FOR CONTRACT NO: 04-153504
PROJECT ID: 0400020739

INFORMATION HANDOUT

MATERIALS INFORMATION

BIOLOGICAL RECONNAISSANCE FIELD ASSESSMENT REPORTS

GEOTECHNICAL DESIGN REPORT

SITE INVESTIGATION REPORT

ROUTE: 04-Sol-80-0.0/R28.4

Biological Reconnaissance Field Assessment Reports

State of California
DEPARTMENT OF TRANSPORTATON

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: Chris States, Senior Biologist
Department of Transportation, District 4
Office of Biological Sciences and Permits

Date: March 6, 2012

File: SOL-80 PM 0.0 – 28.5

EA: 153500

From: David Rasmussen, Biologist
CH2M HILL

Subject: Biological Reconnaissance Field Assessment for Utility Potholing Locations and EMS Locations EA 153500

Background:
On February 10 and 13, 2012, Danielle Tannourji/CH2M HILL, biologist, and on February 21, 2012, David Rasmussen/CH2M HILL, biologist, visited the 36 proposed potholing locations, 10 extinguishable messaging sign (EMS) locations, one sign relocation, and associated trenching locations to assess the existing biological conditions along the proposed construction areas for the Solano 80 Freeway Performance Initiative (FPI) Project, EA 153500. This memorandum describes observations from the field assessment and recommendations for further actions.

Project Description:
The work detailed in this memorandum is in association with the improvements proposed as part of the California Department of Transportation (Caltrans) FPI EA 153500 on Interstate (I)-80 in Solano County, California (Project). In addition to the work detailed in the prior biological memorandum (dated September 23, 2012) and addendum to the memorandum (dated October 19, 2012), the Project proposes to pothole at 36 locations to determine the location of buried utilities, install 10 additional EMSs, relocate one sign, and trench along the roadside to provide utility connections to these signs. The potholes will have an area of impact of approximately 5 by 5 feet. A 4-inch excavation will be conducted at each location using a vacuum extraction truck to locate utilities. After confirming the location of the buried utilities, these excavations will be immediately backfilled using native soils. The EMS locations will have an approximate temporary area of impact of 20 by 20 feet during construction, and a permanent footprint of 5 feet by 5 feet. The trenches will be dug approximately 1 foot deep and 8 inches wide. These will be immediately backfilled after the utility cables have been installed.

Preliminary Biological Review:
In preparation for the field review, CH2M HILL biologists David Rasmussen and Danielle Tannourji evaluated information provided in the Project description and queried the California Natural Diversity Database (CNDDB) and federal critical habitat data to determine reported occurrences and potential habitat of federal- and state-listed threatened/endangered (T/E) species and critical habitat within 2 miles on either side of the I-80 mainline. The CNDDB results

included records for 52 T/E species. Habitat for these 52 species was generally not observed within the vicinity of the Project area during field surveys. The majority of the work locations in the Project area are dominated by annual grasses in ruderal roadside habitat. Many of the work locations are adjacent to urban areas, and these represent major barriers to dispersal for many of the special-status species identified in the CNNDB records search.

Flora and Fauna:
During the February 10, 13, and 22, 2012, site visits, it was observed that the Project is located in a high-volume traffic area and that the majority of the proposed areas of construction consist of bare dirt, lightly vegetated areas dominated by non-native grasses, and landscaped shoulders. Table 1 presents the 52 listed species and the rationale regarding their potential to occur in the Project area.

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB Record within 2-mile Buffer	Status (Federal/ State)	Supporting Habitat/ Blooming Period	Habitat Present/ Absent	Species Presence in the action area/Rationale
Plants						
Alkali milk-vetch	*Astragalus tener var. tener*	2002	None/ None, 1B.2	Playas, valley foothill grassland, alkaline vernal pools; blooms March–June	Absent	Playas, valley foothill grassland, and alkaline vernal pools not found onsite
Heartscale	*Atriplex cordulata*	1892	None/ None, 1B.2	Alkaline flats and scalds with sandy soils in chenopod scrub, valley and foothill grassland, meadows; blooms April–October	Absent	Alkaline flats and scalds with sandy soils in chenopod scrub, valley and foothill grassland, and meadow not found onsite
San Joaquin spearscale	*Atriplex joaquiniana*	1989	None/ None, 1B.2	Seasonal alkali wetlands or alkali sink scrub; blooms April–October	Absent	Seasonal alkali wetlands or alkali sink scrub not found onsite
Vernal pool smallscale	*Atriplex persistens*	2002	None/ None, 1B.2	Alkaline vernal pools; blooms June–October	Absent	Alkaline vernal pools not found onsite

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Big-scale balsamroot	*Balsamorhiza macrolepis var. macrolepis*	1988	None/ None, 1B.2	Strong affinity for serpentine soils, cismontane woodland, valley and foothill grassland; blooms March–June	Absent	No serpentine soils found onsite
Tiburon paintbrush	*Castilleja affinis ssp. neglecta*	1998	E/T	Rocky serpentine valley and foothill grasslands; blooms April–June	Absent	No serpentine soils found onsite
Pappose tarplant	*Centromadia parryi ssp. Parryi*	1933	None/ None, 1B.2	Coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grasslands; locations are vernally mesic and often alkaline; blooms May–November	Absent	Vernally mesic areas found onsite; however, presence is unlikely due to degraded roadside habitat by dominated grasses
Soft bird's-beak	*Chloropyron molle ssp. molle*	1888	E/R	Coastal salt marsh; blooms July–November	Absent	No coastal salt marsh onsite; possibly extirpated due to increased soil salinity
Bolander's water-hemlock	*Cicuta maculata var. bolanderi*	1974	None/ None, 2.1	Freshwater and brackish marshes; blooms July–September	Absent	Freshwater and brackish marshes not found onsite
Suisun thistle	*Cirsium hydrophilum var. hydrophilum*	1994	E/None, 1B.1	Coastal salt marsh; blooms June–September	Absent	No coastal salt marsh found onsite

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Common Name	Scientific Name	Year of last CNDDB Record within 2-mile Buffer	Status (Federal/ State)	Supporting Habitat/ Blooming Period	Habitat Present/ Absent	Species Presence in the action area/Rationale
Recurved larkspur	*Delphinium recurvatum*	1940	None/ None, 1B.2	Alkaline soils, often in valley saltbush or valley chenopod scrub, cismontane woodland; blooms March–June	Absent	Alkaline soils, in valley saltbush or valley chenopod scrub, and cismontane woodland not found onsite; last seen in the area in 1940
Dwarf downingia	*Downingia pusilla*	1998	None/ None, 2.2	Vernal pools and pool margins, mesic sites in valley and foothill grassland; blooms March–May	Absent	Mesic sites found onsite; however, presence is unlikely due to degraded roadside habitat dominated by annual grasses
Mt. Diablo buckwheat	*Eriogonum truncatum*	1888	None/ None, 1B.1	Dry exposed clay or sandy substrates in chaparral, coastal scrub, valley and foothill grassland; blooms April–May	Absent	Last seen in the area in 1888; dry exposed clay or sandy substrates in chaparral, coastal scrub, valley and foothill grassland not found onsite
Fragrant fritillary	*Fritillaria liliacea*	1875	None/ None, 1B.2	Coastal scrub, valley and foothill grassland, coastal prairie; blooms February–April	Absent	Coastal scrub, valley and foothill grassland and coastal prairie not found onsite; last seen in the area in 1875
Adobe-lily	*Fritillaria pluriflora*	1913	None/ None, 1B.2	Usually on clay soils, sometimes serpentine, chaparral, cismontane woodlands, foothill grassland; blooms February–April	Absent	Chaparral, cismontane woodlands and foothill grassland not found onsite

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Common Name	Scientific Name	Year of last CNDDB Record within 2-mile Buffer	Status (Federal/ State)	Supporting Habitat/ Blooming Period	Habitat Present/ Absent	Species Presence in the action area/Rationale
Diablo helianthella	*Helianthella castanea*	2003	None/ None, 1B.2	Chaparral/oak woodland interface in rocky azonal soils, broadleaved upland forest, coastal scrub, riparian woodland, valley and foothill grassland; blooms March–June	Absent	Chaparral/oak woodland interface in rocky azonal soils, broadleaved upland forest, coastal scrub, riparian woodland, and valley and foothill grassland not found onsite
Contra Costa goldfields	*Lasthenia conjugens*	1998	E/None, 1B.1	Cismontane woodlands, alkaline playas, valley and foothill grasslands, vernal pools; depressions with standing water or saturated soils; blooms March–June	Absent	Depressions with standing water and saturated soils found onsite; however, presence is unlikely due to degraded roadside habitat by dominated grasses
Delta tule pea	*Lathyrus jepsonii var. jepsonii*	1989	None/ None, 1B.2	Freshwater and brackish marshes; blooms May–September	Absent	Freshwater and brackish marshes not found onsite
Legenere	*Legenere limosa*	1892	None/ None, 1B.1	Beds of vernal pools; blooms April–June	Absent	Development has resulted in extirpation of natural populations; vernal pools not found onsite
Mason's lilaeopsis	*Lilaeopsis masonii*	2005	None/R, 1B.1	Tidal zones of freshwater and brackish marshes, riparian scrub; blooms April–November	Absent	Freshwater and brackish marshes, and riparian scrub not found onsite

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Common Name	Scientific Name	Year of last CNDDB Record within 2-mile Buffer	Status (Federal/ State)	Supporting Habitat/ Blooming Period	Habitat Present/ Absent	Species Presence in the action area/Rationale
Baker's navarretia	*Navarretia leucocephala ssp. bakeri*	1916	None/ None, 1B.1	Vernal pools and swales with adobe or alkaline soils in cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forests; blooms April–July	Absent	Possibly extirpated, last seen in the area in 1916; vernal pools and swales with adobe or alkaline soils in cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forests not found onsite
Chaparral ragwort	*Senecio aphanactis*	1874	None/ None, 2.2	Drying alkaline flats within cismontane woodland and coastal scrub; blooms January–April	Absent	Drying alkaline flats within cismontane woodland and coastal scrub not found onsite; last observed in the area in 1874
Slender-leaved pondweed	*Stuckenia filiformis*	1981	E/E, 1B.1	Shallow clear water of lakes and drainage canals; blooms May–July	Absent	Shallow clear water of lakes and drainage canals not found onsite
Suisun Marsh aster	*Symphyotrichum lentum*	2009	None/ None, 1B.2	Brackish and freshwater marshes and swamps; blooms May–November	Absent	Brackish and freshwater marshes and swamps not found onsite
Showy rancheria clover	*Trifolium amoenum*	1892	E/None, 1B.1	Open sunny sites, swales within valley and foothill grassland, coastal bluff scrub; blooms April–June	Absent	Open sunny sites and swales found onsite; however, presence is unlikely due to degraded roadside habitat by dominated grasses

