and CAM metals, including additional leachability testing. Such testing would be intended to minimize ISLLC's potential exposure to liability for further degradation of water quality which might occur and be detected during future sampling of existing monitoring wells during the landfill closure process.

LIMITATIONS

The conclusions presented in this report are professional opinions, based upon the scope of this investigation and data described in this report. The data in this report was compiled to provide feasibility information. This data should not be used for structure siting, designs or quantity estimates. These opinions have been formed in accordance with currently accepted consulting geotechnical, engineering and environmental standards and practices applicable to this location, and are subject to the following inherent limitations:

1. MISSION derived the data in this report primarily from a SITE visit, review of existing data provided by others, observations and selected analysis of samples from widely-spaced borings. The passage of time, manifestation of latent conditions, or occurrence of future events may require further exploration at the SITE, analysis of the data, and reevaluation of the findings, observations, and conclusions in the report. Due to the heterogeneity of materials encountered, future exploration and sampling between borings for this investigation may encounter subsurface conditions different than found during this investigation. Different SITE conditions (if found) may impact the conclusions stated in this report.

2. Due to the limitations stated above, the findings, observations, and conclusions expressed by MISSION in this report are not, nor should be, considered an opinion concerning the compliance of any past or present owner or operator of the SITE with any federal, state, or local law or regulation.

3. MISSION's responsibility extends only to its client, and not to any other parties who may obtain or attempt to rely upon this report. Issues raised by this report, if any, should be reviewed by appropriate legal counsel.

4. The conclusions presented in this report are professional opinions based upon data described in this report. They are intended only for the purpose, SITE location, and project indicated. This report is not a definitive study of conditions at the SITE and should not be interpreted as such. An evaluation of geotechnical parameters of on-SITE materials normally included as part of a conventional Geotechnical Foundation Investigation (e.g., settlement characteristics, bearing values, proposed slope stability, etc.), evaluation of deep subsurface soil and groundwater conditions was not performed as part of this investigation.

MISSION appreciates this opportunity to be of professional service on this important matter. Should you have any questions, or desire additional information, please do not hesitate to call us at (714) 955-9086.

Respectfully submitted,

MISSION GEOSCIENCE, INC.

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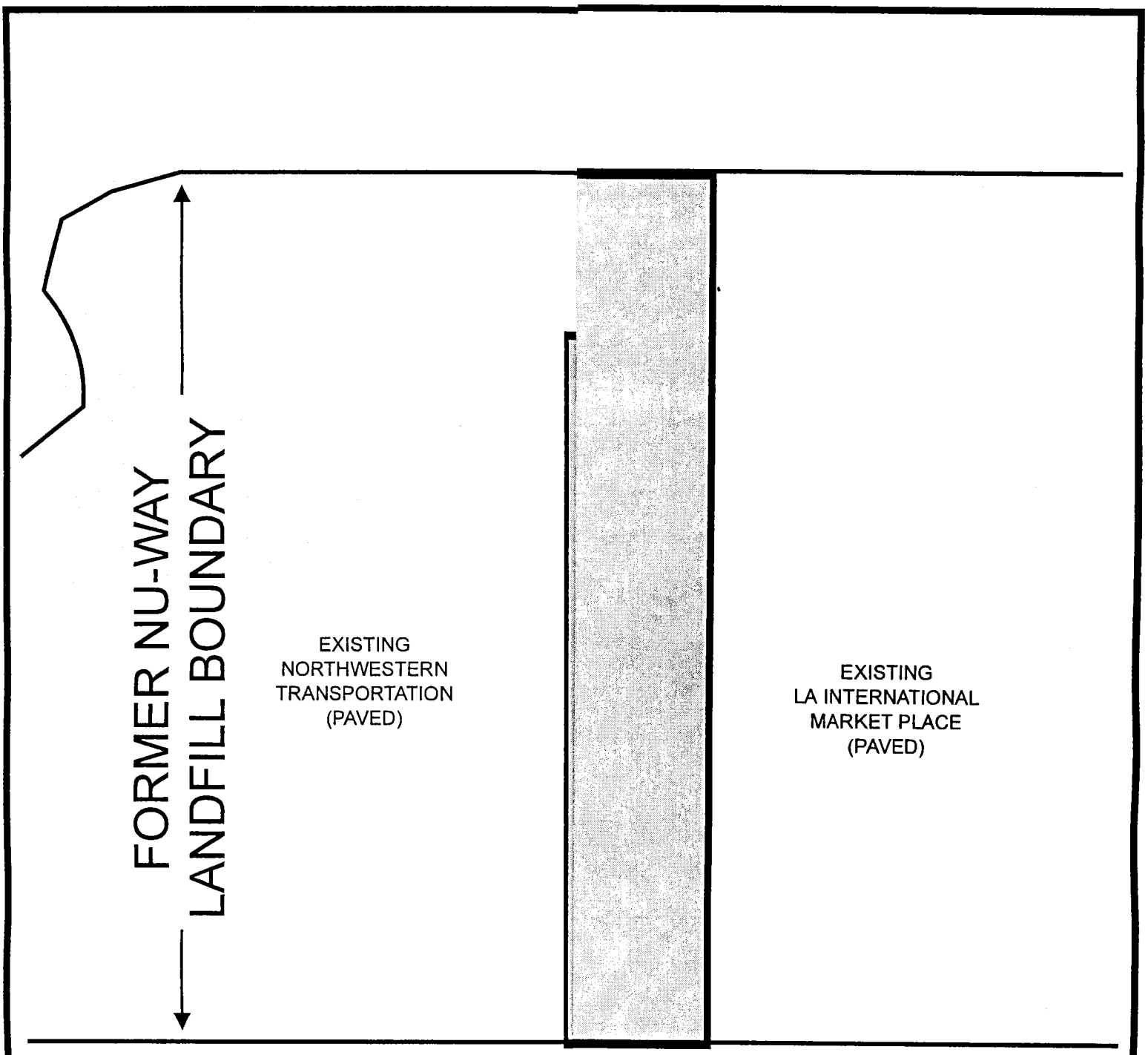
FIGURES



EXPLANAT

SITE Boundary

Reported Subsurface Limits of "

Reported Subgrade Limits of Au

Approximate Limits of Existing (

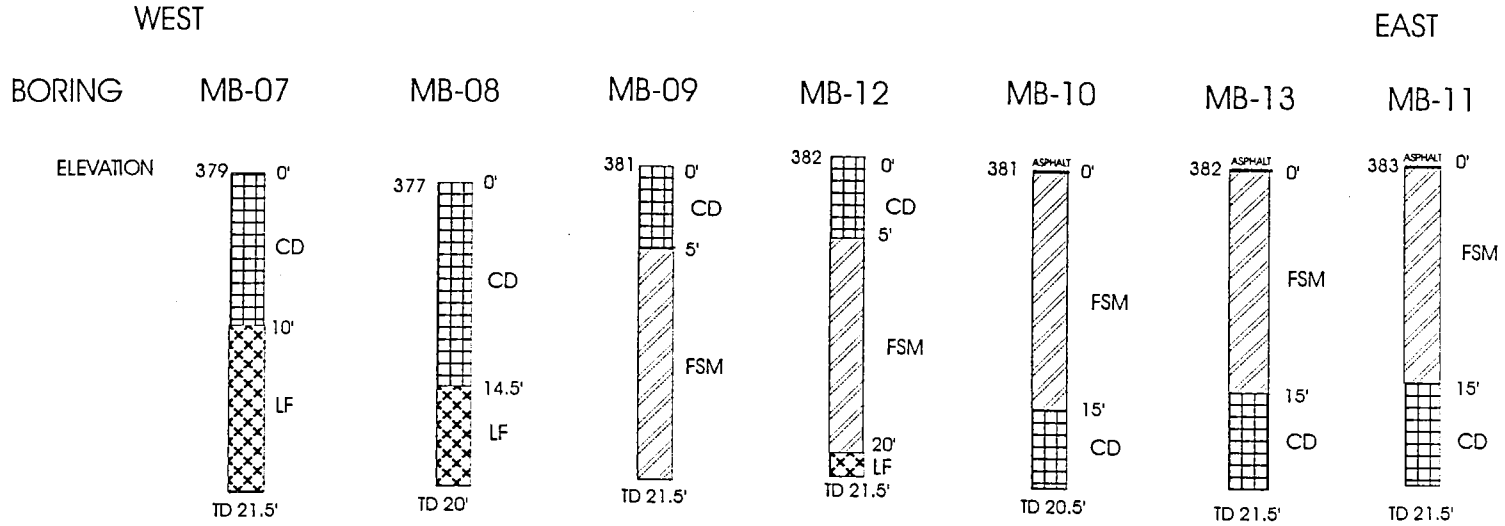
MB-15 MISSION Shallow Geotechnica

PLAN AND
OCATION MAP
dale Motor Speedway
-Way Landfill Site
ale, California

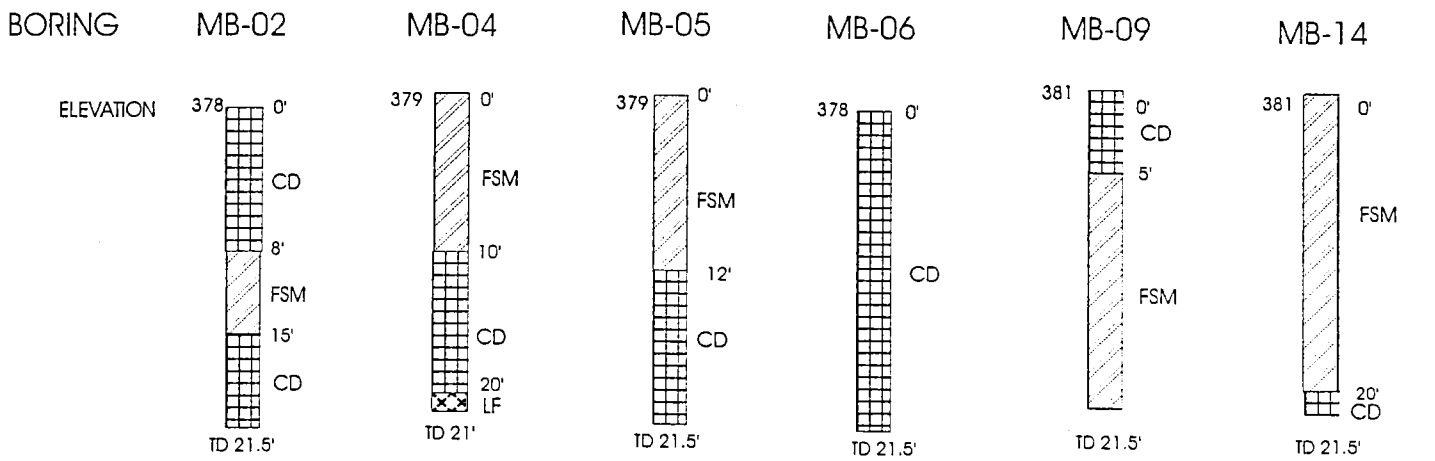
Figure:	1
Project No.:	97-138
Date:	April 1, 1997

GENERALIZED LOG OF TEST BORINGS

GENERALIZED WEST TO EAST VIEW



GENERALIZED NORTH TO SOUTH VIEW



EXPLANATION

- CONSTRUCTION DEBRIS WITH SOIL MATRIX (CD)
- LANDFILL DEBRIS (LF)
- FILL SOIL MATERIALS (FSM)

NOTE: THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY (I.E., NOT TO SCALE AND NO LATERAL CORRELATION BETWEEN BORINGS IS IMPLIED).

MISSION GEOSCIENCE, INC. ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS	GENERALIZED LOG OF TEST BORINGS Irwindale Motor Speedway Irwindale, California	Figure: 2 Project No.: 97-138 Date: April 1997

TABLES

TABLE 1

SUMMARY OF LABORATORY ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

TABLE 1

SUMMARY OF LABORATORY ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS
SOIL SAMPLES FROM FILL COVER

PROPOSED IRWINDALE SPEEDWAY

EPA Method	8260 / 8240 - Volatile Organics (GC/MS) (µg/kg)			8270 Semivolatile Organics (mg/kg) (All Compounds)	8015- modified (mg/kg)		ASTM D2887 (mg/kg)
Sample I.D. and depth	Benzene	1,2,4-Trimethylbenzene	8240 TCLP Extraction (All Compounds)		TVPH	TEPH	Hydrocarbon Chain Distinction
MB-7A @ 15'	ND(5)	ND(5)	ND	ND	ND(0.05)	ND(5)	C18-C24: 77 C24-C32: 243 > C32: 88 Total: 410
MB-7A@ 20'	NA	NA	NA	ND	ND(0.05)	ND(5)	NA
MB-8A @ 10'	NA	NA	NA	ND	0.14	ND(5)	NA
MB-8A @ 20'	NA	NA	NA	ND	75	ND(5)	NA
MB-8B @ 5'	NA	NA	NA	ND	0.18	ND(5)	NA
MB-8B @ 10'	5.2	7.1	ND	ND	2.5	ND(5)	C8-C11: 7.3 (Total)
MB-8B @ 15'	66	5.7	ND	ND	0.25	ND(5)	C14-C18: 16.5 C18-C24: 37 C24-C32: 104 > C32: 8.7 Total: 170
MB-8B @ 20'	NA	NA	NA	ND	0.25	ND(5)	NA
MB-15 @ 10'	NA	NA	NA	ND	ND(0.05)	ND(5)	NA

EXPLANATION:

mg/kg = milligrams per kilogram (parts per million); µg/kg = micrograms per kilogram (parts per billion, ppb).
ND = Constituents Reported as None Detected at concentrations exceeding method detection limit (in parentheses)
NA = Constituent Not Analyzed
TCLP = EPA Toxicity Characteristic Leaching Procedure; EPA Method 1311; volatiles extracted using ZHE apparatus
TVPH = Total Volatile Petroleum Hydrocarbons; TEPH = Total Extractable Petroleum Hydrocarbons