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Common Name	Scientific Name	Year of last CNDDB Record within 2-mile Buffer	Status (Federal/ State)	Supporting Habitat/ Blooming Period	Habitat Present/ Absent	Species Presence in the action area/Rationale
Saline clover	*Trifolium hydrophilum*	1960	None/ None, 1B.2	Mesic and alkaline sites; marshes, swamps, valley and foothill grasslands, vernal pools; blooms April–June	Absent	Mesic areas found onsite; however, presence is unlikely due to degraded roadside habitat by dominated grasses
Invertebrates						
Vernal pool fairy shrimp	*Branchinecta lynchi*	1997	T/None	Vernal pools, swales, and depressions	Low potential near Locations #33–36, EMS #6–10	Swales and depressions holding water found onsite; however, presence is unlikely due to construction activities associated with the highway, and degraded roadside habitat
Monarch butterfly	*Danaus plexippus*	1998	None/ None	Roosts in wind-protected tree groves (Eucalyptus, Monterey pine, cypress)	Absent	Stands of Eucalyptus found at several locations in the Project area
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	2004	T/None	In association with blue elderberry (*Sambucus mexicana*)	Absent	No blue elderberry found onsite
Vernal pool tadpole shrimp	*Lepidurus packardi*	1995	E/None	Vernal pools and swales	Low Potential near Locations #33–36	Swales and depressions holding water found onsite; however, presence is unlikely due to construction activities associated with the highway, and degraded roadside habitat

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Common Name	Scientific Name	Year of last CNDDB Record within 2-mile Buffer	Status (Federal/ State)	Supporting Habitat/ Blooming Period	Habitat Present/ Absent	Species Presence in the action area/Rationale
California linderiella	*Linderiella occidentalis*	2003	None/ Near T	Seasonal pools in unplowed grasslands underlain by hardpan, or in sandstone depressions	Low Potential near Locations #33–36	Seasonal pools in unplowed grasslands underlain by hardpan, or in sandstone depressions not found onsite
Wilbur Springs shorebug	*Saldula usingeri*	1983	None/ None	Springs and creeks with high concentrations of sodium (Na), chlorine (Cl), and lithium (Li)	Absent	Springs and creeks with high concentrations of Na, Cl, and Li not found onsite
Reptiles/Amphibians						
Western pond turtle (WPT)	*Emys marmorata*	2004	None/ None, SC	Ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation; upland habitat to 0.5 kilometer (km) from water	Present near Locations #9–16, EMS #8–10, and sign relocation	Several streams and irrigation ditches with potential for WPT are adjacent to work areas; however, due to limited connectivity to documented occurrences, this species is unlikely to be found onsite
Alameda whipsnake	*Masticophis lateralis euryxanthus*	2002	T/T	Chaparral and scrub habitat, also adjacent grasslands, oak savannah, and woodland	Absent	Chaparral and scrub habitat not found onsite
California red-legged frog (CRLF)	*Rana draytonii*	2004	T/None, SC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent vegetation	Potential habitat near Locations #9–16, EMS #8–10, and sign relocation	Several wetlands with potential to hold CRLF are adjacent to work areas

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Birds						
Tricolored blackbird	*Agelaius tricolor*	1988	None/ None, SC	Open water adjacent to protected nesting substrate	Absent	Open water adjacent to protected nesting substrate not found onsite
Golden eagle	*Aquila chrysaetos*	1987	None/ CFP	Nests in large trees in open areas and cliff-walled canyons	Present	Potential nesting habitat found onsite
Great blue heron	*Ardea herodias*	1993	None/ None	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes	Absent	Suitable nesting habitat adjacent to marshes not found onsite
Burrowing owl	*Athene cunicularia*	2005	None/ None, SC	Open, dry annual and perennial grasslands, deserts, and scrub lands with low-growing vegetation; subterranean nester dependent upon burrowing mammals	Present	Open dry perennial grasslands found onsite
Swainson's hawk	*Buteo swainsoni*	2007	None/T	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural/ranch lands	Present	Potential nesting habitat and recent CNDDB records found onsite

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Common Name	Scientific Name	Year of last CNDDB Record within 2-mile Buffer	Status (Federal/ State)	Supporting Habitat/ Blooming Period	Habitat Present/ Absent	Species Presence in the action area/Rationale
White-tailed kite	*Elanus leucurus*	2004	None/ CFP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland; dense-topped trees for nesting and perching	Present	Potential nesting habitat found onsite
American peregrine falcon	*Falco peregrinus anatum*	1991	Delisted/ CFP	Near wetlands, lakes, rivers, or other water; nests on cliffs, banks, dunes, mounds, and human-made structures	Absent	Potential nesting habitat not found onsite
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	2006	None/ None, SC	Salt, brackish, and freshwater marshes; requires thick continuous cover to water; nests in willows	Absent	Salt, brackish, and freshwater marshes not found onsite
California black rail	*Laterallus jamaicensis coturniculus*	2006	None/ CFP	Inhabits the margins of salt, brackish, and freshwater marshes	Absent	Salt, brackish, and freshwater marshes not found onsite
Suisun song sparrow	*Melospiza melodia maxillaris*	1947	None/ None, SC	Brackish and freshwater marshes; nests in cattails, tules, and other sedges	Absent	Brackish and freshwater marshes not found onsite
San Pablo song sparrow	*Melospiza melodia samuelis*	1901	None/ None, SC	Inhabits tidal sloughs and salt marshes	Absent	Salt marshes not found onsite

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Osprey	*Pandion haliaetus*	1990	None/ None	Large nests built in treetops within 15 miles of fish-producing bodies of water	Absent	Potential nesting habitat found onsite
California clapper rail	*Rallus longirostris obsoletus*	1994	E/E CFP	Inhabits the margins of salt, brackish, and freshwater marshes; typically associated with pickleweed	Absent	Salt, brackish, and freshwater marshes not found onsite
Mammals						
Hoary bat	*Lasiurus cinereus*	1916	None/ None	Roosts in dense foliage of medium to large trees	Present	Dense foliage and medium to large trees not found onsite
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	1992	E/CFP	Saline emergent wetlands; associated with pickleweed	Absent	Saline emergent wetlands not found onsite
Suisun shrew	*Sorex ornatus sinuosus*	1952	None/ None, SC	Tidal marshes with dense low-lying cover and drift weed	Absent	Tidal marshes not found onsite

The Project locations in general do not provide suitable habitat for these species and it is not expected that any of the listed species will be present. In addition, the surrounding high-density development along large stretches of this Project creates a barrier to travel by wildlife from natural habitat.

Within the general vicinity of the Project, the following types of habitats may support T/E species:

- Tidal marshes may support Suisun shrew (*Sorex ornatus sinuosus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), California clapper rail (*Rallus longirostris obsoletus*), Suisun song sparrow (*Melospiza melodia maxillaris*), and other sensitive

wildlife species or rare plants, such as Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*) or soft bird's-beak (*Chloropyron molle* ssp. *molle*). No tidal or salt marshes were present within the direct footprint of the Project. Indirect impacts to offsite locations will be avoided through implementation of Project avoidance and minimization measures (AMMs) including general construction best management practices (BMPs).

- Vernal pools may support rare plants and animals, including vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), or Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*). No vernal pools were present within the direct footprint of the Project; however, a potential exists for these species to occur in tire ruts, drainages, and other seasonally filled depressions. Indirect and direct impacts to offsite locations will be avoided through implementation of Project AMMs, including preconstruction surveys for fairy shrimp, tadpole shrimp, and rare plants.

- Open grasslands, oak woodlands, and chaparral may support sensitive species, including golden eagle (*Aquila chrysaetos*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), burrowing owl (*Athene cunicularia*), or rare plants, such as Mt. Diablo buckwheat (*Eriogonum truncatum*). While open grasslands, woodlands, and chaparral are present in the general vicinity, no direct effects to this habitat are anticipated from Project elements. Indirect impacts will be avoided through implementation of Project AMMs, including BMPs. Impacts to breeding birds protected under the Migratory Bird Treaty Act (MBTA) will be avoided through preconstruction surveys and scheduling vegetation clearing or construction activities outside the breeding season for birds, as specified in the Avoidance and Minimization Measures section of this Constraints Memo.

- Tall trees in open habitat may support breeding birds, including Swainson's hawk (*Buteo swainsoni*) or white-tailed kite (*Elanus leucurus*). Stands of eucalyptus (*Eucalyptus* spp.) may support wintering monarch butterflies (*Danaus plexippus*). Tall trees, such as eucalyptus, are not anticipated to be removed during Project activities. Where tall, ornamental, naturalized, or native trees are present near Project facilities, indirect effects will be avoided through implementation of AMMs, including preconstruction surveys for birds, monarch roosts, and scheduling construction activities outside the breeding season for birds or wintering season for monarchs, as specified in the Avoidance and Minimization Measures section of this Constraints Memo.

- Freshwater marshes and pools may support sensitive species, including California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), or tricolored blackbird (*Agelaius tricolor*). Wetland habitats are adjacent to some Project facilities. Wetlands observed during the site visits were generally small, isolated from open habitats by on-ramps or other developments, and supported by roadside drainage. The majority of the observed wetlands do not contain the specific habitats to support listed species. However, AMMs will be implemented that include the installation of environmentally sensitive area (ESA) fencing, exclusion fencing, and preconstruction surveys for California red-legged frog and California tiger salamander (in the locations specified in Table 2) in the unlikely event that these species may be present in the Project area.

- Blue elderberry bushes (*Sambucus nigra* ssp. *caerulea*) in the eastern portion of the Project area may support valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). No blue elderberry bushes were observed within the Project footprint and impacts are not anticipated to the valley elderberry longhorn beetle.

- Serpentine soils may support rare plants including Tiburon paintbrush (*Castilleja affinis* ssp. *neglecta*), showy rancheria clover (*Trifolium amoenum*), or big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*). No serpentine soils were found within the Project footprint and impacts to offsite locations will be avoided with implementation of AMMs, including BMPs.

- Bats, including hoary bat (*Lasiurus cinereus*) and pallid bat (*Antrozous pallidus*), may roost in dense tree groves, abandoned buildings, and under bridge structures. No bat roosts were observed during surveys. However, to avoid potential impacts to bat species, AMMs that include focused surveys of potential roost sites will be conducted prior to construction in the vicinity of Project activities. If identified, bat maternity roosts will be left undisturbed until the juveniles are independent.

Summary of Avoidance and Minimization Measures and Construction Constraints
AMMs are proposed to avoid impacts to species protected by the federal or state Endangered Species Acts, and to avoid impacts to jurisdictional wetlands and waterways, and are outlined in the Avoidance and Minimization Measures section found on Pages 27 through 29. It is anticipated that if the recommendations put forth in this Constraints Memo are followed, no biological permits will be required based on the information provided at the time. Depending on the extent of jurisdictional wetlands and waterways, and the ability of Project activities to avoid these features, it is possible that as many as three of the work locations may require alterations to the planned designs to avoid obtaining resource agency permits or to avoid potential safety issues. See Table 3 for potential constraints at these three work locations.

Table 2 presents a summary of the AMMs to be employed at each location.