TABLE 2

SUMMARY OF LABORATORY ANALYTICAL RESULTS FOR INORGANIC COMPOUNDS

TABLE 2

SUMMARY OF LABORATORY ANALYTICAL RESULTS FOR INORGANIC COMPOUNDS
SOIL SAMPLES FROM FILL COVER

PROPOSED IRWINDALE SPEEDWAY

EPA Method	CCR TITLE 22 "CAM" METALS - EPA 6010/"7000-series" methods (mg/kg)														
Sample I.D. and depth	**Sb**	**As**	**Ba**	**Cd**	**Cr**	**Co**	**Cu**	**Pb**	**Hg**	**Mo**	**Ni**	**Se**	**Ag**	**V**	**Zn**
MB-7A @ 15'	ND	3.7	120 (0.54)	1.4	10	4.0	33	47	0.2	ND	8.0	ND	ND	18	430
MB-7A @ 20'	ND	2.5	85	ND	12	6.8	26	9.8	0.1	ND	9.3	ND	ND	25	120
MB-8A @ 20'	230 *0.3*	230 *0.45*	190 *7.5*	51 *0.25*	220 *0.9*	17 *0.15*	**13000** *ND*	**17000** *20*	0.85 *ND*	47 *ND*	1900 *1.9*	2.8 *ND*	11 *ND*	39 *0.4*	**55000** *69*
MB-8B @ 10'	ND	5.2	390 (0.21)	7.5	48	6.2	340	350 (2.3)	0.29 (0.0009)	3.9	150	ND	ND	17	1200

EXPLANATION:

mg/kg = milligrams per kilogram (parts per million, ppm).
ND = Constituents reported as None Detected above method detection limit
Values in (parenthesis) indicate results of TCLP via EPA method 1311 followed by EPA 200.7 (EPA 245.1 for Mercury)
Values in *italics type* indicate results of Cal-EPA Waste Extraction Test (WET test) followed by EPA 6010 (EPA 245.1 for Mercury).
TCLP = Toxicity Characteristic Leaching Procedure.
Boldface values indicate concentrations exceeding CCR Title 22 criteria for classification as hazardous solid waste.

ATTACHMENTS

ATTACHMENT A

WORKPLAN APPROVAL

97-138

Cal/EPA

os Angeles
Regional Water
Quality Control
oard

101 Centre Plaza Drive
onterey Park, CA
754-2156
(213) 266-7500
FAX (213) 266-7600

Pete Wilson
Governor

RECEIVED
MAR 20 1997
MISSION GEOSCIENCE, INC.

March 20, 1997

Mr. Eric Hendrix
Vice President
Mission Geoscience
1000 Quail Street, Suite 200
Newport Beach, California 92660

PROPOSED WORK PLAN FOR SHALLOW GEOTECHNICAL INVESTIGATION, PROPOSED IRWINDALE SPEEDWAY - NU-WAY LANDFILL, IRWINDALE (FILE NO. 68-13)

We have reviewed the proposed work plan, dated March 18, 1997. This plan consists of exploring the shallow subsurface conditions of the site to the depths exposed by the proposed grading activities. This includes the drilling of 14 boreholes to a total depth of 20 feet in each boring. The engineering properties of the various sub-grade materials will be evaluated, using laboratory tests, to determine suitable design criteria for developing the proposed speedway.

This letter will confirm in writing the verbal approval granted on March 19, 1997, for this proposal.

If you have any questions, please call Don Peterson at (213) 266-7578.

Rodney H. Nelson

RODNEY H. NELSON, Chief
Landfills

cc: Jim Mnoian, Nu-Way Industries
Elizabeth Haven, State Water Resources Control Board
Jorge Leon, State Water Resources Control Board, Office of the Chief Counsel

ATTACHMENT B

LOGS OF BORINGS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/20/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	378'	BORING DIAMETER	8 inches

BORING LOG NO. MB-01

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
	Landfill Debris	B	G	18 15 7		Bulk sample from 0 - 5'.		Surface : Unpaved 0-8' : **LANDFILL DEBRIS** 0-2' : Decayed lumber pieces (~10%) in soil matrix consisting of GRAVELLY CLAY to SANDY CLAY, dark brown, dry 2-3' : abundant lumber fragments (20-30%), angular concrete chips & rock pieces with max size of 1/2" in soil matrix consisting of CLAYEY SAND with gravel, dark brown, dry 3-3.5' : SANDY CLAY, dark gray, dry			
5			G	15 16 22				3.5-8' : scattered lumber fragments (~10%) in a soil matrix consisting of SANDY CLAY, dark brown, dry with specks of rust (iron oxide)			
	Construction Debris	B	G	20 21 31		Bulk sample from 10-15'.		8-21' : **CONSTRUCTION DEBRIS** 8-10' : angular concrete fragments in a soil matrix consisting of CLAYEY SAND, dark brown, dry scattered gravel, angular to sub-angular granules (1" max)			
10								10-15' : concrete, brick, lumber fragments, and asphalt granules in a soil matrix consisting of CLAYEY SAND, dry, with scattered gravels. (Note: chattering of rod & slight petroleum odor detected during drilling)			
15			G	13 14 19				15-20' : angular fragments of red brick, concrete, pieces of plastic tubing, fragments of asphalt & laminated clays (olive gray) in a soil matrix consisting of CLAYEY SAND, dry			
20			G	18 50				20-21' : fragments (1.5" maximum size) of brick and concrete in a soil matrix consisting of CLAYEY SAND, brown, moist			
25								TOTAL DEPTH = 21 FEET, Sample refusal.			

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	378'	BORING DIAMETER	8 inches

BORING LOG NO. MB-02

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
	Const. Debris	B	G	6 9 10		Bulk sample from 0 - 5'.		Surface : Unpaved 0-2' : Strong vibration of drill rods 0-8' : **CONSTRUCTION DEBRIS** 2-3' : rock chips, concrete fragments, and asphalt chips in a soil matrix consisting of SANDY CLAY, yellowish brown, dry			
5								7' : Encountered a water zone; drill cuttings wet from 7' to 13'			
								8-15' : **FILL SOIL MATERIALS**, SANDY CLAY with gravel			
10		B	G	16 26 30	CL	Bulk sample from 10-15'.		10-11.5' : SANDY CLAY, yellowish brown, moist to wet, with occasional gravel			
15	Const. Debris		G	10 16 17				15-21.5' : **CONSTRUCTION DEBRIS** 15-16.5' : concrete, bricks, asphalt, fragments (~2.5" max size) and wood chips in a soil matrix consisting of SANDY CLAY, yellowish brown, moist			
20			G	12 12 17				20-21.5': concrete, bricks, asphalt, fragments (~2.5" max size) and wood chips in a soil matrix consisting of SANDY CLAY, yellowish brown, moist			
25								TOTAL DEPTH = 21.5 FEET			

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 8-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	382'	BORING DIAMETER	8 inches

BORING LOG NO. MB-03

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Asphalt paved -4"			
								0-13': **FILL SOIL MATERIALS**, SAND-CLAY mixture with gravel			
			G	7 7 12	SC			2-2.5' : CLAYEY SAND, grayish brown, dry, with occasional chips of asphalt and angular rock pieces			
5			G	5 6 8	CL			5-6.5' : SANDY CLAY, oilve gray, damp, with subangular to subrounded gravels (~ 1/4" max); traces of iron oxides and mica flakes			
10			G	3 4 10				5-6.5' : SANDY CLAY, oilve gray, damp, with subangular to subrounded gravels (~ 1/4" max); traces of iron oxides and mica flakes			
	const. debris			50/ 0"				13-15': **CONSTRUCTION DEBRIS** Note: slow penetration from 13' to 15' with strong vibration of drill rods. Cuttings are chips of brick, concrete, quartz, in a soil matrix of SANDY CLAY. Refusal at 15 feet.			
15								TOTAL DEPTH = 15 FEET, Refusal.			
20											
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	379'	BORING DIAMETER	8 inches

BORING LOG NO. MB-04

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Unpaved			
								0-10' : **FILL SOIL MATERIALS**, SAND-CLAY mixture with gravel			
		B	G	2 8 26		Bulk sample from 0 -5'.		2-2.5' : SANDY CLAY with gravel, brownish gray, dry, moderately plastic, with angular rock and concrete fragments			
5			G	8 10 20	SC-CL			5-6.5' : CLAY, dark gray, moist, plastic with minor sand and occasional gravel (1/2" max)			
10	Construction Debris		G	17 28 33				10-11.5' : **CONSTRUCTION DEBRIS**, chips of concrete, red brick, and decayed lumber fragments in a soil a soil matrix consisting of CLAY, moist, moderately plastic			
15		B		38 60/ 3"		Bulk sample from 15-20'		15-16.5': No sample recovery, sample refusal			
20	landfill debris		G	38 50				10-11.5' : **LANDFILL DEBRIS**, concrete fragments and abundant wood chips in a soil matrix consisting of SANDY CLAY; small amount of sample recovered			
25								TOTAL DEPTH = 21 FEET, Sample refusal			

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	378'	BORING DIAMETER	8 inches

BORING LOG NO. MB-05

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Unpaved 0-11.5' : **FILL SOIL MATERIAL**			
		B	G	50 6"	SC	Bulk sample from 0 - 5'.		2-2.5' : CLAYEY SAND, brown,dry, angular to sub-angular granules (1/4" max) with minor silt (~5%) and mica flakes			
5			G	10 16 46	SC			5-6.5' : CLAYEY SAND, grayish brown, dry, micaceous with disintegrated rock fragments, and non-metallic pieces			
10			G	30 26 32	SC			10-11.5' : CLAYEY SAND, dark gray, dry, micaceous with abundant disintegrated rock fragments, minor brick pieces			
	Construction Debris							12-21' : **CONSTRUCTION DEBRIS,** concrete and brick fragments with minor wood in soil matrix			
15		B		35 ~~60~~ 6"		Bulk sample from 15-20'.		15-16' : No sample recovery			
20			G	12 5 20				20-21.5' : disintegrated brick and rock pieces in a soil matrix consisting of CLAYEY SAND, dark gray, dry			
								TOTAL DEPTH = 21.5 FEET.			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	378'	BORING DIAMETER	8 inches

BORING LOG NO. MB-06

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Unpaved 0-21.5' : **CONSTRUCTION DEBRIS**			
		B	G	6 8 10		Bulk sample from 0 - 5'.		2-3.5' : Fragments of concrete and asphalt, subrounded gravel in soil consisting of SILTY SAND with gravel and sparse clay, damp			
5	Construction Debris			60 6"				5-10' : No recovery. Drill rods vibrated strongly during drilling from 5 to 10 feet, cutting consisted of concrete pieces and gravel.			
10				100 6"				10-10.5' : No recovery except for few pieces of concrete			
								10.5 - 15' : Chips of brick, concrete, asphalt and lumber in soil matrix consisting of CLAYEY SAND, dry			
15			G	7 7 10				15-16.5' : Chips of construction debris in soil matrix consisting of CLAYEY SAND, dry			
		B				Bulk sample from 15-20'.					
20			G	5 6 8				21-21.5' : Pieces of disintegrated asphalt and concrete in a soil matrix consisting of SANDY CLAY, dark gray, damp			
								TOTAL DEPTH = 21.5 FEET.			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/20/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	379'	BORING DIAMETER	8 inches

BORING LOG NO. MB-07

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
	Construction Debris							Surface : Unpaved with shrubs and scattered pieces of concrete debris 0-10' : **CONSTRUCTION DEBRIS**			
								0-5' : Fragments of concrete,asphalt, red bricks, and wood in and a soil matrix consisting of CLAYEY SAND, grayish brown, dry			
5				10							
			G	19 22				5-6.5' :Concrete fragments (1/2" max) and friable asphalt in a soil matrix consisting of CLAYEY SAND, dark green, damp micaeous, with a slight petroleum odor			
		B				Bulk sample from 5 -10'.					
10								10-21.5' : **LANDFILL DEBRIS**			
	Landfill Debris			5 5				10-11.5' : Occasional plant fibers and plastic in a soil matrix consisting of CLAY-SAND mixture, dark gray, moist, with a slight petroleum odor			
			G	3							
15				8 18							
			G	23				15-16.5' : Plant fibers and plastic in a soil matrix consisting of CLAYEY SILT, dark gray, moist, micaeous, with occasional gravels			
		B				Bulk sample from 15-20'					
20				6 12				20-21.5' : Plant fibers and plastic in a soil matrix consisting of CLAYEY SILT, dark gray, moist, micaeous, with occasional gravels			
			G	31							
								TOTAL DEPTH = 21.5 FEET			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 3-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/20/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	378'	BORING DIAMETER	8 inches

BORING LOG NO. MB-07A

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Unpaved			
	Construction Debris							0-4' : **CONSTRUCTION DEBRIS**, concrete chips, lumber, brick, strong vibration of rods during drilling			
5			E	49 / 100 / 3"	SC			4-7' : **FILL SOIL MATERIALS** 4-5.5' : CLAYEY SAND, gray,slighlty moist, contains occasional gravels, bricks and concrete chips, some rock pieces are disintegrated and oxidized, no odor			
	Const. Debris							7-10' : **CONSTRUCTION DEBRIS**, very strong vibration of drill strings from 7' to 10'			
10				29 / 11 / 18				10-11.5 : No sample recovery 10-14' : very strong vibration of drill strings during drilling, cuttings included chips of concrete and brick			
	Landfill Debris	B						14.5-20' : **LANDFILL DEBRIS**			
15			E	24 / 14 / 10				14.5-15.5' :angular gravels, copper wire, brick and tire pieces in a soil matrix of CLAYEY SANDS, dark gray, slightly moist,only small amount of sample recovered			27.5
20			E	10 / 11 / 10	MH			20-20.5' : **FILL SOIL MATERIALS** CLAYEY SILT, olive gray to dark gray, slightly moist, moderately plastic, little sand in matrix, faint petroleum hydrocarbon odor			9.2
25								TOTAL DEPTH = 20.5 FEET.			