Table 2: Summary of Avoidance and Minimization Measures by Post Mile

Location/Route/Post-Mile (PM)	Implement-specific AMMs (NB – nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS – vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Erosion control BMPs	Biological Monitoring
Location 1: Westbound (WB) I-80, PM 2.387	NB	–	–
Location 2: Eastbound (EB) I- 80, PM 3.569	NB	–	–
Location 3: EB I-80, PM 4.026	NB, monarch butterfly roosts	X	–
Location 4: EB I-80, PM 4.57	NB	–	–

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Location/Route/Post-Mile (PM)	Implement-specific AMMs (NB – nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS – vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Erosion control BMPs	Biological Monitoring
Location 5: WB I-80, PM 5.401	NB, AM	_	X
Location 6: EB I-80, PM 5.401	NB	_	_
Location 7: WB I-80, PM 7.993	NB, AM	_	X
Location 8: WB I- 80, PM 7.993	NB, AM	_	X
Location 9: WB I- 80, PM 7.993	NB, AM	X	X
Location 10: EB I-80, PM 8.245	NB, AM	_	X
Location 11: WB I-80, PM 9.060	NB, AM	_	X
Location 12: WB I-80, PM 9.160	NB, AM	_	X
Location 13: WB I-80, PM 9.320	NB, AM	_	X
Location 14: WB I-80, PM 9.480	NB, AM	_	X
Location 15: WB I-80, PM 9.640	NB, AM	X	X
Location 16: EB I-80, PM 10.073	NB, AM	X	X
Location 17: EB I 80, PM 12.618	NB	_	_
Location 18: EB I-80, PM 12.627	NB	_	_
Location 19: EB I-80, PM 13.239	NB	_	_
Location 20: EB I-80, PM 13.364	NB	_	_
Location 21: EB I-80, PM 15.580	NB	_	_
Location 22: EB I-80, PM 20.300	NB	_	_
Location 23: EB I-80, PM 21.470	NB, monarch butterfly roosts	_	_
Location 24: EB I-80, PM 22.390	NB	X	_
Location 25: WB I-80, PM 25.145	NB	_	_
Location 26: WB I-80, PM 25.157	NB	_	_
Location 27: WB I-80, PM 25.247	NB	_	_
Location 28: EB I-80, PM 25.268	NB	_	_
Location 29: EB I-80, PM 25.337	NB	_	_
Location 30: EB I-80, PM 25.742	NB	_	_
Location 31: WB I-80, PM 25.829	NB	_	_
Location 32: WB I-80, PM 27.517	NB	_	_
Location 33: WB I-80, PM 28.120	NB, VPS	X	_
Location 34: EB I-80, PM 28.120	NB, VPS	_	_
Location 35: WB I-80, PM 28.140	NB, VPS	_	_

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Location/Route/Post-Mile (PM)	Implement-specific AMMs (NB – nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS – vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Erosion control BMPs	Biological Monitoring
Location 36: EB I-80, PM 28.140	NB, VPS	_	_
EMS Location 1: Southbound (SB) 505 connector to Eastbound (EB) I-80	NB	X	_
EMS Location 2: SB 505 connector to EB I-80	NB	X	_
EMS Location 3: SB 505 connector to WB I-80	NB, VPS	X	_
EMS Location 4: SB 505 connector to WB I-80	NB, VPS, Bat roosts	X	_
EMS Location 5: SB 505 connector to WB I-80	NB, VPS, Bat roosts	X	_
EMS Trenching between Locations 1 and 5: 505 SB connectors to EB and WB I-80	NB, VPS	X	_
EMS Location 6: EB 37 connector to EB I-80	NB	_	_
EMS Location 7: EB 37 connector to EB I-80	NB	X	_
EMS Location 8: EB 37 connector to WB I-80	NB, AM	X	_
EMS Location 9: EB 37 connector to WB I-80	NB, AM	X	X
EMS Location 10: EB 37 connector to WB I-80	NB, AM	X	X
Sign Relocation: WB I-80	NB, AM	X	X
EMS trenching between Locations 6 and 10 and sign relocation: 37 EB connectors to EB and WB I-80	NB, AM	X	X

Notes:

Please consult the entire memorandum for a detailed description of AMMs for the Project area.

[1] Alternatives to surveys may include seasonal work periods and or exclusion fencing, to be evaluated at work locations with survey requirements.

Table 3: Summary of Construction Constraints by PM

Location	Reason for Construction Constraint	Potential Solution
Location 21: EB I-80 PM 15.80	Pothole is located in a seasonal wetland/depression.	Move potholing to adjacent elevated area or pothole 60 feet south in the gravel lot located off of Busch Road.
Location 27: WB I-80 PM 25.247	Pothole is located in a roadside drainage ditch.	Move pothole either 200 feet to the northeast or southwest along the highway, or pothole on the paved road shoulder. Due to a constrained work area, it might not be possible to pothole on the paved shoulder without an off-ramp closure or traffic control plan.
Location 31: WB I-80 PM 25.829	Tight work area adjacent to a blind curve. No biological issues, but a potential safety issue.	Implement a traffic control plan, close the on-ramp, or move the location to a safer work area.
EMS Location 3: SB 505 to WB I-80	Location is in close proximity to waters of the U.S. Construction might impact this wetland.	Work off of the paved shoulder and limit the extent of the work area to avoid the wetland. The EMS could also be relocated to the left-hand side of the on-ramp to avoid impacts to the drainage.
EMS Location 4: SB 505 to WB I-80	Location is in close proximity to waters of the U.S. Construction may impact this wetland.	Work should be isolated to the paved shoulder and the extent of the work area should be limited to avoid the wetland. The EMS could also be relocated to the left-hand side of the on-ramp to avoid impacts to the drainage.
EMS Location 5: SB 505 to WB I-80	Location is in close proximity to a potentially jurisdictional drainage. Construction may impact this drainage.	Work should be isolated to the paved shoulder. The drainage is approximately 5 feet from the road shoulder. If the drainage must be impacted, wetland delineations are recommended or this EMS should be relocated away from the drainage.
EMS Trenching between Locations 1 and 5	Trench as designed passes through U.S. Army Corps of Engineers (USACE) jurisdictional wetland and waters of the state.	Follow recommendations for trench layout provided in the Location Descriptions that follow this table to avoid impacts to these wetlands. All trenching must occur immediately adjacent to the shoulder to avoid impacts.
EMS Locations 6, 7, 8: EB 37 to WB I-80	Locations are in close proximity to a drainage.	Trench only immediately adjacent to the road shoulder, and employ appropriate erosion control BMPs.
EMS Trenching between Locations 6 and 7	Trench as designed passes through two drainages.	Follow recommendations for trench layout provided in the Location Descriptions that follow this table to avoid impacts to these drainages. All trenching must occur immediately adjacent to the shoulder to avoid impacts.

Location Descriptions:
The following observations were noted during the field surveys conducted on February 10, 13, and 21, 2012.

Pothole Locations:

Location 1: WB I-80, PM 2.387

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is covered with a layer of wood chips. Adjacent areas consist of planted vegetation, including several cherry trees (*Prunus padus*) and a dense understory dominated by California rose (*Rosa californica*). Ornamental trees, such as myoporum (*Myoporum laetum*) and ficus (*Ficus* sp.) mixed with coast live oak (*Quercus agrifolia*), are present in the general vicinity but will not be disturbed by the limited potholing activities. The surrounding areas consist of ornamental and landscaped vegetation associated with the highway and adjacent residential developments. The existing vegetation, including the ornamental trees and native shrubs immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 2: EB I-80, PM 3.569

The pothole location is immediately adjacent to the shoulder in the brick-paved median between the off- and on-ramps. Non-native grasses, such as soft chess (*Bromus hordeaceus*) and wild oats (*Avena fatua*), grow in small patches between the bricks. Adjacent areas consist of planted vegetation associated with the highway, including Eucalyptus trees (*Eucalyptus* spp.) with a dense understory dominated by coast live oak, toyon (*Heteromeles arbutifolia*), and myoporum. Other trees within the vicinity, such as Mexican fan palm (*Washingtonia robusta*), are present but will not be disturbed by the limited potholing activities. The surrounding areas consist of ornamental and landscaped vegetation associated with the highway and adjacent commercial developments. These areas will not be disturbed by the limited potholing activities. The existing vegetation including the ornamental trees and native shrubs immediately adjacent to this location may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 3: EB I-80, PM 4.026

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil. Immediately adjacent to the pothole location is a stand of large mature eucalyptus trees with an understory composed of coast live oak and coyote brush (*Baccharis pilularis*). Approximately 12 feet east of the pothole location is a 2-foot-wide roadside drainage dominated by a small (10- by 2-foot) stand of senescent cattails (*Typha* sp.), a wetland obligate species. The majority of the drainage is culverted and devoid of vegetation with approximately 1 inch of standing water. It is recommended that this drainage be avoided during potholing activities. Appropriate BMPs, such as non-monofilament wattles, should be staked into the ground around the potholing location to

prevent any sediments, excavation spoils, or water from entering the drainage. Silt fencing is not recommended to be installed, as the excavation will be open for a short period of time and the impacts of installing the fencing would likely be greater than the excavation itself. Adjacent areas consist of non-native grassland dominated by wild oat and soft chess. The surrounding areas consist of ornamental and landscaped vegetation associated with the adjacent residential and commercial developments. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the ornamental trees and native shrubs immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 4: EB I-80, PM 4.57

The pothole location is immediately adjacent to the shoulder on disturbed and compacted bare ground with small patches of soft chess. Adjacent areas consist of planted vegetation associated with the highway, including several cherry trees and California rose. In between the plantings are ruderal forbs, including mustard (*Brassica juncea*) and red-stem filaree (*Erodium cicutarium*). The surrounding areas consist of ornamental and landscaped vegetation associated with the highway and adjacent commercial developments. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the ornamental trees and native shrubs immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of the nesting bird survey AMMs, impacts to federal- or state-listed species are not anticipated.

Location 5: WB I-80, PM 5.401

The pothole location is approximately 25 feet off the shoulder in an area dominated by non-native grasses, such as soft chess, wild oat, and annual ryegrass (*Lolium multiflorum*), with a small patch of ruderal forbs, including mustard and wild radish (*Raphanus sativus*). Approximately 50 feet north of the pothole location is a small (100- by 1-foot), dry, roadside drainage dominated by annual ryegrass. In addition, there is a larger drainage (150- by 3-foot) approximately 150 feet to the northeast that is dominated by arroyo willow (*Salix lasiolepis*). It is recommended that both of these features be avoided during potholing activities. There is a CNDDB record for CRLF within 0.9 mile of this work location. This record is to the west, across highway, within Riddler Creek, which connects under the highway and to this drainage. Due to this dispersal corridor and suitable habitat for this species immediately adjacent to the work area, this species could potentially be found in this drainage. Other adjacent areas consist of planted ornamental vegetation associated with the highway and adjacent golf course. These areas will not be disturbed by the limited potholing activities. The existing vegetation at this location may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 6: EB I-80, PM 5.401

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by non-native grasses, including soft chess, wild oat, and ruderal forbs, such as mustard, English plantain (*Plantango lanceloata*), curly dock (*Rumex crispus*), and fennel (*Foeniculum vulgare*). Adjacent areas consist of planted vegetation associated with the highway, including several pine trees (*Pinus* sp.) and liquidamber (*Liquidambar styraciflua*). The surrounding areas consist of ornamental and landscaped vegetation associated with the highway, including toyon, myoporum, and pine trees. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the ornamental trees and shrubs immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 7: WB I-80, PM 7.993

The pothole location is within 10 feet of the shoulder on disturbed and compacted soil that is dominated by mustard. Adjacent areas consist of planted vegetation associated with the highway, including coyote brush. The surrounding areas are actively grazed fields dominated by non-native grassland vegetation. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the coyote brush immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 8: WB I-80, PM 7.993

The pothole location is within 10 feet of the shoulder on disturbed and compacted soil that is dominated by mustard. Adjacent areas consist of planted vegetation associated with the highway, including coyote brush. The surrounding areas consist of actively grazed fields dominated by non-native grassland vegetation. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the coyote brush immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 9: WB I-80, PM 7.993

The pothole location is within 15 feet of the shoulder on disturbed and compacted soil that is dominated by non-native grasses including soft chess and wild oat. Immediately adjacent to the pothole location is a small (50- by 2-foot), dry drainage dominated by senescent cattails, bulrush (*Schoenoplectus* sp.), and a large arroyo willow. It is recommended that this drainage be avoided during potholing activities. Appropriate BMPs, such as non-monofilament wattles, should be staked into the ground around the potholing location to prevent any sediments, excavation spoils, or water from entering the drainage. Silt fencing is not recommended to be installed as the excavation will be open for a short period of time and the impacts of installing the fencing would likely be greater than the excavation itself. Due to the proximity to CNDDB records, critical habitat for CRLF, and suitable habitat within the drainage, it is recommended that a biological

monitor is present during all work activities. The slope down to this drainage is steep and it is recommended that all work occur from the road shoulder and that no vehicles leave the pavement to minimize potential impacts to the drainage and CRLF, and that the excavation avoid any suitable refuge areas for CRLF, such as ground squirrel burrows. The surrounding areas consist of actively grazed fields dominated by non-native grassland vegetation. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the willow tree immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 10: EB I-80, PM 8.245

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by ruderal habitat including mustard, fennel, bristly ox-tongue (*Picris echioides*), and non-native grasses such as wild oat. East of the pothole location, approximately 20 feet away and adjacent to McGary Road, is a dry drainage dominated by arroyo willow. It is recommended that this drainage be avoided during potholing activities. Due to the proximity to CNDDB records, critical habitat for CRLF, and suitable upland dispersal habitat within the drainage, it is recommended that a biological monitor is present during all work activities. It is recommended that all work occur from the road shoulder and that no vehicles leave the pavement to minimize potential impacts to the drainage and CRLF, and that the excavation avoid any suitable refuge areas for CRLF such as ground squirrel burrows. The surrounding areas consist of actively grazed fields dominated by non-native grassland vegetation. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the willow immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 11: WB I-80, PM 9.060

The pothole location is within 20 feet of the shoulder on disturbed and compacted soil that is dominated by mustard. Adjacent areas consist of ruderal habitat associated with the highway. Due to the proximity to CNDDB records, critical habitat for CRLF, and suitable upland dispersal habitat, it is recommended that a biological monitor is present during all work activities. The surrounding areas consist of actively grazed fields dominated by non-native grassland and ruderal vegetation. These areas will not be disturbed by the limited potholing activities. The ruderal vegetation and one coast live oak tree approximately 50 feet northwest of the pothole location may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 12: WB I-80, PM 9.160

The pothole location is within 20 feet of the shoulder on disturbed and compacted soil that is dominated by mustard. Adjacent areas consist of ruderal habitat associated with the highway. Due to the proximity to CNDDB records, critical habitat for CRLF, and suitable upland dispersal

habitat, it is recommended that a biological monitor is present during all work activities. The surrounding areas consist of actively grazed fields dominated by non-native grassland and ruderal vegetation. These areas will not be disturbed by the limited potholing activities. The ruderal habitat may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 13: WB I-80, PM 9.320

The pothole location is within 10 feet of the shoulder on disturbed and compacted soil that is dominated by non-native grasses such as wild oat, soft chess, and annual ryegrass. Adjacent areas consist of ruderal habitat associated with the highway and a stand of coast live oak trees with a sparse coyote brush understory. A concrete drainage ditch is located approximately 35 feet northwest and up-slope of the pothole location. Due to the proximity to CNDDB records, critical habitat for CRLF, and suitable upland dispersal habitat, it is recommended that a biological monitor is present during all work activities. The surrounding areas consist of actively grazed fields dominated by non-native grassland and ruderal vegetation. These areas will not be disturbed by the limited potholing activities. The native vegetation adjacent to the site may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 14: WB I-80, TMS, PM 9.480

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is currently devoid of vegetation. Adjacent areas consist of non-native grasses and ruderal habitat dominated by several brome species (*Bromus* spp.) and mustard. One coyote brush shrub is within 50 feet of the pothole location. Due to the proximity to CNDDB records, critical habitat for CRLF, and suitable habitat within the drainage, it is recommended that a biological monitor is present during all work activities. The surrounding areas consist of actively grazed fields dominated by non-native grassland and ruderal vegetation. These areas will not be disturbed by the limited potholing activities. The ruderal habitat and coyote brush at this location may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 15: WB I-80, PM 9.640

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by ruderal habitat, including mustard and poison hemlock (*Conium maculatum*). Immediately adjacent to the pothole location, there is a large stand of coast live oak trees with an understory dominated by coyote brush scrub. In addition, the topography slopes steeply downward to a creek that is approximately 40 feet north of the pothole location. This creek parallels Lynch Road and hereafter will be referred to as "unidentified creek." Appropriate BMPs, such as non-monofilament wattles, should be staked into the ground around the potholing location to prevent any sediments, excavation spoils, or water from entering the creek. Silt

fencing is not recommended to be installed as the excavation will be open for a short period of time and the impacts of installing the fencing would likely be greater than the excavation itself. The unidentified creek's watershed is dominated by coast live oak riparian forest vegetation. It is recommended that this creek and its associated vegetation be avoided during potholing activities. Due to the proximity to CNDDB records, critical habitat for CRLF, and suitable habitat within the creek, it is recommended that a biological monitor is present during all work activities. The surrounding areas consist of actively grazed fields dominated by non-native grassland vegetation. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the coast live oak trees and coyote brush scrub immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 16: EB I-80, PM 10.073

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by ruderal habitat including mustard and poison hemlock. Immediately adjacent to the pothole location, the topography slopes steeply downward to McGary Road and the unidentified creek, which is approximately 85 feet to the south. Appropriate BMPs, such as non-monofilament wattles, should be staked into the ground around the potholing location to prevent any sediments, excavation spoils, or water from entering the drainage. Silt fencing is not recommended to be installed as the excavation will be open for a short period of time and the impacts of installing the fencing would likely be greater than the excavation itself. The slope is dominated by mustard and coyote brush scrub. The unidentified creeks watershed is dominated by coast live oak riparian forest vegetation. This portion of the creek and its associated vegetation will not be disturbed during potholing activities. Due to the proximity to CNDDB records, critical habitat for CRLF, and suitable habitat within the drainage, it is recommended that a biological monitor is present during all work activities. The surrounding areas consist of actively grazed fields dominated by non-native grassland vegetation and the unidentified creeks watershed. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including coyote brush scrub, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 17: EB I-80, PM 12.618

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by non-native grasses including soft chess, wild oat, annual ryegrass, and ruderal forbs, such as mustard, English plantain, curly dock, and fennel. Adjacent areas consist of non-native grasses and eucalyptus trees associated with the highway. The surrounding areas consist of ruderal habitat and ornamental vegetation associated with the highway and commercial developments. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the eucalyptus trees immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 18: EB I-80, PM 12.627

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by non-native grasses including soft chess, wild oat, annual ryegrass, and ruderal forbs, such as mustard, English plantain, curly dock, and fennel. Adjacent areas consist of non-native grasses and eucalyptus trees associated with the highway. The surrounding areas consist of ruderal habitat and ornamental vegetation associated with the highway and commercial developments. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the eucalyptus trees immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 19: EB I-80, PM 13.239

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by non-native grasses, including annual ryegrass and ruderal forbs, such as mustard, English plantain, and curly dock. Adjacent areas consist of non-native grasses and two arroyo willow trees that are associated with a roadside culvert that is located 30 feet south of the pothole location and next to an existing fence line. It is recommended that this area is avoided during potholing activities. The surrounding areas consist of ruderal habitat and ornamental vegetation associated with the highway and commercial developments. These areas will not be disturbed by the limited potholing activities. The existing vegetation, including the willow trees immediately adjacent to this location, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 20: EB I-80, PM 13.364

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is currently devoid of vegetation. Adjacent areas consist of Himalayan blackberry (*Rubus discolor*), oleander (*Nerium oleander*), coyote brush, cherry, and eucalyptus trees. The surrounding areas consist of ruderal habitat and ornamental vegetation associated with the highway and commercial developments. These areas will not be disturbed by the limited potholing activities. The existing vegetation immediately adjacent to this location, including the Himalayan blackberry and oleander, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 21: EB I-80, PM 15.580

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by non-native grasses including annual ryegrass, soft chess, English plantain, curly dock, wild radish, bristly ox-tongue, and wild oat. The pothole location is within a depression that appears to collect highway and stormwater. The adjacent areas are elevated and bare of vegetation. It is recommended that the pothole is relocated to this high bare area next to

the existing fence line to avoid this depression. Approximately 80 feet off of the highway is a graveled area that can be accessed off of Busch Road, this graveled area would also be suitable for potholing. The surrounding areas consist of ruderal habitat and ornamental vegetation associated with the highway and adjacent golf course. This vegetation will not be disturbed by the limited potholing activities. The surrounding vegetation is not expected to support nesting birds; however, the graveled area off of Busch road is suitable nesting habitat for killdeer (*Charadrius vociferous*) and other ground nesting birds. Nesting bird surveys are required at this location if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 22: EB I-80, PM 20.300

The pothole location is immediately adjacent to the shoulder along a gentle slope with disturbed and compacted soil that is dominated by non-native grasses including wild oat and smilo grass (*Piptatherum miliaceum*). Due to the large amount of vegetation present around the pothole location, it is recommended that all work occur from the highway shoulder and that no vehicles drive off of paved surfaces. The adjacent areas consist of ornamental and native vegetation including oleander, coast live oak, and coyote brush associated with the highway and adjacent commercial developments. The surrounding areas are dominated by ornamental vegetation, including cherry and eucalyptus trees. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 23: EB I-80, PM 21.470

The pothole location is immediately adjacent to the shoulder along a gentle slope with disturbed and compacted soil that is dominated by wild oat, eucalyptus, coast live oak, and coyote brush. Due to the large amount of vegetation present around the pothole location, it is recommended that all work occur from the highway shoulder and that no vehicles drive off of paved surfaces. The adjacent areas consist of ornamental and native vegetation including eucalyptus, coast live oak, pine, and coyote brush associated with the highway and adjacent golf course. The surrounding areas include non-native grasslands and ornamental vegetation associated with residential areas. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 24: EB I-80, PM 22.390

The pothole location is adjacent to Lyons Road on disturbed and compacted soil that is dominated by annual ryegrass, wild oat, soft chess, coast live oak, coyote brush, and an arroyo willow tree. The adjacent areas consist of actively grazed fields and a roadside drainage ditch that parallels Lyons Road approximately 10 feet north of the pothole location. Appropriate BMPs, such as non-monofilament wattles, should be staked into the ground around the potholing

location to prevent any sediments, excavation spoils, or water from entering the drainage. Silt fencing is not recommended to be installed as the excavation will be open for a short period of time and the impacts of installing the fencing would likely be greater than the excavation itself. The ditch is dominated by arroyo willow and coyote brush. The surrounding areas consist of actively grazed fields. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location, including the coast live oak, coyote brush, and willows may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 25: WB I-80, PM 25.145