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 3-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/20/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	377'	BORING DIAMETER	8 inches

BORING LOG NO. MB-08

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Unpaved, littered with construction debris			
								0-14' : **CONSTRUCTION DEBRIS**			
								0-2' :concrete fragments (3" max), broken ceramic tiles, and pieces of lumber in a soil matrix consisting of plastic CLAY			
				14							
		B		20		Bulk sample from 0 -5'.		2-3.5' : Fragments of concrete, broken ceramic tiles, lumber, and red brick in a soil matrix consisting SANDY CLAY, dark gray, damp			
			G	12							
	Construction Debris										
5				18							
				36				5-6.5' : Concrete fragments (2" max) in a soil matrix consisting of GRAVELLY CLAY, dark green; sample recovery less than 6"			
			G	30							
		B									
10				13							
				19							
				19		Bulk sample from 10 -15'.		10-11.5': No sample recovery			
		B									
								14-20' : **LANDFILL DEBRIS**			
15								14-15' : cuttings have a strong petroleum odor			
	Land. Debris			13							
				17							
			G	19				15-16.5' : Decayed wood, plastic and wire in a soil matrix consisting of SANDY CLAY, dark gray, slightly moist, with a strong petroleum odor			
				50/ 0"							
20											
								TOTAL DEPTH = 20 FEET, Sample refusal			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/24/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	378'	BORING DIAMETER	8 inches

BORING LOG NO. MB-08a

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
	Construction Debris							Surface : Unpaved 0-14' : **CONSTRUCTION DEBRIS** 0-5' : Concrete, brick, wood, and asphalt fragments in a soil matrix consisting of CLAY SAND, with a slight petroleum odor Strong vibration of drill rods			
5			E	8 18 20				4-5.5' : fragments of brick, concrete, asphalt, car tires, in a soil matrix consisting of SANDY CLAY, brown to dark brown, with a slight petroleum odor			
10			E	4 9 21				9-10.5' : fragments of brick, concrete, asphalt, pieces of car tire, and plastic tubing, in a soil matrix consisting of SANDY CLAY, brown to dark brown, plastic, with a slight petroleum odor			
15	Landf. Debris		E	12 13 33				14-20.5' : **LANDFILL DEBRIS** 14-15.5' : Decayed wood and refuse, pieces of tire and plastic in a soil matrix consisting of SANDY CLAY with occasional gravel, dark gray, with a strong odor			
20			E	24 50 36				19-20.5' : Decayed wood and refuse, pieces of tire and plastic in a soil matrix consisting of SANDY CLAY with occasional gravel, dark gray, with a strong odor			13.4
25								TOTAL DEPTH = 20.5			

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/24/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	377'	BORING DIAMETER	8 inches

BORING LOG NO. MB-08b

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
	Const. Debris							Surface : Unpaved 0-10' : **CONSTRUCTION DEBRIS** 0-5' :concrete, brick, wood, and asphalt fragments in a soil matrix consisting of SANDY CLAY. Strong vibration of drill rods			
				6 11							
5			E	20				4-5.5' : Decayed wood and brick fragments in a soil matrix consisting of SANDY CLAY, dark gray, slightly moist			
								9-21' : **LANDFILL DEBRIS**			
	Landfill Debris			4							
10			E	5 8				9.5-11' : Decayed wood in a soil matrix consisting of SANDY CLAY with occasional angular gravel (1/2" max), dark gray, with a strong petroleum odor Note: sample refusal at 9', redrilled to 9.5' and collected sample			38.0
				5 6							
15			E	18				14-15.5' : Decayed wood in a soil matrix consisting of SANDY CLAY with occasional angular gravel (1/2" max), dark gray, with a strong petroleum odor			20.5
				8 10							
20			E	14				19-20.5' : Decayed wood in a soil matrix consisting of SANDY CLAY, olive gray to dark gray, with a faint petroleum odor			13.3
								TOTAL DEPTH = 20.5			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	381'	BORING DIAMETER	8 inches

BORING LOG NO. MB-09

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
	Const. Debris	B	G	6 12 15		Bulk sample from 0 - 5'.		Surface : Unpaved with grass growth 0-2' : Stong vibration of drill rods 0-5' : **CONSTRUCTION DEBRIS** 2-3.5' : pieces of lumber, plant fibers, and concrete chips in a soil matrix consisting of CLAY to CLAYEY SAND, yellowish to dark brown, dry	21	101	
5				9 10 20				5-20' : **FILL SOIL MATERIALS,** SAND-CLAY mixture, occasional gravel 5-6.5': No Sample recovery			
10		B	G	100/5"	SC	Bulk sample from 10-15'.		10-11.5' : CLAYEY SAND, yellowish brown moist, with occasional angular to subrounded gravels (max 1/4")	7	110	
15			G	9 9 11	SC			15-16.5' : CLAYEY SAND, slightly moist	26	101	
20			G	6 8 6				20-21.5': SAND-CLAY mixture with gravel, damp, plastic clay matrix	16	103	
								TOTAL DEPTH = 21.5 FEET			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	381'	BORING DIAMETER	8 inches

BORING LOG NO. MB-10

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Asphalt paved-4" thick			
								0-15' : **FILL SOIL MATERIALS**, SAND-CLAY mixture with occasional gravel			
		B	G	4 8 13	SC	Bulk sample from 0 - 5'.		2-3.5' : CLAYEY SAND, brown, moist, with subangular gravels (3/8" max) ; clay is moderately plastic			
5		B	G	8 8 15	CL	Bulk sample from 5-10'.		5-6.5': SANDY CLAY, yellowish brown to grayish brown, very moist; clay is plastic			
10			G	16 16 37	SC			10-11.5' : CLAYEY SAND, slightly wet, very dense, with occasional gravels			
15	Const. Debris		G	11 27 30				15-20.5' : **CONSTRUCTION DEBRIS** 15-16.5' : pieces of drywall, brick, and concrete in soil matrix consisting of SANDY CLAY, dark gray, wet			
20			G	100/ 6"				20-21.5': pieces of drywall, brick ,and concrete in soil matrix consisting of SANDY CLAY, dark gray, wet			
								TOTAL DEPTH = 20.5 FEET			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	383'	BORING DIAMETER	8 inches

BORING LOG NO. MB-11

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Asphalt paved-3 to 4" thick			
								0-15' : **FILL SOIL MATERIALS**, CLAY-SAND mixture with occasional gravels			
		B	G	10 14 22		Bulk sample from 0 - 5'.		2-2.5' : SANDY CLAY, yellowish (upper) to grayish (lower), dry, sparse angular gravels and pieces of asphalt	15	103	
5			G	10 13 16	CL			5-6.5': SILTY CLAY, olive to dark gray, slightly moist, micaceous, plastic	19	106	
10		B	G	8 9 13		Bulk sample from 10-13'.		10-11.5': SILTY CLAY, olive to dark gray, slightly moist, micaceous plastic	20	100	
15	Const. Debris		G	13 18 38				15-20' : **CONSTRUCTION DEBRIS** 15-16.5' : pieces of asphalt, red brick, lumber, and concrete in a soil matrix consisting of SANDY CLAY, dark brown	13	100	
20			G	20 9 18				20-21.5': pieces of asphalt, red brick, lumber, and concrete in a soil matrix consisting of SANDY CLAY, dark brown			
								TOTAL DEPTH = 21.5 FEET			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	382'	BORING DIAMETER	8 inches

BORING LOG NO. MB-12

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
	Const. Debris	B	G	4 5 12		Bulk sample from 0 - 5'.		Surface : Unpaved, gravelly soil with grass and shrubs 0-5' : **CONSTRUCTION DEBRIS** 2-3.5' : fragments of concrete, lumber, red brick, and concrete in a soil matrix consisting of SANDY CLAY, dark brown, with occasional angular gravels			
5			G	14 26 32	CL			5-20': **FILL SOIL MATERIALS,** CLAYEY SAND with occasional gravel 5-6.5': CLAYEY SAND, brown, damp, with angular gavels (1/2" max)			
10		B	G	10 14 22		Bulk sample from 10-13'.		10-11.5' : CLAYEY SAND, brownish gray, moist, with interbedded clay seams (upper 6" and lower 4" of the sample)			
15				75/2"				Sample refusal at 15'; drilled 1', continued sampling			
			G	12 6 6				16-17.5' : CLAYEY SAND, brownish gray, moist, medium dense, with occasional gravel			
20	landfill debris		G	9 12 14				20-21.5': **LANDFILL DEBRIS,** fragments of asphalt and decayed wood in a soil matrix consisting of CLAYEY SAND and SANDY CLAY with angular gravel, slightly moist			
25								TOTAL DEPTH = 21.5 FEET			

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/21/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	382'	BORING DIAMETER	8 inches

BORING LOG NO. MB-13

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Asphalt paved-4" thick			
								0-15': **FILL SOIL MATERIALS**, SAND-CLAY mixture with occasional gravel			
				8							
				13				2-3.5' : SANDY CLAY, yellowish brown, with occasional gravels mixed with CLAY, olive gray, plastic; damp			
			G	20							
5				10	SC			5-6.5': SAND-CLAY mixture, damp, micaeous, clay is plastic, with occasional gravels (3/8" max)			
			G	22							
				35							
		B				Bulk sample from 5 - 7'.					
10				8							
				8				10-11.5' : SILTY CLAY, brown to gray, moist, micaceous, plastic			
			G	11							
					CL						
15				100/				15-21.5': **CONSTRUCTION DEBRIS**			
			G	6"				15-16.5': asphalt and concrete chips in a soil matrix consisting of GRAVELLY CLAY, dark gray, dry			
	Const. Debris	B				Bulk sample from 15-20'.					
20				11				20-21.5': disintegrated asphalt and pieces of red bricks, decayed wood, and weathered rock in a soil matrix consisting of GRAVELLY CLAY, dry			
			G	28							
				30							
								TOTAL DEPTH = 21.5 FEET			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 6-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/20/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION	381'	BORING DIAMETER	8 inches

BORING LOG NO. MB-14

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Unpaved with shrubs and grass			
								0-20': **FILL SOIL MATERIALS**, SAND-CLAY mixture with occasional gravel			
		B	G	4 14 16	CL	Bulk sample from 2 - 6'.		2-3.5' : SANDY CLAY, yellowish brown to gray, dry	27	85	
5			G	10 12 13	MH			5-6.5': CLAYEY SILT, yellowish brown, moist, low plasticity, micaceous	12	109	
10		B	G	9 12 20	CL	Bulk sample from 10-15'.		10-11.5' : SANDY CLAY with gravel, yellowish brown, very moist, micaceous, with seams of plastic clay	12	124	
15		B	G	100/ 6"		Bulk sample from 15-20'.		15-16.5': SANDY CLAY, dary gray, moist, micaceous, with occasional gravels	19	93	
20	const. debris		G	3 21 30				20-21.5': **CONSTRUCTION DEBRIS**, concrete fragments (>10%, max size 3") in a soil matrix consisting of SANDY-CLAY with gravel, dry	13		
								TOTAL DEPTH = 21.5 FEET			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 2-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

PROJECT NAME	Irwindale Motor Speedway	DRILLER	Beylik Drilling
PROJECT NO.	97-138	TYPE OF RIG	CME 75 Hollow Stem Auger
DATE	3/24/97	DRIVE WT.	140 lbs
LOGGED BY	RA	DROP	30 inches
ELEVATION		BORING DIAMETER	8 inches

BORING LOG NO. MB-15

DEPTH (FEET)	GRAPHIC LOG	SAMPLE TYPE	SAMPLE	BLOW COUNT	SOILS CLASS (U.S.C.S.)	GEOLOGIC NOTE	WELL DETAIL	GEOLOGICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	OVM (PPM)
								Surface : Unpaved 0-14' : **CONSTRUCTION DEBRIS**			
5	Construction Debris		E	100/ 6"				5-5.5' : Concrete fragments in a soil matrix consisting of GRAVELLY CLAY, brown, slightly moist; clay is plastic			
								Strong vibration of drill string			
10			E	36 40 10				9-10.5' : fragments of brick and concrete in a soil matrix consisting of SANDY CLAY with gravel, brown and yellow, clay matrix is plastic			
15	Landf. Debris		E	100				14-20.5' : **LANDFILL DEBRIS** 14-15.5' : Decayed wood and refuse and concrete fragments in a soil matrix consisting of CLAY, dark gray to black, slightly moist, plastic			6.5
20			E	15 50 83				19-20.5' : Decayed wood, concrete fragments (1" max), pieces of glass and plastic in a soil matrix consisting of CLAYEY SAND, dry			
								TOTAL DEPTH = 20.5			
25											

SAMPLE TYPES:
- C ROCK CORE
- B BULK SAMPLE
- D DRIVE SAMPLE
- G SPLIT SPOON 1-INCH RING
- E SPLIT SPOON 3-INCH RING
- S SPT

GEOLOGIC SYMBOLS:
- B BEDDING PLANE
- J JOINTING
- F FAULT
- S SHEAR
- C CONTACT
- CS CLAY SEAM
- GROUNDWATER WHILE DRILLING
- STABILIZED GROUNDWATER

MISSION GEOSCIENCE, INC.
ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

ATTACHMENT C

LABORATORY ANALYSES FOR ORGANIC COMPOUNDS

SIERRA
LABORATORIES

Date: 3/31/97

Mission Geoscience		Client Project Number:	97-138/Irwindale Speedway
1000 Quail Street, Suite 200		Date Sampled:	3/24/97
Newport Beach, CA 92660		Date Samples Received:	3/26/97
Attention:	Mr. Eric Hendrix	Sierra Project No.:	9703-264

Attached are the results of the chemo-physical analysis of the sample(s) from the project identified above.

The samples were received by Sierra Laboratories, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analysis were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report. If you require additional retaining time, please advise us.

Richard K. Forsyth
Laboratory Director

Reviewed

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the clientto whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

26052 Merit Circle, Suite 105, Laguna Hills, California 92653
Telephone: (714) 348-9389 Fax: (714) 348-9115

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	SM
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/31/97

TOTAL PETROLEUM HYDROCARBONS
EPA 8015 MODIFIED - GASOLINE FUEL

SIERRA Sample No.	Client Sample No.	Concentration (mg/kg)	Dilution Factor	% Surrogate Recovery	MDL (mg/kg)
04427	MB-07A-15	ND	1	97	0.05
04428	MB-07A-20	ND	1	98	0.05
04429	MB-08B-5	0.18	1	97	0.05
04430	MB-08B-10	2.5	1	96	0.05
04431	MB-08B-15	0.25	1	98	0.05
04432	MB-08B-20	0.25	1	97	0.05
04433	MB-08A-10	0.14	1	85	0.05
04434	MB-08A-20	75	50	98	0.05
04435	MB-15-10	ND	1	100	0.05

Quality Assurance/Quality Control Data

QC Sample ID: 9703-264-4427

Compound	LCS % Rec.	QC Limits	Spike % Rec.	Spike Dup % Rec.	QC Limits	RPD	QC Limits
TPH as Gasoline	108	80-120	108	110	50-150	1.4	0-30

ND means Not Detected

Reporting Limit (RL) = Method Detection Limit (MDL) x Dilution Factor

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	LT
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/31/97

TOTAL PETROLEUM HYDROCARBONS
EPA 8015 MODIFIED - DIESEL FUEL

SIERRA Sample No.	Client Sample No.	Concentration (mg/kg)	Dilution Factor	% Surrogate Recovery	MDL (mg/kg)
04427	MB-07A-15	ND	10	76	5.0
04428	MB-07A-20	ND	1	61	5.0
04429	MB-08B-5	ND	5	70	5.0
04430	MB-08B-10	ND	5	64	5.0
04431	MB-08B-15	ND	5	97	5.0
04432	MB-08B-20	ND	5	67	5.0
04433	MB-08A-10	ND	5	56	5.0
04434	MB-08A-20	ND	5	105	5.0
04435	MB-15-10	ND	5	92	5.0

Quality Assurance/Quality Control Data

QC Sample ID: 9703-264-4427

Compound	LCS % Rec.	QC Limits	Spike % Rec.	Spike Dup % Rec.	QC Limits	RPD	QC Limits
TPH as Gasoline	103	80-120	108	95	50-150	13.0	0-30

ND means Not Detected

Reporting Limit (RL) = Method Detection Limit (MDL) x Dilution Factor

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/26/97
Sierrra Project No.:	9703-264	**Analyst:**	LT
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/31/97

ASTM METHOD D2887 - Carbon Range Distribution of Petroleum Hydrocarbons

	Concentration, mg/kg				
Client Sample No.:	MB-07A-15	MB-08B-10	MB-08B-15		**Method Detection Limit, mg/kg**
Sierra Sample No.:	04427	04430	04431		
COMPOUNDS:					
HC≤8	ND	ND	ND		1
C8≤HC<C9	ND	2.7	ND		1
C9≤HC<C10	ND	2.1	ND		1
C10≤HC<C11	ND	2.5	ND		1
C11≤HC<C12	ND	ND	ND		1
C12≤HC<C14	ND	ND	ND		1
C14≤HC<C16	ND	ND	4.5		1
C16≤HC<C18	ND	ND	12		1
C18≤HC<C20	19	ND	9		1
C20≤HC<C24	58	ND	28		1
C24≤HC<C28	190	ND	77		1
C28≤HC<C32	53	ND	27		1
C32≤HC	88	ND	8.7		1
Total:	410	7.3	170		
Dilution Factor	10	5	5		**QC Limits**
% Surrogate Recovery:	76	64	97		60-130

Quality Assurance/Quality Control Data

QC Sample ID: 9703-084

Compounds	**LCS % Rec.**	**QC Limits**	**Spike % Rec.**	**Spike Dup % Rec.**	**QC Limits**	**RPD**	**QC Limits**
Diesel Fuel	110	80-120	107	111	50-150	4.0	0-30

ND means Not Detected

Reporting Limit (RL) = Method Detection Limit (MDL) x Dilution Factor

HC = Hydrocarbon

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	WCH
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/27/97

VOLATILE ORGANICS (GC/MS)
EPA METHOD 8260

	Concentration, µg/kg				
Client Sample No.:	MB-07A-15	MB-08B-10	MB-08B-15		**Method Detection Limit, µg/kg**
Sierra Sample No.:	04427	04430	04431		
COMPOUNDS:					
Benzene	ND	5.2	66		5
Bromobenzene	ND	ND	ND		5
Bromochloromethane	ND	ND	ND		5
Bromodichloromethane	ND	ND	ND		5
Bromoform	ND	ND	ND		5
Bromomethane	ND	ND	ND		5
2-Butanone	ND	ND	ND		5
n-Butylbenzene	ND	ND	ND		5
sec-Butylbenzene	ND	ND	ND		5
tert-Butylbenzene	ND	ND	ND		5
Carbon tetrachloride	ND	ND	ND		5
Chlorobenzene	ND	ND	ND		5
Chloroethane	ND	ND	ND		5
Chloroform	ND	ND	ND		5
Chloromethane	ND	ND	ND		5
2-Chlorotoluene	ND	ND	ND		5
4-Chlorotoluene	ND	ND	ND		5
Dibromochloromethane	ND	ND	ND		5
1,2-Dibromo-3-chloropropane	ND	ND	ND		5
1,2-Dibromomethane	ND	ND	ND		5
Dibromomethane	ND	ND	ND		5
1,2-Dichlorobenzene	ND	ND	ND		5
1,3-Dichlorobenzene	ND	ND	ND		5
1,4-Dichlorobenzene	ND	ND	ND		5
Dichlorodifluoromethane	ND	ND	ND		5

CONTINUED

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	WCH
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/27/97

VOLATILE ORGANICS (GC/MS)
EPA METHOD 8260 CONTINUED

	Concentration, µg/kg				
Client Sample No.:	MB-07A-15	MB-08B-10	MB-08B-15		**Method Detection Limit, µg/kg**
Sierra Sample No.:	04427	04430	04431		
COMPOUNDS:					
1,1-Dichloroethane	ND	ND	ND		5
1,2-Dichloroethane	ND	ND	ND		5
1,1-Dichloroethene	ND	ND	ND		5
cis 1,2-Dichloroethene	ND	ND	ND		5
trans 1,2-Dichloroethene	ND	ND	ND		5
1,2-Dichloropropane	ND	ND	ND		5
1,3-Dichloropropane	ND	ND	ND		5
2,2-Dichloropropane	ND	ND	ND		5
1,1-Dichloropropene	ND	ND	ND		5
cis-1,3-Dichloropropene	ND	ND	ND		5
trans-1,3-Dichloropropene	ND	ND	ND		5
Ethylbenzene	ND	ND	ND		5
Hexachlorobutadiene	ND	ND	ND		5
Isopropylbenzene	ND	ND	ND		5
4-Isopropyltoluene	ND	ND	ND		5
Methylene Chloride	ND	ND	ND		5
Napthalene	ND	ND	ND		5
n-Propylbenzene	ND	ND	ND		5
Styrene	ND	ND	ND		5
1,1,1,2-Tetrachloroethane	ND	ND	ND		5
1,1,2,2-Tetrachloroethane	ND	ND	ND		5
Tetrachloroethene	ND	ND	ND		5
Toluene	ND	ND	ND		5
1,2,3-Trichlorobenzene	ND	ND	ND		5
1,2,4-Trichlorobenzene	ND	ND	ND		5
1,1,1-Trichloroethane	ND	ND	ND		5
1,1,2-Trichloroethane	ND	ND	ND		5
Trichloroethene	ND	ND	ND		5

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	WCH
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/27/97

VOLATILE ORGANICS (GC/MS)
EPA METHOD 8260 CONTINUED

	Concentration, µg/kg				
Client Sample No.:	MB-07A-15	MB-08B-10	MB-08B-15		**Method Detection Limit, µg/kg**
Sierra Sample No.:	04427	04430	04431		
COMPOUNDS:					
Trichlorofluoromethane	ND	ND	ND		5
1,2,3-Trichloropropane	ND	ND	ND		5
1,2,4-Trimethylbenzene	ND	7.1	5.7		5
1,3,5-Trimethylbenzene	ND	ND	ND		5
Vinyl Chloride	ND	ND	ND		5
m,p-Xylenes	ND	ND	ND		5
o-Xylene	ND	ND	ND		5
Dilution Factor	1	1	1		**QC Limits**
%Surrogate Recoveries:					
Dibromoflouromethane	117	106	111		80-120
Toluene-d8	88	89	95		81-117
4-Bromofluorobenzene	81	88	92		74-121

Quality Assurance/Quality Control Data

QC Sample ID: 9703-264-4431

Compounds	**LCS**	**Spike % Rec.**	**Spike Dup % Rec.**	**QC Limits**	**RPD**	**QC Limits**
1,1-Dichloroethene	96	105	92	50-150	13	0-30
Trichloroethene	91	89	75	71-157	17	0-30
Benzene	97	103	110	37-151	7	0-30
Toluene	97	98	86	47-150	13	0-30
Chlorobenzene	89	104	89	37-160	16	0-30

ND means Not Detected

Reporting Limit (RL) = Method Detection Limit (MDL) x Dilution Factor

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	WCH
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	TCLP Extract on Soil	**Report Date:**	3/31/97

TCLP VOLATILE ORGANICS - (GC/MS)
EPA METHOD 8240

	Concentration, mg/l				
Client Sample No.:	MB-07A-15	MB-08B-15			**Method Detection Limit, mg/L**
Sierra Sample No.:	04427	04431			
COMPOUNDS:					
Acrolein	ND	ND			0.01
Acrylonitrile	ND	ND			0.01
Acetone	ND	ND			0.01
Benzene	ND	ND			0.005
Bromodichloromethane	ND	ND			0.005
Bromomethane	ND	ND			0.005
Bromoform	ND	ND			0.005
2-Butanone	ND	ND			0.02
Carbon tetrachloride	ND	ND			0.005
Chlorobenzene	ND	ND			0.005
Chloroethane	ND	ND			0.005
2-Chloroethyl vinyl ether	ND	ND			0.005
Chloroform	ND	ND			0.005
Chloromethane	ND	ND			0.005
Dibromochloromethane	ND	ND			0.005
1,2-Dichlorobenzene	ND	ND			0.005
1,3-Dichlorobenzene	ND	ND			0.005
1,4-Dichlorobenzene	ND	ND			0.005
1,1-Dichloroethane	ND	ND			0.005
1,2-Dichloroehtane	ND	ND			0.005
1,1-Dichloroethylene	ND	ND			0.005
trans-1,2-Dichloroethene	ND	ND			0.005
1,2-Dichloropropane	ND	ND			0.005
cis-1,3-Dichloropropane	ND	ND			0.005
trans-1,3-Dichloropropane	ND	ND			0.005
Ethyl Benzene	ND	ND			0.005

CONTINUED

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	WCH
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	TCLP Extract on Soil	**Report Date:**	3/31/97

EPA METHOD 8240 CONTINUED

	Concentration, mg/L				
Client Sample No.:	MB-07A-15	MB-08B-15			**Method Detection Limit, mg/L**
Sierra Sample No.:	04427	04431			
COMPOUNDS:					
2-Hexanone	ND	ND			0.02
4-Methyl-2-pentanone	ND	ND			0.02
Methylene Chloride	ND	ND			0.005
Styrene	ND	ND			0.005
Tetrachloroethene	ND	ND			0.005
Toluene	ND	ND			0.005
Total Xylenes	ND	ND			0.005
1,1,2,2-Tetrachloroethane	ND	ND			0.005
1,1,1-Trichloroethane	ND	ND			0.005
1,1,2-Trichloroethane	ND	ND			0.005
Trichloroethylene	ND	ND			0.005
Trichlorofluoromethane	ND	ND			0.005
Vinyl Chloride	ND	ND			0.005
Dilution Factor	1	1			**QC Limits**
%Surrogate Recoveries:					
Dibromoflouromethane	110	117			80-120
Toluene-d8	102	104			81-117
4-Bromofluorobenzene	85	87			74-121

Quality Assurance/Quality Control Data

QC Sample ID: 9608-116-13363

Compounds	**LCS % Rec.**	**Spike % Rec.**	**Spike Dup % Rec.**	**QC Limits**	**RPD**	**QC Limits**
1,1-Dichloroethene	87	80	82	50-150	2	0-30
Trichloroethene	95	91	93	71-157	2	0-30
Benzene	98	99	100	37-151	1	0-30
Toluene	100	98	102	47-150	4	0-30
Chlorobenzene	87	86	89	37-160	3	0-30

ND means Not Detected

Reporting Limit (RL) = Method Detection Limit (MDL) x Dilution Factor

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Extracted:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	WCH
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/31/97