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by annual ryegrass, wild oat, English ivy (*Hedera helix*), pine, and mustard. The adjacent and surrounding areas consist of ornamental vegetation associated with commercial and residential developments. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location, including the pine tree, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 26: WB I-80, PM 25.157

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is dominated by English ivy, wild radish, and smilo grass. The adjacent area is dominated by smilo grass and California rose. The surrounding areas consist of ornamental and native vegetation associated with commercial and residential developments, including cherry, eucalyptus, and coast live oak. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location, including California rose, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 27: WB I-80, PM 25.247

The pothole location is adjacent to the shoulder on disturbed and compacted soil that is dominated by English ivy. A small (35- by 1-foot) dry roadside drainage is located immediately adjacent to the pothole location that is dominated by English ivy and wild radish. It is recommended that the pothole location be moved 200 feet northeast or southwest of the current location to avoid the drainage. Another alternative would be to conduct the potholing within the road shoulder itself to minimize potential impacts to the drainage. The adjacent areas consist of Mexican fan palm and California rose. The surrounding areas consist of ornamental and native vegetation associated with commercial and residential developments including pine and coast live oak. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location may support nesting birds and will require

nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 28: EB I-80, PM 25.268

The pothole location is adjacent to the shoulder on disturbed and compacted soil that is dominated by wild oat. The adjacent areas consist of willow, pine, oak (*Quercus* sp.), cherry, and oleander. The surrounding areas consist of ornamental and native vegetation associated with the highway and commercial developments, including pine, cherry, oleander, and coast live oak. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 29: EB I-80, PM 25.337

The pothole location is adjacent to the shoulder on disturbed and compacted soil that is dominated by red-stem filaree. The adjacent areas consist of oak, oleander, California rose, and red stem filaree. A concrete-lined drainage ditch is located approximately 50 feet northwest of the potholing location and it is recommended that it is avoided during potholing. The surrounding areas consist of ornamental and native vegetation associated with the highway and commercial developments, including pine, cherry, oleander, and coast live oak. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 30: EB I-80, PM 25.742

The pothole location is immediately adjacent to the shoulder on disturbed and compacted soil that is currently devoid of vegetation. The adjacent areas consist of toyon, cherry, and eucalyptus. The surrounding areas consist of ornamental and native vegetation associated with the highway and commercial developments, including pine, cherry, oleander, and eucalyptus. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 31: WB I-80, PM 25.829

The pothole location is adjacent to the shoulder on disturbed and compacted soil that is dominated by wild oat. A 10-foot-tall retaining wall is located approximately 5 feet to the west of the pothole location. The surrounding areas consist of ornamental and native vegetation associated with the highway and residential developments, including pine, cherry, and coast live oak. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location may support nesting birds and will require

nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 32: WB I-80, TMS, PM 27.517

The pothole location is in a 10-foot-wide strip of disturbed and compacted soil between the highway shoulder and East Monte Vista Avenue. The adjacent areas are largely hardscaped or covered in wild oat. The existing vegetation immediately adjacent to this location would not support nesting birds. However, there are several large trees within 250 feet that are suitable nesting habitat for raptors, necessitating nesting bird surveys if construction is to take place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 33: WB I-80, PM 28.120

The pothole location is adjacent to the shoulder on disturbed and compacted soil that is dominated by wild oat and wild radish. The adjacent area is dominated annual grasses and ornamental shrubs, including myoporum and bottlebrush (*Callistemon rigidus*). A chain-link fence runs parallel to the highway at this location and a roadside drainage is located on the far side of this fence, approximately 10 feet northwest of the pothole location. The drainage is dominated by wild oat, wild radish, and annual ryegrass. Due to nearby CNDDB records for vernal pool tadpole shrimp (*Lepidurus packardi*) and suitable habitat for vernal pool fairy shrimp (*Branchinecta lynchi*), it is recommended that this drainage be avoided. As this species can also occur in water-filled tire ruts, it is recommended that all tire ruts with potential to seasonally hold water are avoided during potholing. To minimize potential impacts to special-status species, it is recommended that all work occur from the road shoulder and that no vehicles drive off pavement. Appropriate BMPs, such as non-monofilament wattles, should be staked into the ground around the potholing location to prevent any sediments, excavation spoils, or water from entering the drainage. Silt fencing is not recommended to be installed as the excavation will be open for a short period of time and the impacts of installing the fencing would likely be greater than the excavation itself. The surrounding areas consist of ornamental and native vegetation associated with the highway and residential developments, including pine and eucalyptus. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location, including myoporum, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 34: EB I-80, PM 28.120

The pothole location is adjacent to the shoulder on disturbed and compacted soil that is dominated by mustard, fennel, and wild oat. The adjacent area is dominated by ruderal forbs, grasses, and ornamental trees, including cherry and eucalyptus. Due to nearby CNDDB records for vernal pool tadpole shrimp and suitable habitat for vernal pool fairy shrimp, it is recommended that any tire ruts with potential to seasonally hold water are avoided during potholing. To further minimize potential effects to these special-status species, it is recommended that all work occur from the road shoulder and that no vehicles drive off

pavement. The surrounding areas consist of ornamental and native vegetation associated with the highway and commercial developments, including pine, cherry, and eucalyptus. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 35: WB I-80, PM 28.140

The pothole location is adjacent to the shoulder on disturbed and compacted soil that is dominated by myoporum and bottlebrush. The adjacent area is dominated by these shrubs and eucalyptus trees. Due to nearby CNDDB records for vernal pool tadpole shrimp and suitable habitat for vernal pool fairy shrimp, it is recommended that any tire ruts with potential to seasonally hold water are avoided during potholing. To further minimize potential effects to these special-status species, it is recommended that all work occur from the road shoulder and that no vehicles drive off pavement. The surrounding areas consist of ornamental and native vegetation associated with the highway and residential developments, including pine and eucalyptus. These areas will not be disturbed during the limited potholing activities. The existing vegetation at this location including myoporum may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 36: EB I-80, PM 28.140

The pothole location is adjacent to the shoulder on disturbed and compacted soil that is dominated by mustard, fennel, and wild oat. The adjacent area is dominated by ruderal forbs, grasses, and cherry and eucalyptus trees. Due to nearby CNDDB records for vernal pool tadpole shrimp and suitable habitat for vernal pool fairy shrimp, it is recommended that any tire ruts with potential to seasonally hold water are avoided during potholing. To further minimize potential effects to these special-status species, it is recommended that all work occur from the road shoulder and that no vehicles drive off pavement. The surrounding areas consist of ornamental and native vegetation associated with the highway and commercial developments, including pine, cherry, and eucalyptus. These areas will not be disturbed during the limited potholing activities. The existing vegetation immediately adjacent to this location, including cherry and eucalyptus, may support nesting birds and would require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS and Sign Relocation Locations:

EMS Location 1: SB 505 Connector to EB I-80, PM 0.66

The EMS will be located on the left-hand side of the Route 505 SB connector to EB I-80. This location is dominated by wild oat. Due to safety concerns, the area could only be observed from an automobile, as there was no suitable safe parking area adjacent to the work area. Immediately downslope of this location is a low-lying area that appears to seasonally collect water. It is

recommended that all work avoid this potential seasonal wetland. Adjacent areas are dominated by wild oat, mustard, English plantain, and several eucalyptus and walnut trees. Surrounding areas are predominantly hardscaped with commercial developments. To minimize impacts to the potential seasonal wetland, it is recommended that BMPs, such as silt fencing and non-monofilament wattles, are installed around the perimeter of the work area to minimize the potential for construction spoils or sediments to run off of the construction site. There are several nearby CNDDB records for vernal pool tadpole shrimp and vernal pool fairy shrimp; however, this location appears to have been re-contoured during construction of the overpass and there did not appear to be suitable habitat adjacent to the EMS location for these species. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Location 2: SB 505 Connector to WB I-80, PM R 0.02

The EMS will be located on the left-hand side of the Route 505 SB connector to WB I-80. The work site is dominated by wild oat, foxtail fescue, and English plantain. Surrounding areas are dominated by wild oat, mustard, star thistle (*Centaurea solstitialis*), seep willows (*Baccharis salicifolia*), pine, and eucalyptus. Surrounding areas are predominantly hardscaped with commercial developments. Downslope of this work location is a seasonal wetland and drainage. Hal Durio, Caltrans Senior Environmental Planner, on September 7, 2011, determined that a portion of this drainage was waters of the U.S. and the upstream portion was waters of the state. This wetland will be avoided during the EMS construction activities. To minimize impacts to the seasonal wetland, it is recommended that BMPs, such as silt fencing and non-monofilament wattles, are installed around the perimeter of the work area to minimize the potential for construction spoils or sediments to run off of the construction site. There are several nearby CNDDB records for vernal pool tadpole shrimp and vernal pool fairy shrimp; however, this location appears to have been re-contoured during construction of the overpass and there did not appear to be suitable habitat adjacent to the EMS location for these species. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Location 3: SB 505 Connector to WB I-80, PM R 0.094

The EMS will be located on the right-hand side of the Route 505 SB connector to WB I-80. This location is in very close proximity to the waters of the state that Hal Durio had identified during a site visit on September 7, 2011. After this on-ramp has been widened, it is possible that this EMS location will impact this wetland. The work area is dominated by annual ryegrass, wild oat, and mustard. Adjacent areas are dominated by wild oat, mustard, seep willows, foxtail fescue, curly dock, and several large eucalyptus and pine trees. Surrounding areas are predominantly hardscaped with commercial developments and agricultural fields to the north. If the EMS is relocated to the left-hand side of the on-ramp the wetland area will be avoided. Due to nearby CNDDB records for vernal pool tadpole shrimp, it is recommended that all wetlands and tire ruts with potential to seasonally hold water are avoided during EMS installation. If these areas are located in the immediate vicinity of the work area, it is recommended that they are surrounded

by silt fencing and non-monofilament wattles to minimize the potential for construction spoils and sediments to enter these areas. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Location 4: SB 505 Connector to WB I-80, PM R 0.04

The EMS will be located on the right-hand side of the Route 505 SB connector to WB I-80. This location is in very close proximity to the waters of the U.S. that Hal Durio had identified on the September 7, 2011 site visit, and within 20 feet of a channelized creek. It is possible that installation of this EMS location will impact this wetland. The work area is dominated by annual ryegrass, wild oat, and mustard. Adjacent areas are dominated by wild oat, mustard, seep willow, foxtail fescue, curly dock, and several large eucalyptus and pine trees. Surrounding areas are predominantly hardscaped with commercial developments; agricultural fields are located to the north. If the EMS is relocated to the left-hand side of the on-ramp the wetland area would be avoided. Due to nearby CNDDB records for vernal pool tadpole shrimp, it is recommended that all wetlands and tire ruts with potential to seasonally hold water are avoided during EMS installation. If these areas are located in the immediate vicinity of the work area, it is recommended that they are surrounded by silt fencing and non-monofilament wattles to minimize the potential for construction spoils and sediments to enter these areas. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. The creek culvert under the 505 connector provides suitable roosting habitat for bats, and it is recommended that preconstruction surveys for bats take place. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Location 5: SB 505 Connector to WB I-80, PM R 28.215

The EMS will be located on the right-hand side of Route 505 before it connects to I-80. The work area is dominated by star thistle, fennel, mustard, and wild oat. Adjacent areas are dominated by these species and Russian thistle, with several eucalyptus and walnut trees. Surrounding areas are dominated by agricultural fields. Approximately 200 feet to the south is Horse Creek and a roadside drainage ditch runs approximately 10 feet away from this EMS location to Horse Creek. It is recommended that this EMS is installed from the road shoulder and that silt fencing is installed between this work location and the drainage to prevent construction spoils and sediments from entering it. A similar drainage exists on the left-hand side of the roadway, so relocating the sign to that side of the road will have similar impacts. Due to nearby CNDDB records for vernal pool tadpole shrimp, it is recommended that all wetlands and tire ruts with potential to seasonally hold water are avoided during EMS installation. If these areas are located in the immediate vicinity of the work area, it is recommended that they are surrounded by silt fencing and non-monofilament wattles to minimize the potential for construction spoils and sediments to enter these areas. The culvert at Horse Creek is suitable habitat for roosting bats and pre-construction surveys for bats are recommended. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if

construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Trenching between Locations 1 and 5: 505 SB Connectors to EB and WB I-80

The trenching diagrams that were provided on February 17, 2012, to connect these EMS locations would impact seasonal wetlands previously identified by Hal Durio on September 7, 2011, and other drainage ditches. It is recommended that trenching at this location occur as described below to minimize the potential to impact these sensitive areas.