SEMIVOLATILE ORGANICS (GC/MS)
EPA METHOD 8270

	Concentration, mg/kg				
Client Sample No.:	MB-07A-15	MB-08B-15			**Method Detection Limit, mg/kg**
Sierra Sample No.:	04427	04431			
COMPOUNDS:					
Acenaphthene	ND	ND			0.5
Acenaphthylene	ND	ND			0.5
Anthracene	ND	ND			0.5
Benzidine	ND	ND			0.5
Benzo(a)anthracene	ND	ND			0.5
Benzo(b)fluoranthene	ND	ND			0.5
Benzo(k)fluoranthene	ND	ND			0.5
Benzo(a)pyrene	ND	ND			0.5
Benzo(ghi)perylene	ND	ND			0.5
Benzyl Alcohol	ND	ND			0.5
Bis(2-chloroethyl)ether	ND	ND			0.5
Bis(2-chloroethoxy)methane	ND	ND			0.5
Bis(2-ehtylhexyl)phthalate	ND	ND			0.5
Bis(2-chloroisopropyl)ether	ND	ND			0.5
4-Bromophenyl phenyl ether	ND	ND			0.5
Butyl Benzylphthalate	ND	ND			0.5
4-Chloroaniline	ND	ND			0.5
2-Chlorophenol	ND	ND			0.5
4-Chloro-3-Methylphenol	ND	ND			0.5
2-Chloronapthalene	ND	ND			0.5
4-Chlorophenyl phenyl ether	ND	ND			0.5
Chrysene	ND	ND			0.5
Dibenzo(a,h)anthracene	ND	ND			0.5
Dibenzofuran	ND	ND			0.5
1,3-Dichlorobenzene	ND	ND			0.5
1,2-Dichlorobenzene	ND	ND			0.5
1,4-Dichlorobenzene	ND	ND			0.5
3,3-Dichlorobenzidine	ND	ND			1.0
2,4-Dichlorophenol	ND	ND			0.5

CONTINUED

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Extracted:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	WCH
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/31/97

EPA METHOD 8270 CONTINUED

	Concentration, mg/kg				
Client Sample No.:	MB-07A-15	MB-08B-15			**Method Detection Limit, mg/kg**
Sierra Sample No.:	04427	04431			
COMPOUNDS:					
Diethyl phthalate	ND	ND			0.5
2,4-Dimethylphenol	ND	ND			0.5
Dimethyl phthalate	ND	ND			0.5
Di-n-butyl phthalate	ND	ND			0.5
2,4-Dinitrophenol	ND	ND			0.5
4,6-Dinitro-2-Methyl phenol	ND	ND			0.5
2,4-Dinitrotoluene	ND	ND			0.5
2,6-Dinitrotoluene	ND	ND			0.5
Di-n-octyl phthalate	ND	ND			0.5
Fluoranthene	ND	ND			0.5
Fluorene	ND	ND			0.5
Hexachlorobenzene	ND	ND			0.5
Hexachlorobutadiene	ND	ND			0.5
Hexachlorocyclopentadiene	ND	ND			0.5
Hexachloroethane	ND	ND			0.5
Indeno(1,2,3-cd)pyrene	ND	ND			0.5
Isophorone	ND	ND			0.5
2- Methylnapthalene	ND	ND			0.5
2- Methylphenol	ND	ND			0.5
4- Methylphenol	ND	ND			0.5
Naphthalene	ND	ND			0.5
2- Nitroaniline	ND	ND			0.5
3- Nitroaniline	ND	ND			0.5
4- Nitroaniline	ND	ND			0.5
Nitrobenzene	ND	ND			0.5
2-Nitrophenol	ND	ND			0.5
4-Nitrophenol	ND	ND			0.5
N-Nitrosodiphenylamine	ND	ND			0.5
N-Nitrosodipropyllamine	ND	ND			0.5

CONTINUED

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Extracted:**	3/26/97
		Date Analyzed:	3/26/97
Sierra Project No.:	9703-264	**Analyst:**	WCH
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/31/97

EPA METHOD 8270 CONTINUED

	Concentration, mg/kg				
Client Sample No.:	MB-07A-15	MB-08B-15			**Method Detection Limit, mg/kg**
Sierra Sample No.:	04427	04431			
Pentachlorophenol	ND	ND			0.5
Phenanthrene	ND	ND			0.5
Phenol	ND	ND			0.5
Pyrene	ND	ND			0.5
1,2,4- Trichlorobenzene	ND	ND			0.5
2,4,5- Trichlorophenol	ND	ND			0.5
2,4,6- Trichlorophenol	ND	ND			0.5
Hexachlorocyclopentadiene	ND	ND			0.5
N-Nitrosodiphenylamine	ND	ND			0.5
Dilution Factor	1	1			**QC Limits**
%Surrogate Recoveries:					
2-Fluorophenol	54	76			23-120
D5-Phenol	46	56			30-115
D5-Nitrobenzene	70	82			18-137
2-Fluorobiphenyl	71	85			24-113
2,4,6-Tribromophenol	63	74			25-121
D14-Terphenyl	89	105			19-122

Quality Assurance/Quality Control Data

QC Sample ID: 9703-241-04255

Compounds	**LCS**	**Spike % Rec.**	**Spike Dup % Rec.**	**QC Limits**	**RPD**	**QC Limits**
Phenol	53	64	70	5-112	10	0-30
2-Chlorophenol	60	75	80	23-134	7	0-30
Pentachlorophenol	77	87	100	14-176	14	0-30
1,4-Dichlorobenzene	54	42	42	20-124	0	0-30
N-Nitrosodi-n-propylamine	76	87	90	0-230	3	0-30
Acenaphthene	61	50	40	47-145	22	0-30
2,4-Dinitrotoluene	59	76	76	39-139	0	0-30
Pyrene	65	52	52	52-115	0	0-30
1,2,4-Trichlorobenzene	62	49	48	44-142	2	0-30
4-Nitrophenol	57	67	65	0-132	2	0-30
4-Chloro-3Methylphenol	72	77	79	22-147	2	0-30

ND means Not Detected

Reporting Limit (RL) = Method Detection Limit (MDL) x Dilution Factor

ATTACHMENT D

LABORATORY ANALYSES FOR INORGANIC COMPOUNDS

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/27/97
Sierra Project No.:	9703-264	**Analyst:**	JBN
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/31/97

TTLC TITLE 22 SOIL/HAZARDOUS WASTE
EPA 6010 / 7471

		Concentration, mg/kg				
Client Sample No.:		MB-07A-15	MB-07A-20	MB-08B-10	MB-08A-20	**Reporting Limit, mg/kg**
Sierra Sample No.:		04427	04428	04430	04434	
CONSTITUENTS:	**TTLC Limits:**					
Antimony	500	ND	ND	ND	230	3.0
Arsenic	500	3.7	2.5	5.2	230	2.0
Barium	10,000	120	85	390	190	0.50
Beryllium	75	ND	ND	ND	ND	0.20
Cadmium	100	1.4	ND	7.5	51	0.50
Chromium	2,500	10	12	48	220	3.0
Cobalt	8,000	4.0	6.8	6.2	17	2.0
Copper	2,500	33	26	340	13000	1.0
Lead	1,000	47	9.8	350	17000	2.0
Mercury	20	0.2	0.1	0.29	0.85	0.05
Molybdenum	3,500	ND	ND	3.9	47	1.5
Nickel	2,000	8.0	9.3	150	1900	1.0
Selenium	100	ND	ND	ND	2.8	1.0
Silver	500	ND	ND	ND	11	0.50
Thallium	700	ND	ND	ND	ND	2.0
Vanadium	2,400	18	25	17	39	1.0
Zinc	5,000	430	120	1200	55000	1.0
Dilution Factor						

ND means Not Detected.

* Hg Analyzed by CVAA

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/26/97
		Date Analyzed:	3/28/97
Sierra Project No.:	9703-264	**Analyst:**	JBN
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	3/31/97

FEDERAL REGISTER 1311: TCLP - EPA 200.7
MERCURY - EPA 245.1

	Concentration, mg/l				
Client Sample No.:	MB-07A-15	MB-08B-10			**Reporting Limit, mg/l**
Sierra Sample No.:	04427	04430		TCLP Limits	
CONSTITUENTS:					
Arsenic	ND	ND		5.0	0.30
Barium	0.54	0.21		100	0.05
Cadmium	ND	ND		1.0	0.08
Chromium	ND	ND		5.0	0.05
Lead	ND	2.3		5.0	0.30
Mercury	ND	0.0009		0.2	0.0005
Selenium	ND	ND		1.0	0.30
Silver	ND	ND		5.0	0.04
Dilution Factor					

ND means Not Detected

* Hg Analyzed by CVAA

Mission Geoscience, Inc.		**Date Sampled:**	3/24/97
1000 Quail Street, Suite 200		**Date Received:**	3/26/97
Newport Beach, CA 92660		**Date Prepared:**	3/28/97
		Date Analyzed:	4/1/97
Sierra Project No.:	9703-264 Addendum	**Analyst:**	JBN
Client Project ID:	97-138/Irwindale Speedway		
Sample Matrix:	Soil	**Report Date:**	4/1/97

TITLE 22 STLC - EPA 6010
MERCURY - EPA 245.1

		Concentration, mg/l			
Client Sample No.:		MB-08A-20			**Reporting Limit, mg/l**
Sierra Sample No.:		04434			
CONSTITUENTS:	**STLC Limits:**				
Antimony	15	0.30			0.15
Arsenic	5.0	0.45			0.30
Barium	100	7.5			0.05
Beryllium	0.75	ND			0.02
Cadmium	1.0	0.25			0.02
Chromium	560	0.90			0.05
Cobalt	80	0.15			0.10
Copper	25	ND			0.02
Lead	5.0	20			0.30
Mercury	0.20	ND			0.005
Molybdenum	350	ND			0.05
Nickel	20	1.9			0.13
Selenium	1.0	ND			0.30
Silver	5.0	ND			0.04
Thallium	7.0	ND			0.30
Vanadium	24	0.40			0.05
Zinc	250	69			0.07
Dilution Factor					

ND means Not Detected.

4103-264

PROJECT NUMBER:	PROJECT ADDRESS:	TURNAROUND TIME REQUESTED:
97-138	400 EAST LIVE OAK, IRWINDALE IRWINDALE SPEEDWAY	☐ 24-HR ☒ 48-HR ☐ NORMAL ☐ OTHER

SAMPLER'S SIGNATURE: Ronnie Almero (Mission Geoscience)

SAMPLE NUMBER	DATE	TIME	# OF CONTAINERS	PRESERVATIVES	EPA 8015-mod TVH AND TEH	EPA 8015-HC CHAIN	EPA 8260	EPA 8260 w/ TCLP	EPA 8270	EPA 6010-CAM METALS (FULL)	EPA 6010-CAM w/ TCLP	REMARKS:
MB-07A-15	3/24/97	7:00 AM	1 brass sleeve	4427	X	X	X	X	X		X	
MB-07A-20				4428	X					X		
MB-08B-5				4429	X							
MB-08B-10				4430	X	X	X	[redacted]	[redacted]	X	X	
MB-08B-15				4431	X	X	X	X	X			
MB-08B-20				4432	X							
MB-08A-10				4433	X							
MB-08A-20				4434	X					X		
MB-15-10	3/24/97	11:00 AM	1 brass sleeve	4435	X							

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Ronnie Almero	3/26/97	7:55	[signature]
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

FAX RESULTS TO: ERIC HENDRIX
(714) 955-9088 (project manager)

MAIL ORIGINALS TO:

MISSION GEOSCIENCE, INC.
1000 QUAIL STREET, SUITE 200
NEWPORT BEACH, CALIFORNIA 92660
Phone (714) 955-9086

ATTACHMENT E

PETROLEUM HYDROCARBON CHROMATOGRAM

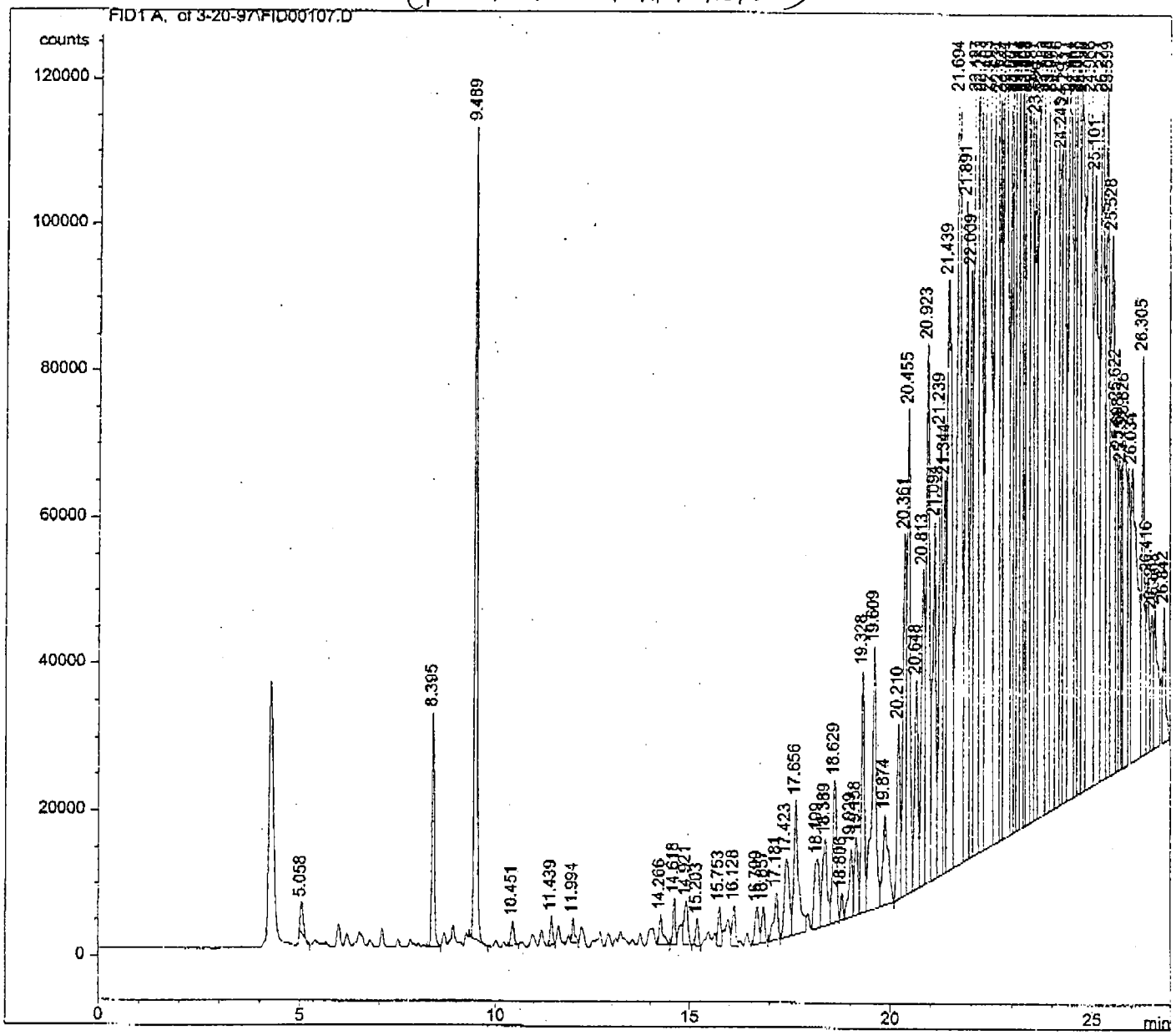
File C:\HPCHEM\1\DATA\3-20-97\FID00107.D

==========

Injection Date : 3/26/97 2:35:53 PM
Sample Name : 4430 (MB-08B-10)
Acq. Operator : Suzanne Morgan

Seq. Line : -
Vial : 1
Inj : -
Inj Volume : Manually

Method : C:\HPCHEM\1\METHODS\EPA8015.M
Last changed : 2/24/97 12:34:33 PM by Suzanne Morgan
EPA8015 MODIFIED GASOLINE (PURGE AND TRAP ANALYSIS)



Chromatogram

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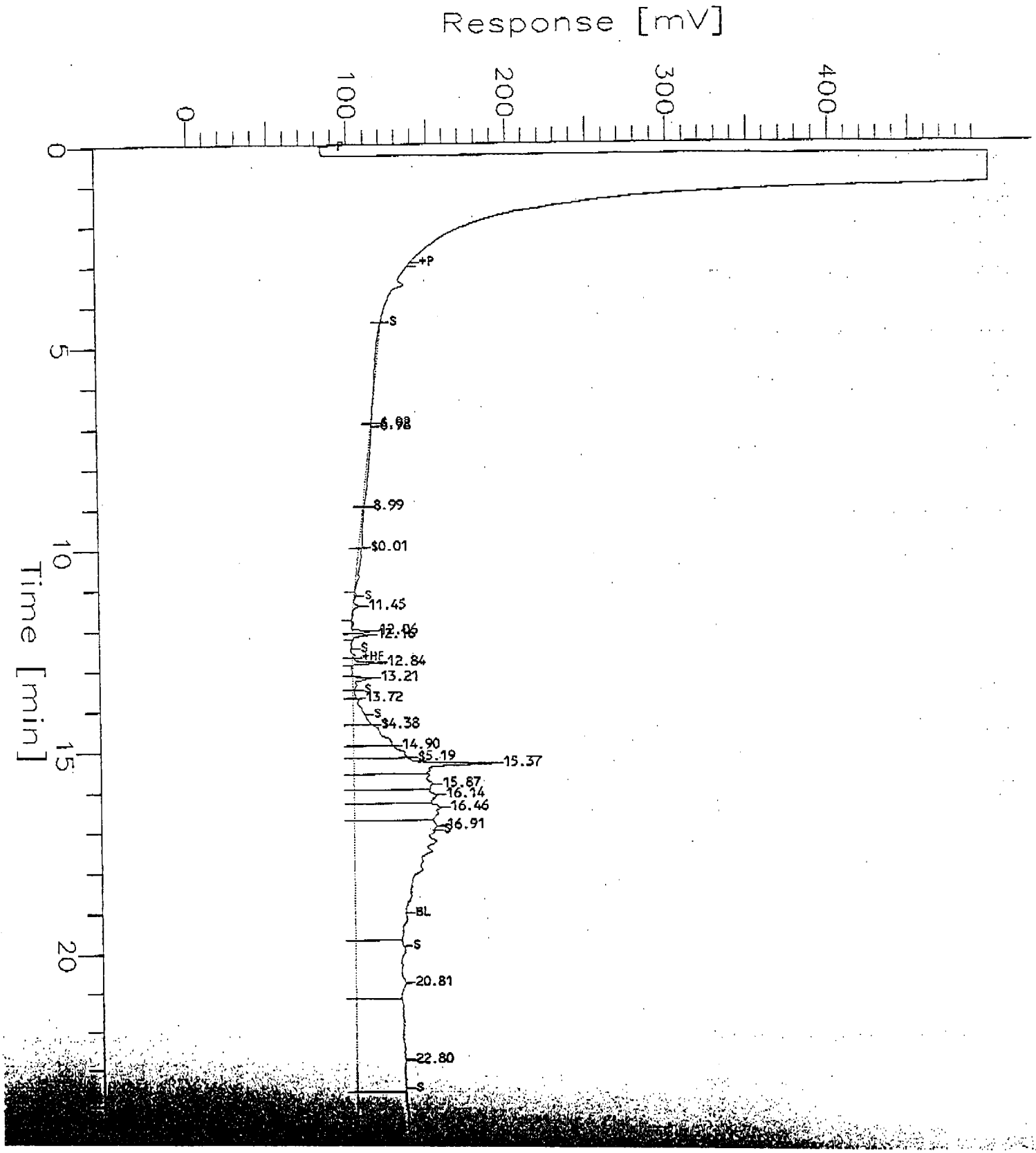
Method : DIESEL.ins
Start Time : 0.00 min End Time : 25.40 min
Scale Factor: 1.0 Plot Offset: 0 mV

Sample #: MB-07A-15 Page 1 of 1
Date : 3/27/97 10:17 AM
Time of Injection: 3/26/97 09:39 PM
Low Point : 0.00 mV High Point : 500.00 mV
Plot Scale: 500.0 mV



Chromatogram

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FileName : c:\2700\DIES040A.raw
Method : DIESEL.ins
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Scale Factor: 0.0

End Time : 25.40 min
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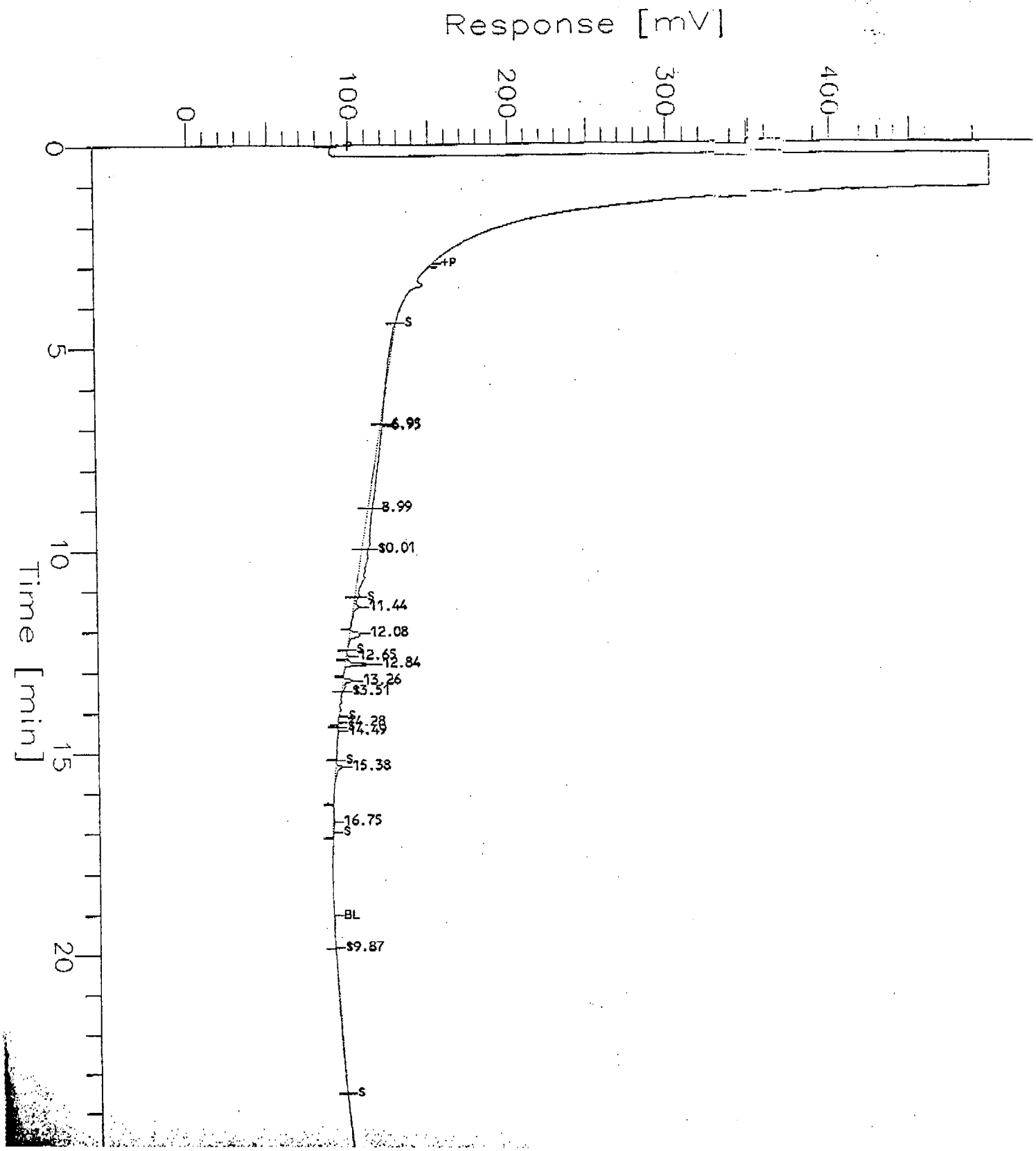
Sample #: MB-08B-10
Date : 3/26/97 09:02 PM
Time of Injection: 3/26/97 08:36 PM
Low Point : 0.00 mV
Plot Scale: 500.0 mV

Page 1 of 1
High Point : 500.00 mV



Preliminary Summary of Irwindale Speedway Redevelopment Constraints
Former Nu-View Landfill
400 East Live Oak Avenue, Irwindale, California

Mission Geoscience, Inc.

March 10, 1997

MISSION GEOSCIENCE, INC.

LOS ANGELES
SAN FRANCISCO
NEW YORK
ATLANTA
WASHINGTON
DALLAS
HOUSTON

ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

March 10, 1997

Mr. Michael J. Hoppe, Jr.
General Counsel
IRWINDALE SPEEDWAY, LLC
18301 Von Karman Avenue, Suite 1170
Irvine, California 92612-1009

RE: PRELIMINARY SUMMARY OF
IRWINDALE SPEEDWAY DEVELOPMENT CONSTRAINTS
Former Nu-Way Landfill
400 East Live Oak Avenue, Irwindale, California
MISSION File No. 97-138

Dear Mr. Hoppe:

In accordance with your request and authorization following our meeting of February 18, 1997, Mission Geoscience, Inc. (MISSION) has prepared this summary of environmental and geotechnical engineering compliance or design constraint issues which, in our opinion, should be considered by the Irwindale Speedway LLC (ISLLC) during their acquisition of the ground lease for the proposed speedway property from Nu-Way Industries, and during subsequent design phases of the proposed speedway and appurtenant structures, pavement sections and/or landscaping.

The summary herein represents a "streamlined" version of those key SITE redevelopment and design constraints, prepared for your convenience and discussion. A more comprehensive written discussion of SITE operational and regulatory history, and its impact upon the proposed development, may be provided to the ISLLC at your request, if desired, together with appurtenant attachments and illustrative materials.

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EMAIL: mission@cerfnet.com • NATIONWIDE (800) 556-4779

SCOPE OF WORK

MISSION conducted supplementary review of available regulatory agency documentation, conducted interviews with appropriate representatives of those regulatory agencies with jurisdiction over the closure and post-closure operations and maintenance issues of the former Nu-way Industries landfill, reviewed additional State (Los Angeles Regional Water Quality Control Board, LARWQCB) and local (Los Angeles County Department of Public Works) statutory provisions for solid waste disposal facility closure, and performed SITE visits to observe current conditions and operations.. Regulatory agency file review was also conducted for selected non-waste-disposal environmental issues potentially impacting the SITE, including sensitive ecological areas and underground storage tanks.

As part of our correspondence with the LARWQCB, MISSION has also prepared a formal request for the ISLLC's receipt of a potential purchaser "comfort letter" from this agency, with respect to potential future landfill closure enforcement issues. This request is included herein as an attachment.

Several attempts have been made to contact the environmental consultant to Nu-Way Industries (Law/Crandall Inc.). A response has only recently (March 11) been received by MISSION from the consultant's designated Project Manager. The consultant to Nu-Way Industries would be unlikely to provide supplementary information other than that already received from the regulatory agencies, with the possible exception of potential mechanisms which might be proposed in the future by the consultant to achieve early "closure" of groundwater quality monitoring and final cap construction issues from LARWQCB. Receipt by the ISLLC of the requested "comfort letter" from LARWQCB could conceivably make moot these latter issues

To date, MISSION has not been provided with scale drawings illustrating the proposed speedway structure placement with respect to existing SITE features or former landfill boundaries. More precise detailed observations and constraints may be identified by MISSION following receipt of these documents from the ISLLC's speedway design team.

SITE OPERATIONS and CONDITIONS

The proposed ground lease for the Irwindale Speedway property occupies roughly forty-three acres in the west-central portion of the former 85-acre Nu-Way Industries landfill. The SITE is bounded on the north by a paved area forming the northeastern extension of the Northwestern Freight Lines terminal, and by East Live Oak Avenue beyond; on the east by the asphalt-paved LA International Marketplace (swap meet are including open-air stalls and enclosed office space); on the south by the active Livingston Graham gravel quarry operations; and on the west by the bulk of the paved Northwestern Freight Lines truck terminal (600 E. Live Oak Avenue; formerly the "Superior Fast Freight" terminal). The SITE is bounded on three sides by chain link fencing.