From EMS Location 5, it is recommended that the trench run along the right-hand side of the roadway immediately adjacent to the shoulder to avoid impacts to the drainage. This will pass two channelized creeks and it is recommended that utility cables are run along the bridge in conduit and that no work is conducted within the bed, bank, or slope of these creeks. After the second creek crossing jack-and-bore will carry the utilities to the left-hand side of the Route 505 connector to EB I-80. From there, the trench will run along the left-hand side of the connector ramp to EMS Location 2. The trench will then continue following the left-hand side of the connector and run downslope to I-80 immediately adjacent to the structure, then north along the SB Route 505 connector ramp to I-80 to EMS 3. To get utilities to the EMS locations on the EB side of I-80, it is recommended that jack-and-bore be used to carry the utilities from the base of the Route 505 overpass on the WB side of I-80 to the base of the overpass on the EB side of I-80. Another option is to carry the utilities across the bridge in conduit. Once on the EB side of I-80, the trench should run immediately adjacent to the shoulder on the left-hand side of the Route 505 connector ramp to EB I-80 to EMS 1.

EMS Location 6: EB 37 Connector to EB I-80, PM R 11.63

The EMS will be located on the right-hand side of the EB Route 37 connector to EB I-80 in an area dominated by wild oat and other annual grasses. Star thistle, fennel, stone fruit trees, and pine dominate adjacent areas. There is a steep slope immediately adjacent to the highway shoulder that is not drivable, and it is recommended that all work be completed from the road shoulder due to this steep slope. Surrounding areas are dominated by annual grasses, landscaped areas, and to the east are agricultural fields. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Location 7: EB 37 Connector to EB I-80, PM R 11.528

The EMS will be located immediately adjacent to a guard rail off on the right-hand side of the EB Route 37 connector to EB I-80 in an area dominated by wild oat and star thistle. Adjacent areas are dominated by fennel, curly dock, and ornamental trees. Approximately 120 feet downslope to the east of this location is a drainage. It is recommended that erosion control BMPs, such as non-monofilament wattles, are staked around the perimeter of the work area to minimize the potential for construction sediments and spoils to run off into this drainage. Surrounding areas are dominated by annual grasses, landscaped areas, and to the east are

agricultural fields. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Location 8: EB 37 Connector to WB I-80, PM R 11.477

The EMS will be located on the right-hand side of the EB Route 37 connector to WB I-80 in an area dominated by wild oat and other annual grasses. Annual grasses, ornamental trees, English plantain, and fennel dominate adjacent areas. Surrounding areas are largely hardscaped with commercial and residential developments. It was too dangerous to stop in this location due to a small shoulder and steep slope adjacent to the shoulder. A wetland and drainage run at the base of this slope, and according to a field visit conducted by Hal Durio on September 7, 2011, this area is not USACE jurisdictional. This drainage runs downstream past EMS Locations 9 and 10, and appears to have a downstream connection to Lake Chabot. There is a CNDDB record for CRLF within 0.9 mile of this work location. This record is to the west across the highway at Riddler Creek, and this drainage connects downstream to the creek. Due to this dispersal corridor and suitable habitat for this species immediately adjacent to the work area this species could potentially be found in this drainage. It is recommended that AMMs specific to CRLF are implemented at this location, including a biological monitor being present during all construction activities. It is recommended that erosion-control BMPs, such as non-monofilament wattles, are staked around the perimeter of the work area to minimize the potential for construction sediments and spoils to run off into this drainage. Surrounding areas are dominated by annual grasses and commercial and residential development. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Location 9: EB 37 Connector to WB I-80, PM R 11.39

The EMS will be located on the right-hand side of the EB Route 37 connector to WB I-80 in an area dominated by wild oat and other annual grasses. Adjacent areas were dominated by annual grasses, ornamental trees, bull thistle (*Cirsium vulgare*), artichoke thistle (*Cynara cardunculus*), and fennel. Surrounding areas are largely hardscaped with commercial and residential developments. It was too dangerous to stop in this location due to a small shoulder and steep slope off of the shoulder. A wetland and drainage run at the base of this slope, and according to a field visit conducted by Hal Durio on September 7, 2011, this area is not USACE jurisdictional. This drainage runs past EMS Location 7 and downstream to Location 10 and the sign relocation, and appears to have a downstream connection to Lake Chabot. There is a CNDDB record for CRLF within 1.0 mile of this work location. This record is to the west across the highway at Riddler Creek and this drainage connects downstream to the creek. Due to this dispersal corridor and suitable habitat for this species immediately adjacent to the work area this species could potentially be found in this drainage. It is recommended that AMMs specific to CRLF are implemented at this location, including a biological monitor being present during all construction activities. It is recommended that erosion-control BMPs, such as non-monofilament wattles, are staked around the perimeter of the work area to minimize the potential for construction

sediments and spoils to run off into this drainage. Surrounding areas are dominated by annual grasses and commercial and residential development. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Location 10: EB 37 Connector to WB I-80, PM R 11.202

The EMS will be located on the right-hand side of the EB Route 37 prior to where this highway connects to I-80. Wild oat and other annual grasses dominate the work area. Adjacent areas were dominated by annual grasses, prickly pear cactus (*Opuntia* spp.), ornamental trees, bull thistle, and fennel. Surrounding areas are largely hardscaped with commercial and residential developments. It was too dangerous to stop in this location due to a small shoulder and steep slope off of the shoulder. A wetland and drainage run at the base of this slope and this connects underneath Turner Parkway to the drainage that runs past EMS Locations 8 and 9 and to the sign relocation and appears to have a downstream connection to Lake Chabot. According to a field visit conducted by Hal Durio on September 7, 2011, this area is not USACE jurisdictional. There is a CNDDB record for CRLF within 1.25 miles of this work location. This record is to the west across the highway at Riddler Creek. Due to this dispersal corridor and suitable habitat for this species immediately adjacent to the work area, this species could potentially be found in this drainage. It is recommended that AMMs specific to CRLF are implemented at this location, including a biological monitor being present during all construction activities. It is recommended that erosion-control BMPs, such as non-monofilament wattles, are staked around the perimeter of the work area to minimize the potential for construction sediments and spoils to run off into this drainage. Surrounding areas are dominated by annual grasses and commercial and residential development. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Sign Relocation: WB I-80

A sign located adjacent to the shoulder of WB I-80 is proposed to be relocated approximately 250 feet to the south. The work area is dominated by wild oat, annual ryegrass, purple needlegrass (*Nasella pulchra*), and several trees that include a coast live oak, pine, and California pepper (*Schinus molle*). Approximately 30 feet to the west is a drainage that connects upstream to the drainage that runs past EMS Locations 8, 9, and 10, and appears to have a downstream connection to Lake Chabot. This drainage was dominated by Harding's bunchgrass (*Phalaris aquatica*), bristly ox-tongue (*Picris echioides*), and seep willow. The entire drainage adjacent to the work location held water during the site visit and connected to Riddler Creek. Surrounding areas are dominated by commercial developments. There is a CNDDB record for CRLF 1.1 miles upstream of this work location on Riddler Creek. Due to this dispersal corridor and suitable habitat for this species immediately adjacent to the work area, this species could potentially be found in this drainage. It is recommended that AMMs specific to CRLF are implemented at this location, including a biological monitor being present during all construction activities. It is recommended that erosion-control BMPs, such as non-monofilament wattles, are staked around the perimeter of the work area to minimize the potential for construction

sediments and spoils to run off into this drainage. Surrounding areas are dominated by annual grasses, and commercial and residential development. Surrounding areas are dominated by annual grasses and commercial and residential development. The existing vegetation immediately adjacent to this location may support nesting birds and will require nesting bird surveys if construction takes place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

EMS Trenching between Locations 6 and 10 and Sign Relocation: 37 EB Connectors to EB and WB I-80

The trenching diagrams that were provided on February 17, 2012, to connect these EMS locations indicate that a single trench will be used to provide utilities to EMS Locations 8, 9, and 10, and the relocated sign. This would run in the same location as one previously described in the prior memorandum approved by Caltrans. As the drainage is located immediately downslope of Route 37, it is recommended that all trenching take place immediately adjacent to the shoulder. Appropriate erosion control measures such as staked non-monofilament wattles, or silt fencing are recommended to be installed along the length of the trench to prevent construction spoils or sediments from entering this drainage. To minimize potential impacts to the drainage, it would also be possible to trench on the left-hand side of the 37 EB to I-80 WB connector ramp; however, this would require jack-and-bore to carry the utilities to the other side of the roadway and would likely result in a larger impact to the drainage. There is a CNDDB record for CRLF approximately 0.9 mile from this trench across the highway at Riddler Creek. The drainage that runs past EMS Locations 8, 9, and 10 connects downstream to the creek. Due to this dispersal corridor and suitable habitat for this species immediately adjacent to the work area, this species could potentially be found in this drainage. It is recommended that AMMs specific to CRLF are implemented at this location, including a biological monitor being present during all construction activities.

The connection between EMS Locations 6 and 7, as shown on the trenching diagrams, crosses a concrete-lined and a natural drainage. It is recommended that this trenching layout is changed to avoid impacting these drainages. Option 1 is to route utilities through conduit on the EB 37 to EB I-80 connector ramp between these locations. Option 2 is to run the trench immediately downslope of EMS 6 to the Admiral Callaghan on-ramp to WB Route 37, then use jack-and-bore to carry the utilities under the on-ramp. From that point, the trench would run east along the EB I-80 to WB 37 connector ramp to the WB I-80 Admiral Callaghan off-ramp. At this location, there is another small drainage, and trenching would have to occur immediately adjacent to the shoulder to avoid it. The trench would then run west along the WB Route 37 off-ramp to Admiral Callaghan to a point adjacent to EMS 7, then directly upslope to this location. Option 3 would be to connect utilities to EMS 7 by connecting it to the utilities that ran to EMSs 8 through 10. This could be accomplished by using jack-and-bore to carry the utilities to the EB 37 connector ramp to EB I-80, and from there run a trench upslope to EMS 7. EMS 6 would be connected to utilities from an existing adjacent connection.