Conditions

The western half of the proposed speedway property is presently unpaved, and operated as a waste transfer station by Nu-Way Industries. The surface of this area is earthen, with construction debris visible in the smoothed soil. The soil appears to be of low density, and is not yet at finish grade (i.e., additional fill materials will be placed). A 12-15-foot deep closed depression was observed in the northeastern corner of the unpaved parcel, and currently is in use for top-loading truck trailers with refuse at the Nu-Way transfer station. The eastern half of the SITE is currently paved, and grades with a westerly slope (2 to 3 percent) towards the unpaved parcel.

During MISSION's SITE visits, the pavement surface in eastern portion of the SITE was noted to be in good condition, with only minor signs of surface unevenness. We observed the two-story commissary building of the adjacent L.A. Marketplace, constructed of CMU walls and concrete floors, built roughly four years ago. A methane monitoring probe was noted adjacent to the north wall of this building. The building appeared to be in overall good structural condition, with minimal sign of settlement distress. One crack, which has been repaired, was observed trending from the left corner of an east wall doorway. The concrete paving surrounding the commissary building also exhibited some significant lateral cracking, in a radial pattern outward from the building. These cracks passed through sumps, concrete tree "planter rings", and other discontinuities. One crack on the north wall was open ½", but no vertical displacement was observed across the crack. These radial cracks crossed the concrete "cosmetic paving", but did not continue into the asphalt parking lot pavement section.

We noted some ground surface subsidence near the east boundary in the general vicinity of a two-legged sign pole.

MISSION noted the Northwestern trucking terminal buildings to be in relatively good condition, with little visible external indications of settlement-related distress. The office building appeared to be in good condition from a structural viewpoint.

Based upon preliminary sketches provided by the ISLLC, we interpreted that the proposed location of the ½ mile super-elevated oval race track will be primarily on the non-paved portion of the SITE. We interpreted that the principal (southern) grandstand will be within this non-paved area. The northern grandstand will ostensibly be located about 100 to 150 feet south of and parallel to East Live Oak. The south grandstand location will be about 200 to 300 feet inward from, and subparallel to, the southern SITE boundary.

Operations

The former Nu-Way landfill reportedly accepted only inert, non-putrescent (non-decomposable) wastes in a former gravel quarry from 1969 until it ceased waste acceptance in 1990. As such, the facility was "unclassified, and comparatively exempt from compliance, with respect to most CCR Title 23, Chapter 15 (Water Quality Control Board) and CCR Title 14, Chapter 3 landfill operation, monitoring or closure requirements. To this end, although a Title 23-compliant "Closure and Post-Closure Maintenance Plan" was submitted to the LARWQCB by Nu-way Industries in 1991, the final landfill cover consisted only of clean fill dirt placed without meeting 90% minimum relative compaction requirements of structural fills, covered with an asphalt "cap" (six-inch Class II aggregate base under four-inch asphaltic concrete) over 75% of the former landfill acreage. Much of the proposed speedway acreage is not presently covered with asphalt. Based upon MISSION's comparison of historical topographic maps of the former landfill at various stages of its history, total thickness of settlement-prone materials (waste plus fill cover) exceeds 200 feet in thickness. In some locations, inert waste materials included auto shredder wastes (accepted until 1983) and asbestos (accepted until 1985). Auto shredder wastes were reportedly placed under the southern portion of the proposed speedway track and grandstand/office locations.

Owing to the inert wastes placed in the former Nu-Way facility, and cessation of waste disposal in mid-1990, exemption was granted by the California Integrated Waste Management Board (CIWMB.) and the South Coast Air Quality Management District (SCAQMD) for air quality SWAT testing or post-closure air quality monitoring pursuant to State of California Health & Safety Code section 41805. As discussed below under the heading of "Air Quality" however, Los Angeles county codes will require future methane gas monitoring and methane barriers on a limited basis following speedway development.

Groundwater quality monitoring continues within five landfill network monitoring wells. Current periodic monitoring occurs on a nine-month frequency. The most recent monitoring event was reportedly in December and January of 1997. Existing well MW-1 is located immediately off-SITE due southeast of, and hydrogeologically downgradient from, the proposed speedway property.

SUMMARY OF ENVIRONMENTAL ISSUES

Water Quality

Interviews with the Landfill Unit of the LARWQCB (Messrs, Rod Nelson, Unit Chief, and Don Peterson, Nu-Way SITE Project Manager) reveal that it is likely that continued groundwater quality monitoring will be required for a minimum of two additional years prior to consideration of "closure" of water quality issues by LARWQCB. The SITE has continued mild concern to this agency because of its position within the recharge area of the San Gabriel groundwater basin. Of primary concern are 1) demonstration that low concentrations of VOCs previously detected do not re-appear in any of the SITE monitoring wells, and 2) a continued trend of decreasing concentrations of soluble sulfates and total dissolved solids (TDS) is observed, specifically in wells MW-1 and MW-3. The

LARWQCB representatives have expressed that they do not believe that TDS and sulfates originate from recharge of imported Colorado River waters into groundwater at the upgradient Santa Fe Spreading Grounds. Based upon our review of the available water quality monitoring data, MISSION concurs with the LARWQCB opinion.

Mobilization of soluble inorganic compounds via historic recharge of ponded surface waters through buried auto shredder wastes is considered the most likely source of the TDS, sulfates, and low dissolved concentrations of arsenic, manganese, iron and VOCs (benzene, trichloroethylene) monitored historically in the SITE wells. **The ISLLC should consider surface drainage design which diverts surface water away from the locations of the buried shredder waste. Consideration should also be given to a landscape design which involves drought-tolerant vegetation, and the use of conventional drip-irrigation systems with moisture sensors to minimize over-watering potential and surface water recharge potential.**

Because TDS and sulfates are not carcinogens or reproductive toxins, and because arsenic concentrations in groundwater currently only slightly exceed drinking water standards, MISSION is of the opinion that the consultants to Nu-Way may wish to consider a "health-risk-assessment based" approach for the SITE groundwater issues to expedite the water quality closure process.

Because existing monitoring well MW-1 is downgradient of the SITE with respect to groundwater flow direction, and because this well remains the "problem well" with respect to former VOCs and current TDS/sulfates in groundwater per LARWQCB, **the ISLLC should consider extra precaution to cap the proposed speedway areas, and provide special secondary containment, leak detection and waste handling practices for any hazardous materials potentially used in the racing operations (e.g., petroleum fuels, solvents, etc.) , to minimize potential surface water or waste discharges.** This issue will be particularly acute if future water quality in well MW-1 decreases, thus potentially leading to disputes with Nu-way Industries regarding the "origin" of the degraded water quality (e.g., leachate created by natural fluctuations of groundwater levels through the existing waste, generated via surface water recharge, and/or originating from potential future surface releases of hazardous materials from raceway operations.

MISSION has prepared and submitted a "potential purchaser comfort letter" request to the LARWQCB, with your review, which addresses the ISLLC's exemptions from potential enforcement actions for these water quality issues. The request is included as Attachment A.

Fees

The LARWQCB has indicated that Nu-way Industries has been delinquent in payment of their roughly $3,000 annual fees pursuant to Waste Discharge Requirement (WDR) 68-13. These fees must be paid by the former operator (Nu-Way) until such time that LARWQCB grants closure for all former landfill issues per CCR Title 23, as stipulated within the 1991 "Closure Plan" (i.e., water quality, completion of the final cap, and surface grades/drainage).

The ISLLC should consider provisions within the ground lease agreement to ensure these fees are paid.

Leaking Underground Storage Tanks

MISSION observed that Nu-Way Industries appears as a responsible party for a "LRST" (Leaking Registered Storage Tank") in the LARWQCB database of such leaking tank sites, with the former landfill address listed on the database (400 East Live Oak). Although MISSION observed fuel dispensers and underground tank fill ports immediately north (and upgradient) of the SITE on the Northwestern truck terminal site, it is not clear that these tanks are the leaking tanks in question, inasmuch as nonleaking tanks are also reported in the same database at the Northwestern terminal address (600 East Live Oak, listed with former tenant Superior Fast Freight as responsible party).

MISSION is in the process of resolving this issue with the Underground Storage Tank Unit of the LARWQCB, and the Los Angeles County Fire Department, which is reportedly the lead regulatory agency for the case. A final resolution is pending during the week of March 17, 1997.

It is recommended that the ISLLC seek provisions in the SITE ground lease agreement which address indemnifications with respect to any and all former or current SITE underground storage tank provisions of CCR Title 23, Chapter 16, particularly the "corrective action" provisions for leaking tanks in Chapter 16, Section 2720.

Final Cover and Cap

The 1991 "Closure Plan" prepared by Law/Crandall indicates that the final cover for the former Nu-Way facility and approved by LARWQCB includes clean but uncompacted fill dirt, covered by a four-inch-thick asphaltic concrete cap. No other CCR Title 23 closure provisions for final cover and cap (e.g., vegetative cover, low-permeability clay or geosynthetic membrane layers, 90% or greater compaction of fill cover, etc.) were or will be required, according to MISSION's discussions with the LARWQCB.

To date, the unpaved portion of the SITE has not yet achieved final agency-approved cover/cap placement or closure. The 12-to-15-foot deep depression at the existing Nu-Way transfer station must be brought up to final Closure Plan design grades, with a 3 percent westerly surface grade.

MISSION recommends that the final asphalt cap extend beneath the proposed paved and dirt-track speedway race courses within the center of the speedway, in order to minimize surface water recharge through buried wastes. Final design surface grade elevations may need to be modified if the ISLLC follows this recommendation.

Surface Grade and Drainage

Attachment B includes copies of correspondence between Nu-Way Industries and the LARWQCB regarding the CCR Title 23, Chapter 15-regulated issue of surface grades, drainage and erosion control. This correspondence indicates that repeated ponding of surface water has occurred on unpaved portion of the SITE following heavy rains, in violation of LARWQCB waste discharge requirement (WDR) Order No. 85-36, and the approved 1991 "Closure and Post-Closure Maintenance Plan". These drainage violations have occurred apparently due to the absence of "positive drainage" (e.g., the presence of closed depressions and hummocky topography).

MISSION is of the opinion that adherence to the approved 1991 Maintenance Plan will achieve compliance with the issue of grade and drainage. Inasmuch as this issue is regulated pursuant to CCR Title 23, Chapter 15, MISSION is of the opinion that, based upon our experience, it is the purview of the former landfill operator to demonstrate compliance with this issue. Based upon our discussions with the LARWQCB, final closure of landfill cover/cap issues will not be forthcoming until this issue is addressed by Nu-Way Industries. A final survey of the finished grades and cap will also be required to be performed by a licensed land surveyor, for submittal to LARWQCB as part of this closure process.

Air Quality

Although the SITE was exempted by the South Coast Air Quality Monitoring District (SCAQMD) from preparation of an "air quality" Solid Waste Assessment Test (SWAT) report, and exempted from all CCR Title 14 closure and post-closure maintenance requirements for air quality issues per Government Code section 66796.22 (CCR Title 14), Health & Safety Code section 41805 and SCAQMD Rule 1150.1, primarily due to the inert nature of the buried wastes, the SCAQMD has the option of requiring a "baseline" SWAT investigation if there are "changes in the character" of the SITE. Such "changes" include change of title or SITE operations by owners or lessors, per the regulation. Per Rule 1150.1, Nu-Way Industries will be required to file a report of said "changes" to the SCAQMD, after which time the agency may or may not require an air-quality SWAT report.

MISSION recommends that the ISLLC seek provisions for the SITE seller to address compliance with the above-cited SCAQMD and Health & Safety Code requirements, as applicable.

MISSION's interviews with the Los Angeles County Department of Public Works' (LACDPW) Waste Management Division (SITE project manager Ms. Stacy Jordan) indicate that the proposed speedway will be required to install and periodically monitor both interior and exterior methane probes in much the same fashion as currently performed at the adjacent L.A. Market place. This is required pursuant to County Building Code, section 308, regardless of the inert nature of the former SITE wastes.

Additionally, it is likely that the LACDPW and County Building & Safety Department will require placement of geosynthetic membranes as potential methane barriers beneath floor slabs of "occupied" structures (ground floor offices, concession areas, etc.). MISSION preliminarily estimates unit costs for typical LDPE/HDPE membranes to be on the order of **$ 0.85 To $1.20 per square foot.**

Final decision as to the necessity of such membrane barriers, the total number of methane probes to be installed, and frequency of methane probe monitoring, will ultimately be the purview of the County Building & Safety Department.

Sensitive Ecological Areas

MISSION reviewed several databases (LA County General Plan, State Department of Fish & Game, State native Plant Society) to determine if potential sensitive ecological areas, including wetlands, may be present near the SITE, or located in such a way that former SITE waste disposal operations could have adversely impacted such areas.

The SITE area probably contains "disturbed" native "valley and foothill grassland" habitats owing to the history of industrial usage; however, no currently-listed endangered or threatened species habitats or sensitive ecological areas are listed within a mile of the SITE. Such grasslands require soil conditions not known to exist in the immediate SITE vicinity.

The nearest potential sensitive ecological area to the SITE are artificial marshlands upstream of the SITE in the Santa Fe Dam Spreading Grounds, roughly one mile north of the SITE.

MISSION makes no recommendation to the ISLLC with respect to potential sensitive ecological areas.

GEOTECHNICAL ISSUES

Settlement Potential

Settlements of non-consolidated east and uncompacted fill materials such as those beneath the SITE may be expected to settle as much as five to ten percent of total thickness as the media re-orient themselves due to particle crushing, wetting, and seismic events. This 150-200 foot thick fill may thus have a long-term settlement potential of several (7 to 20) feet. Additionally, this landfill contains auto (shredder) wastes which in themselves are highly compressible. Until further evaluation is made and preliminary dead/live load estimates are available from the design team, several feet of total settlement and significant differential settlement of proposed speedway structures must be contemplated.

MISSION's recommends a foundation investigation in stages to result in an economical, bearing capacity solution for the proposed facility.

The fill needed to effect the super-elevated track will result in differential settlement, especially at the perimeter of the track where a 12 foot high retaining walls are planned. Differential settlement between the track and grandstands must also be expected and mitigated. Final design must also must the prevention of use of excessive irrigation water which might otherwise exacerbate settlement of the landfill media, and the assurance of positive surface drainage away from areas with anticipated highest structural loads.

There are several potential foundation alternatives which warrant evaluation for moderating the effects of differential settlement.

MISSION recommends to the ISLLC drilling approximately ten to twelve deep borings, and a further ten to twelve shallow borings, in the vicinity of the track and grandstands for preliminary evaluation of subgrade landfill media and its settlement/collapse potential. Borings should be advanced with air rotary, air percussion, rotary-sonic or other techniques which do not introduce moisture into the wastes or fills. The previous (1992) Pioneer Consultants investigation at the adjacent L.A. Marketplace was inconclusive and inadequate for this purpose, inasmuch as waste types and settlement potential vary greatly beneath the former waste disposal area. MISSION recommends extension of borings through the landfill media, and collection of samples for evaluation of settlement potential, including presence of percentage of shredder wastes in the southern portion of the proposed speedway location, and the in-place moisture and density characteristics of fill and cover soils.

MISSION also recommends the use of geophysical exploratory techniques, including ground penetrating radar to evaluate buried void spaces and seismic refraction to evaluate wastes with different densities, seismic velocity and thicknesses and, across selected sections of the track and grandstand areas, to develop an understanding of the variability and consistency of landfill media throughout the area.

Foundations

A shallow, "structural mat" foundation system is likely the most appropriate for the proposed structures, inasmuch as the "conventional" alternative (e.g., deep driven piles) would provide unwanted potential conduits for surface water migration into buried wastes and fills, thus exacerbating both leachate generation and settlement. Such conduits would create unwanted exposure to the ISLLC from the LARWQCB, particularly until formal closure is achieved.

Once the subgrade fill conditions are better understood, MISSION can better evaluate the settlement tolerances of proposed structures and compare them to actual soil conditions to develop appropriate SITE preparations and foundation recommendations.

MISSION recommends evaluating the viability of shallow versus deep foundation systems for the proposed structures. Large linear structures such as grandstands typically have low tolerance to differential settlement. The two conventional alternatives above former landfills include: A) to improve a 'block' or 'mat' of soil extending beyond the footprint of the structure (typical costs **$2 to $4 per square foot)**, or B) to deep-found the structures with driven friction piles supported by non-settlement-prone strata at depth.

At this site, deep foundations will need to derive their bearing from strata beneath the bottom of the former sand and gravel pits which predated the landfill. Driving piles to an estimated 150 to 200 feet depth through the construction debris would be expensive and difficult. Foundation elements will be subject to damage during driving, and also affected by settlement of the landfill mass which will cause down-drag (negative skin friction) on the driven piles, lessening their structural capacity.

Shallow foundation systems will relate to stiffening the landfill soils over a wide area but relatively shallow depth, to effect reduction of settlement, and more significantly, differential settlement potential. Ground improvement schemes relate to void-space reduction, either in situ or by removal and replacement, typically with reprocessing of the removed soil to improve structural quality. The latter includes several potential methods of incorporating reinforcing fabrics in the fill as it is replaced.

MISSION also strongly recommends the construction of a shallow foundation system above the final cover and cap to be placed by Nu-Way Industries, pursuant to the provisions of the 1991 "Closure and Post-Closure Maintenance Plan". However, from a geotechnical viewpoint, the near-surface soils must be "densified" in order to provide a base above which the shallow 'mat' foundation system may be raised, and to minimize long-term settlement. This apparent conflict must be resolved between the need to construct a stable foundation system which can tolerate fill settlement, and the need to minimize the ISLLC's potential exposure impact to groundwater quality through their future activities as an "operator" of the SITE. This conflict is typical to most landfill redevelopment concepts.

Following our discussion of these issues, MISSION is prepared to pursue and further quantify the Environmental and Geotechnical constraints to SITE development as directed. MISSION sincerely appreciates this opportunity to assist you with this important matter. Should you have any questions, please do not hesitate to contact us at your earliest convenience.

Respectfully Submitted,
MISSION GEOSCIENCE, INC.

James R. Ashby, CEG 1553
Principal Geologist

Eric D. Hendrix, CEG 1531, CHG 431
Principal Hydrogeologist

John R. Sutton, RCE 40324, GE 812
Principal Engineer

ATTACHMENTS A - LARWQCB Potential Purchaser Letter Request
B - Surface Drainage Issues

JRA/EDH/JRS:ca\97\138sumry.ltr

ATTACHMENT A

LARWQCB POTENTIAL PURCHASER LETTER REQUEST

MISSION GEOSCIENCE, INC.

LOS ANGELES
SAN FRANCISCO
NEW YORK
ATLANTA
WASHINGTON
DALLAS
HOUSTON

ENVIRONMENTAL & GEOTECHNICAL CONSULTANTS

March 5, 1997

Mr. Rod Nelson
Unit Chief, Landfills
LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD
101 Centre Plaza Drive
Monterey Park, CA 91754

RE: POTENTIAL GROUND LEASE PURCHASE,
PORTION OF FORMER NU-WAY LANDFILL PROPERTY,
400 East Live Oak Avenue, Irwindale, CA
LARWQCB WDR No. 68-13
LARWQCB Monitoring and Reporting Program 5563

Dear Mr. Nelson:

Pursuant to our telephone discussions and meetings with you and Mr. Don Peterson of your staff, this letter has been prepared by Mission Geoscience, Inc. (MISSION) on behalf of our client, the Irwindale Speedway LLC ("the ISLLC"). MISSION has been retained by our client to evaluate potential environmental liabilities and issues with respect to the former landfill property operated from 1968 to 1993 by Nu-Way Industries at the above addresses (the SITE). Final fill cover was reportedly completed at the SITE in 1993, and a pavement cap exists over roughly 85 percent of the final fill cover. The ISLLC is a potential purchaser of a ground lease of a portion of the former landfill property from Nu-Way Industries, who is identified as the responsible party by LARWQCB for all SITE activities relating directly or indirectly to protection of groundwater quality beneath the SITE.

It is the ISLLC's understanding that the former SITE is not classified as either a Class I, II or III landfill pursuant to Chapter 15 of CCR Title 23, owing to the inert nature of the former solid wastes accepted for disposal. As such, strict adherence to all closure and post-closure requirements of CCR Title 23 has ostensibly not been required by the LARWQCB (i.e., final cover and cap construction, cap maintenance, irrigation plan, vegetative cover. Nevertheless, the LARWQCB continues to require periodic water quality monitoring from five SITE wells, reportedly on account of the SITE's location within the greater recharge area for the San Gabriel Valley Groundwater Basin, the historic presence in limited SITE wells of total dissolved solids and sulfates exceeding current State drinking water standards, and the former presence of very low concentrations of VOCs in one of the SITE wells.

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The ISLLC understands that this existing groundwater monitoring program is expected to continue for at least 1 or 2 more years prior to sanction of SITE closure by LARWQCB pursuant to CCR Title 23, Chapter 15 provisions.

The ISLLC's proposed design concept for the SITE, if the ground lease is purchased, involves the construction of a multi-track auto speedway with associated paved parking areas. The ISLLC is interested, as potential purchaser of the ground lease from Nu-Way Industries, Inc., in receiving a written statement ("comfort letter") from your agency, specifically that the ISLLC (or successors who may purchase the lease from ISLLC) would not be named as responsible parties by your agency for any potential future enforcement actions related to historic landfill waste disposal operations, final fill cover placement, landfill cap construction or post-closure maintenance, groundwater quality monitoring, known or current soil or groundwater contamination, or any other closure or post-closure monitoring requirements pursuant to CCR Title 23, Chapter 15.

As prospective ground lease purchaser of a portion of the former Nu-Way landfill, the ISLLC is of the understanding that they do not meet either the CERCLA, RCRA or equivalent State of California Health & Safety Code definitions of former landfill "owner" or "operator". If LARWQCB legal counsel concurs with this statutory interpretation, ISLLC would appreciate a statement to this effect within your written correspondence.

ISLLC is also interested in your opinion as to the comparative benefits, and ISLLC's eligibility for receipt from the LARWQCB, of a conventional "comfort letter" versus a more formal "Potential Purchaser Agreement" ("PPA"), as authorized per State of California Water Code §13304, with respect to the above-described issues.

Please send your written correspondence directly to our client at the following address:

Irwindale Speedway, LLC
18301 Von Karman Avenue, Suite 1170
Irvine, CA 92715-0110
Attention: Mr. Michael J. Hoppe, Jr.
Facsimile: (714) 252-2092

MISSION and the ISLLC sincerely appreciate your cooperation and time spent with respect to this matter. Any assistance you can provide in issuing such a written statement to the ISLLC as of **April 1, 1997** would be most appreciated.

Please contact the undersigned at your convenience should you require clarification as to this inquiry.

Respectfully submitted,
MISSION GEOSCIENCE, INC.

Eric D. Hendrix,
Principal/Vice President, Geology

Distribution: (2) Addressee

(1) **Irwindale Speedway, LLC**
18301 Von Karman Avenue, Suite 1170
Irvine, CA 92715-0110
Attention: Mr. Michael J. Hoppe, Jr.

JRA:EDH\97\138rwqcb.ltr

ATTACHMENT B

SURFACE DRAINAGE ISSUES

NU-WAY INDUSTRIES, INC.
54 E. HUNINGTON DR.
P.O. 661238
ARCADIA, CA. 91066-1238

April 26, 1995

68-13

California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Attn: Anne Saffell

Re: Ponding of Water - File #68-13

Dear Anne:

The ponding water problem at the closed landfill has been corrected. As you correctly state in your letter the water was due to the recent heavy rains. We have used a vaccuum truck to collect the water and used it for irrigation at the site.

We are presently installing concrete and a pumping station in the bottom of the transfer station to prevent further occurrences.

The original 85 acre site has been developed with "positive drainage" with the exception of the 10 acre transfer station.

We will be submitting a technical report in the near future describing the final closure and conditions of the Nu-Way Industries landfill.

If you have any additional questions or comments, please call.

Thank you,

Jim

Jim Mnoain

JM:aml

cc: Elizabeth Haven, State Water Resources Control Board
Charlene Herbst, California Integrated Waste Management Board
Richard Hanson, County of Los Angeles, Department of Health Services

fax (818) 446-7120 phone (818) 446-7127

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, *Governor*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX: (213) 266-7600

March 24, 1995

Mr. James P. Mnoian
Vice President
Nu-Way Industries, Inc.
54 East Huntington Dr.
Arcadia, CA 91006

PONDING OF WATER - NU-WAY LANDFILL, IRWINDALE - (FILE NO. 68-13)

During an inspection of Nuway Landfill on March 20, 1995, Regional Board staff noticed ponding of water on the west side of the landfill, near the entrance to the recycling center. Such ponding, caused by recent heavy rains, is in violation of waste discharge requirements (WDRs) Order No. 85-36.

Provision B.7 of the WDRs States that:

> "At least 90 days prior to cessation of disposal operations at this site, the discharger shall submit a technical report to the Board describing the methods and controls to be used to assure protection of the quality of surface and groundwaters of the area during final operations and with any proposed subsequent use of the land. The report shall be prepared by or under the supervision of a registered engineer or a certified engineering geologist."

The Closure and Post-Closure Maintenance Plan, dated December 2, 1991, also, "provides for positive drainage".

Pursuant to Section 13267 of the California Water Code, you are directed to submit a technical report by April 24, 1995, which details your activities to correct this violation, and to prevent future violations of this nature.

If you have any questions, please call Don Peterson at (213) 266-7578.

ANNE SAFFELL
Supervising Engineering Geologist

cc: Elizabeth Haven, State Water Resources Control Board
Charlene Herbst, California Integrated Waste Management Board
Richard Hanson, County of Los Angeles, Department of Health Services

STATE OF CALIFORNIA

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500

June 4, 1992

Mr. James P. Mnoian
Vice President
Nu-Way Industries, Inc.
54 East Huntington Dr.
Arcadia, CA 91006

PONDING OF WATER - NU-WAY LANDFILL (FILE NO. 68-13)

On May 27, 1992, Regional Board staff made a follow-up inspection of Nuway Landfill and noted that the violations of the waste discharge requirements observed on April 21, 1992, and which we identified to you in our letter dated April 29, 1992, had been remediated.

Ponding water had been removed and the area was filled and compacted with clean soil.

Please ensure that the final grading is according to the "Closure and Post-Closure Maintenance Plan", which provides for proper drainage.

If you have any questions, please call Don Peterson at (213) 266-7578.

Rodney H. Nelson

RODNEY H. NELSON, Head
Landfills Unit

cc: Lisa Babcock, State Water Resources Control Board
Bill Orr, California Integrated Waste Management Board
Richard Hanson, LA Co., DHS

Nu-Way Industries, Inc.

IRWINDALE LAND RECOVERY
P.O. BOX 3088
ARCADIA, CALIFORNIA 91066
(818) 446-7127 • FAX (818) 446-7120

May 21, 1992

92 MAY 22 PM 2:05
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA. 91754-2156

Attention: Rodney H. Nelson, Head
Landfill Unit

RE: Letter - Ponding Water

Dear Mr. Nelson:

Due to the unusual amount of rainfall we received over the last season, water did accumulate in a low section of the landfill. We are in the process of filling this portion of the property to its final elevation which will provide for proper drainage.

Shortly after your staffs visit to the site, we were able to blend clean soil with the ponded water and compact it into place. The standing water remained for only a short period of time. We expect the site to reach its final grade by the end of the year.

The final grading of the landfill is being pursued according to our "CLOSURE AND POST-CLOSURE MAINTENANCE PLAN" filed with the Regional Board on December 2, 1991.

Please call if you need any additional information or action.

Thank you,

Sincerely,
NU-WAY INDUSTRIES, INC.

James P. Mnoian