Federal Migratory Bird Treaty Act:
The federal MBTA 16 United States Code (U.S.C.) 703 et seq.; Title 50 *Code of Federal Regulations* (CFR) Part 10; and California Fish and Game Code Sections 3503, 33513, and 3800

protect the occupied nests and eggs of migratory birds. Birds nest are located in a variety of places, including trees, shrubs, human-made structures, and on the ground. No bird nests were observed within the Project area during the site visits. All work locations contain larger vegetation, trees, or suitable habitat for ground nesting birds within 500 feet of work areas.

To comply with the MBTA and California Fish and Game Code, active bird nests must be protected. To avoid impacting nests, any trimming, clearing, or grubbing of vegetation in the Project area should occur between September 1 and January 31. If this is not possible, a qualified biologist must perform a preconstruction survey to identify active nests, and those nests must be avoided during construction. Caltrans biologists require notice of 5 working days prior to clearing and grubbing. If no active nests are located, the tree removal/trimming must occur within 3 days of the bird survey. Caltrans will not remove any vegetation containing active bird nests. The Caltrans standard specification (14-6.02) for bird protection will be included in the bid package.

Waters and Wetlands:
Several of the locations have wetland characteristics and/or drainage areas within the Project area. See location descriptions for recommendations on how to avoid special aquatic areas. See Table 3 and location descriptions for construction constraints. If these special aquatic areas can be completely avoided, this will preclude the need for formal wetland delineation. If there are jurisdictional waters and wetlands and they will be impacted, resource agency permits will be required at these locations.

Resource Agency Permits:
It is anticipated that if the recommendations put forth in this Constraints Memo are followed, then biological permits (USACE 404, Regional Water Quality Control Board [RWQCB] 401, U.S. Fish and Wildlife Service [USFWS], or National Oceanic and Atmospheric Administration [NOAA] Biological Opinion, or California Department of Fish and Game [CDFG] 1602 permit) will not be required based on the information provided at the time of memo preparation.

It is recommended that all special aquatic areas are avoided and that the recommendations provided within the location descriptions, Table 2, and Table 3 are followed. If these special aquatic areas and potentially sensitive resources can be completely avoided through the use of AMMs, preconstruction surveys, and changes to the Project plans, this would preclude the need for wetland delineations. If the Project description and design changes from the dates of this field review (February 10 and 13, 2012), then additional field studies may be required.

Avoidance and Minimization:
AMMs will include the following:

- Where Project activities are near suitable vegetation, including trees, shrubs, and grasslands that may support nesting birds, including ground and tree nesting raptors, surveys for nesting birds (where access is possible) will be required if construction occurs during the bird nesting season (February 1 through August 31). Protection of nesting birds should be conducted according to Caltrans Standard Specification 14-6.02.

Specification 14-6.02 requires protection of "migratory and nongame birds, their occupied nests, and their eggs."

- If an active nest is found, a buffer of at least 100 feet will be placed around the nest. Criteria used to determine the buffer placed around the nest will include, but not be limited to, the following: species of bird present, presence of visual screening between the nest and construction activities, ambient conditions affecting the nest, behavior of birds in response to the surveyors or other ambient human activity, and the extent of disruption from the proposed construction. If it is determined that construction will not affect an active nest or disrupt nesting behavior, construction will proceed without any restriction or mitigation measure. If it is determined that construction will affect an active bird nest or disrupt reproductive behavior, then avoidance will be implemented.

- Where there is potential for CRLF and California tiger salamander, pre-construction surveys should be conducted to prevent impacts to suitable refugia for these species. During all construction activities, including vegetation removal for the locations between American Canyon Road and Red Top Road (Locations 7 through 16, and EMS Locations 8-10, sign relocation, and trenching work to connect EMS Locations 8-10 and the sign relocation), a biological monitor must be present. See Table 2 for locations where CRLF AMMs are recommended.

- Where tall eucalyptus trees are in the Project area, a qualified biologist shall identify the presence of potential monarch roosts. Work should be scheduled outside of the wintering season for monarchs at these locations to avoid direct and indirect impacts.

- Where Project activities are proposed for an area that may support vernal pool species, it is recommended that these areas be avoided and that no work occur within locations with potential to seasonally hold water. However, if it is not feasible for these areas to be avoided, it is recommended that a focused survey for vernal pool tadpole shrimp and vernal pool fairy shrimp takes place. See Table 2 for locations where vernal pool species AMMs are recommended. If sensitive vernal pool species are identified, avoidance measures will be implemented (including exclusion zones) if feasible. If these areas cannot be avoided, suitable mitigation measures will be developed in consultation with USFWS and/or CDFG. Measures will be developed specific to species impacted and may include habitat acquisition.

- Where blue elderberry bushes are located in the Project area, they must be avoided to prevent potential impacts to valley elderberry longhorn beetle.

- Where potential bat roosts are present within 500 feet of Project activities, a qualified biologist shall identify the presence of potential bat maternity roosts. During the months of November through February, a qualified biologist shall supervise the installation of screens at potential roosts to prevent bat use (after verifying that no bats will be trapped by screening). If roosts cannot be excluded, a determination will be made by a qualified biologist, in coordination with CDFG, as to whether or not construction work will affect

the site or disrupt reproductive behavior. Criteria used for this evaluation will include, but not be limited to, presence of visual screening between the roost and construction activities, ambient conditions affecting the roost, and the extent of disruption from the proposed construction. If construction activities have the potential to threaten the viability of an active maternity, then a minimum 500-foot buffer will be flagged around the site and designated a construction-free zone until the site is no longer active.

- Where Project activities are proposed for an area that may support rare plants, it is recommended that these areas are avoided through the use of silt fencing. However, if it is not feasible for these areas to be avoided, it is recommended that a focused survey for rare plants will be conducted during appropriate blooming periods at least 6 months prior to construction. See Table 2 for locations where rare plant AMMs are recommended. If plants are identified, avoidance measures will be implemented (including exclusion zones) if feasible. If plants cannot be avoided, suitable mitigation measures will be developed in consultation with USFWS and/or CDFG. Measures will be developed specific to species impacted and may include plant relocation, seed harvest and replanting, or habitat acquisition.

- Where Project activities have the potential to impact jurisdictional waterways and wetlands, a formal jurisdictional delineation shall be conducted. Where Project activities cannot be modified to avoid impacts to jurisdictional waterways and wetlands, permits will be acquired from appropriate regulatory agencies. Permit conditions and requirements will be incorporated into Project construction documents for compliance and implementation.

- Excavations shall be open for the minimum amount of time necessary, and never overnight. After confirming the location of the buried utilities, these excavations shall be backfilled and compacted using native vegetation. If excavations must be open overnight, additional avoidance and minimization measures will be required.

- Implement standard Caltrans BMPs for stormwater pollution prevention.

- Adhere to MBTA regulations to protect nesting birds.

- Perform work from the paved road where possible.

- Pothole immediately adjacent to the shoulder in previously disturbed and compacted soil to minimize impacts to vegetation.

- Clean up all leaks, drips, and spills from any equipment immediately.

- Inspections should be regularly conducted by Construction Monitors/Environmental Inspectors to ensure that AMMs and BMPs are being followed.

Please allow the Office of Biological Science and Permits the opportunity to review your plans as they progress. If you have any questions or concerns regarding this constraints memorandum, please contact Caltrans Biologist Decie Boone at: (510) 286-5667

State of California
DEPARTMENT OF TRANSPORTATON

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: Christopher States, Senior Biologist
Department of Transportation, District 4
Office of Biological Sciences and Permits

Date: October 19, 2011

File: SOL-80 PM 0.0 – 28.5

EA: 153500

DRB 10/19/2011

From: David Rasmussen, Biologist
CH2M HILL

Subject: Addendum to the Biological Reconnaissance Field Assessment for Implementation of Ramp Widening, Traffic Operation Systems, and Changeable Message Sign for Freeway Performance Initiative EA 153500

Background:

On June 30 and July 27 through July 29, 2011, David Rasmussen/CH2M HILL biologist accompanied Dennis Ocampo/California Department of Transportation (Caltrans) Project Engineer, Christopher States/Caltrans Senior Biologist, and Decie Boone/Caltrans Associate Biologist to assess the existing biological conditions along the proposed construction areas for the Solano 80 Freeway Performance Initiative (FPI) Project, EA 153500. This addendum to the memorandum dated September 23, 2011, describes additional observations from the field assessment and recommendations on further actions for Location 72.

Project Description:

- Caltrans proposes to implement ramp widening, traffic operation systems (TOS), changeable message signs (CMS), and other improvements for Freeway Performance Initiative (FPI) EA 153500 on Interstate 80 (I-80) in Solano County, California (Project). The Project proposes to widen lanes at 17 on-ramp locations along I-80. In addition, along I-80 Traffic Operations Systems (TOS) will be installed consisting of; traffic monitoring stations (TMS), which will be installed at 43 locations; closed-circuit television (CCTV), which will be installed at 29 locations; and changeable message signs (CMS), which will be installed at 5 locations. Maintenance vehicle pullouts (MVP) and CHP enforcement areas will be created to ease future access to these locations. See the prior memorandum dated September 23, 2011 for further descriptions of the Project.

Preliminary Biological Review:

In preparation for the field review, CH2M HILL biologist David Rasmussen evaluated information provided in the Project description, queried the California Natural Diversity Database (CNDDB) and federal critical habitat data to determine reported occurrences and potential habitat of federal- and state-listed threatened/endangered (T/E) species and critical habitat within 2 miles on either side of the I-80 mainline, and conducted field surveys to identify suitable habitat for those species. See Attachment 2 for CNDDB maps of the Project

area. Due to the limited footprint of the Project, a 4-mile corridor along I-80 within the Project area for CNDDB records was considered sufficient to adequately research the species that may potentially occur in the Project vicinity. The CNDDB results included records for 52 T/E species. Habitat for these 52 species was generally not observed within the vicinity of the Project area during field surveys. The majority of the work locations in the Project area are dominated by annual grasses in ruderal roadside habitat.

Flora and Fauna:
During the June 30 and July 27 through July 29, 2011, site visits, it was observed that the Project is located in a high-volume traffic area and that the majority of the proposed areas of construction consist of bare dirt, lightly vegetated areas dominated by invasive grasses, and landscaped shoulders. See the Memorandum dated September 23, 2011 for further descriptions of listed species and their potential to occur in the Project area.

Summary of Avoidance and Minimization Measures and Construction Constraints
Avoidance and Minimization Measures (AMMs) are proposed to avoid impacts to species protected by the federal or state Endangered Species Acts, and to avoid impacts to jurisdictional wetlands and waterways, and are outlined in the Avoidance and Minimization Measures section found in the Memorandum dated September 23, 2011. AMMs relevant to the additional location described in this addendum are found on pages 4-6. It is anticipated that if the recommendations put forth in this constraints memo are followed then no biological permits, will be required based on the information provided at the time.

Table 1 presents a summary of the AMMs to be employed at Location 72.

Table 1: Summary of Avoidance and Minimization Measures by Post Mile

Location / Route / Activity / Post-Mile	Avoidance and Minimization Measures				
	Implement specific AMMs (NB –nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS –vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Fencing Type		Biological Monitoring	Seasonal Work Windows
		Silt	ESA		
Location 72: Eastbound Interstate 80, Nut Tree Rd, On-ramp Widening, TMS, PM 28.39	NB, VPS, monarch butterfly roosts	X	X	-	-

Please consult the entire memorandum for a detailed description of Avoidance and Minimization Measures for the Project area

[1]- Alternatives to surveys may include seasonal work periods and or exclusion fencing, to be evaluated at work locations with survey requirements.

Location Descriptions:
The following observations were noted during the field surveys conducted on June 30 and July 27 through 29, 2011. See the Memorandum dated September 23, 2011 for descriptions of Locations 1-71.

Location 72: Eastbound Interstate 80, On-ramp widening, TMS, PM 28.39

At this location, the EB I-80 on-ramp from Nut Tree Road is proposed to be widened from one lane to two lanes. A TMS will be installed at a location near the merge point with I-80. Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. On the left hand side of the on-ramp is a drainage and two culverts that likely connect to the jurisdictional wetland and drainage at Location 71 described in the Memorandum dated September 23, 2011. Within this drainage there is potential habitat for several rare plants that grow in vernally mesic areas. This drainage should be avoided during construction, and no widening or trenching should take place on the left hand side of the on-ramp. All widening and trenching should occur on the right hand side of the eastbound onramp. An existing chain-link fence separates the onramp from this area. ESA fencing and silt fencing will be installed along this fence line to prevent any direct or indirect impacts to the drainage.

During the site visit several tire ruts were holding water adjacent to the onramp. Due to the proximity to CNDDB records for vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardi*), AMMs specific to these species must be implemented if these seasonal pools will be impacted. If they will not be directly impacted by the on-ramp widening, it is recommended that they are surrounded by ESA fencing and silt fencing to prevent any direct or indirect impacts to the pools. Due to the proximity of large trees and suitable nesting habitat for killdeer (*Charadrius vociferous*) to the work area, nesting bird surveys will be required if trenching and construction take place during the nesting season. In addition, due to the Eucalyptus tree (*Eucalyptus globulus*) adjacent to this location, surveys for monarch butterfly winter roosts should be conducted if construction will occur in winter months (September to April). Commercial development, landscaped areas, and farmland dominate adjacent lands. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Federal Migratory Bird Treaty Act:

The Federal Migratory Bird Treaty Act (MBTA) 16 U.S.C 703 et seq., Title 50 Code of Federal Regulations Part 10, and California Fish and Game Code Sections 3503, 33513 and 3800 protect the occupied nests and eggs of migratory birds. Birds nest in a variety of places, including trees, shrubs, man-made structures, and on the ground. No bird nests were observed within the Project area during the site visits. All work locations contain larger vegetation, trees, or suitable habitat for ground nesting birds within 500 feet of work areas.

To comply with the MBTA and California Fish and Game Code, active bird nests must be protected. To avoid impacting nests, any trimming, clearing, or grubbing of vegetation in the Project area should occur between September 1 and January 31. If this is not possible, a

Caltrans biologist must perform a preconstruction survey to identify active nests, and those nests must be avoided during construction. Caltrans biologists require notice of 5 working days prior to clearing and grubbing. If no active nests are located, the tree removal/trimming must occur within 3 days of the bird survey. Caltrans will not remove any trees containing active bird nests. The Caltrans standard specification (14-6.02) for bird protection will be included in the bid package.

Waters and Wetlands:
The location described in this addendum, and several described in the Memorandum dated September 23, 2011 have wetland characteristics and/or drainage areas within the Project area. See the location description in this addendum and the descriptions in the prior Memorandum for recommendations on how to avoid special aquatic areas. If these special aquatic areas can be completely avoided, this will preclude the need for formal wetland delineation. If there are jurisdictional waters and wetlands and they will be impacted, resource agency permits will be required at those locations. ESA fencing and silt fencing will need to be placed at the work location described in this addendum, and at 36 work locations described in the prior September 23, 2011 Memorandum to prevent impacts to water quality, wildlife, or aquatic habitat downstream from drainage areas and wetlands within the Project area. See Table 1 and location descriptions for work locations with the need for ESA fencing and silt fencing.

Resource Agency Permits:
It is anticipated that if the recommendations put forth in this constraints memo are followed then no biological permits (USACOE 404, USFWS or NOAA Biological Opinion, or CDFG 1602 permit) will be required based on the information provided at this time.

It is recommended that all special aquatic areas are avoided, and that the recommendations provided within the location descriptions, and Table 1 are followed. If these special aquatic areas and potentially sensitive resources can be completely avoided through the use of AMMs, preconstruction surveys, and changes to the Project plans, this would preclude the need for a wetland delineation and the associated permits. If the Project description and design changes from the dates of this field review (June 30 and July 27 through 29, 2011), then additional field studies may be required.

Avoidance and Minimization:
AMMs relevant to the location described in this addendum are the following. Please see the Memorandum dated September 23, 2011 for further AMMs for the Project area:

- Where Project activities are near suitable vegetation, including trees, shrubs, and grasslands that may support nesting birds, including ground and tree nesting raptors, surveys for nesting birds (where access is possible) will be required if construction occurs during the bird nesting season (February 1 through August 31). Protection of nesting birds should be conducted according to Caltrans standard Specification 14-6.02. Specification 14-6.02 requires protection of "migratory and nongame birds, their occupied nests, and their eggs."

- If an active nest is found, a buffer of at least 100 feet will be placed around the nest. Criteria used to determine the buffer placed around the nest will include, but not be limited to the following; species of bird present, presence of visual screening between the nest and construction activities; ambient conditions affecting the nest; behavior of birds in response to the surveyors or other ambient human activity; and the extent of disruption from the proposed construction. If it is determined that construction will not affect an active nest or disrupt nesting behavior, construction will proceed without any restriction or mitigation measure. If it is determined that construction will affect an active bird nest or disrupt reproductive behavior, then avoidance will be implemented.

- Where there are tall Eucalyptus trees in the project area, a qualified biologist shall identify the presence of potential monarch roosts. Work should be scheduled outside of the wintering season for monarchs at these locations to avoid direct and indirect impacts.

- Where Project activities are proposed for an area that may support vernal pool species, it is recommended that these areas be avoided through the use of ESA fencing and silt fencing. However, if it is not feasible for these areas to be avoided it is recommended that a focused survey for vernal pool tadpole shrimp, and vernal pool fairy shrimp takes place. See Table 1 for locations where vernal pool species (VPS) AMMs are recommended. If sensitive vernal pool species are identified, avoidance measures will be implemented (including exclusion zones) if feasible. If these areas cannot be avoided, suitable mitigation measures will be developed in consultation with the USFWS and/or CDFG. Measures will be developed specific to species impacted and may include habitat acquisition.

- Where Project activities are proposed for an area that may support rare plants, it is these areas will be avoided through the use of ESA fencing and silt fencing. However, if it is not feasible for these areas to be avoided a focused survey for rare plants will be conducted during appropriate blooming periods at least 6 months prior to construction. If plants are identified, avoidance measures will be implemented (including exclusion zones). If plants cannot be avoided, suitable mitigation measures will be developed in consultation with the USFWS and/or CDFG. Measures will be developed specific to species impacted and may include plant relocation, seed harvest and replanting, or habitat acquisition.

- Where Project activities have the potential to impact jurisdictional waterways and wetlands, a formal jurisdictional delineation shall be conducted. Where Project activities cannot be modified to avoid impacts to jurisdictional waterways and wetlands, permits will be acquired from appropriate regulatory agencies. Permit conditions and requirements will be incorporated into Project construction documents for compliance and implementation.

- Implement Standard Caltrans Best Management Practices for stormwater pollution prevention.

- Adhere to MBTA regulations to protect nesting birds.
- Perform work from the paved road where possible.
- Install trenching immediately adjacent to the shoulder in previously disturbed and compacted soil to minimize impacts to vegetation.
- Place ESA fencing and silt fences a minimum of 50 linear feet in either direction beyond the construction area, and a minimum of 100 linear feet from special aquatic resources.
- Allow all ESA fencing and silt fencing to remain in place until the vegetation has been reestablished in the disturbed areas.
- Clean up all leaks, drips, and spills from any equipment immediately.
- Inspections should be regularly conducted by Construction Monitors / Environmental Inspectors to ensure AMMs and BMPs are being followed.

Please allow the Office of Biological Science and Permits the opportunity to review your plans as they progress. If you have any questions or concerns regarding this constraints memorandum, please contact Caltrans Biologist Decie Boone, at: (510) 286-5667

State of California
DEPARTMENT OF TRANSPORTATON

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: Christopher States, Senior Biologist
Department of Transportation, District 4
Office of Biological Sciences and Permits

Date: September 23, 2011

File: SOL-80 PM 0.0 – 28.5

EA: 153500

DYB 9/23/11

From: David Rasmussen, Biologist
CH2M HILL

Subject: Biological Reconnaissance Field Assessment for Implementation of Ramp Widening, Traffic Operation Systems, and Changeable Message Sign for Freeway Performance Initiative EA 153500

Background:
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Project Description:
Caltrans proposes to implement ramp widening, traffic operation systems (TOS), changeable message signs (CMS), and other improvements for Freeway Performance Initiative (FPI) EA 153500 on Interstate 80 (I-80) in Solano County, California (Project). The Project proposes to widen lanes at 17 on-ramp locations along I-80, including Redwood Street eastbound (EB), State Route (SR) 37 EB connector ramp to I-80 EB, SR 37 westbound (WB) to I-80 WB, Columbus Parkway WB to I-80 WB, Red Top Road WB, Alamo Drive EB and WB, Davis Street EB and WB, Cliffside Drive EB, Nut Tree Road EB and WB, North Texas Street WB, Mason/Depot WB, Monte Vista Avenue WB, I-505 southbound (SB) to I-80 EB, and I-505 SB connector ramp to I-80 WB. In addition, along I-80; traffic monitoring stations (TMS) will be installed at 43 locations; closed-circuit television (CCTV) will be installed at 29 locations; and CMS will be installed at 5 locations. Maintenance vehicle pullouts (MVP) will be created to ease future access to these locations.

Preliminary Biological Review:
In preparation for the field review, CH2M HILL biologist David Rasmussen evaluated information provided in the Project description; queried the California Natural Diversity Database (CNDDB) and federal critical habitat data to determine reported occurrences and potential habitat of federal- and state-listed threatened/endangered (T/E) species and critical habitat within 2 miles on either side of the I-80 mainline; and conducted field surveys to

identify suitable habitat for those species. See Attachment 1 for CNDDB maps of the Project area. Due to the limited footprint of the Project, a 4-mile corridor along I-80 within the Project area for CNDDB records was considered sufficient to adequately research the species that may potentially occur in the Project vicinity. The CNDDB results included records for 52 T/E species. Habitat for these 52 species was generally not observed within the vicinity of the Project area during field surveys. The majority of the work locations in the Project area are dominated by annual grasses in ruderal roadside habitat.

Flora and Fauna:
During the June 30 and July 27 through 29, 2011, site visits, it was observed that the Project is located in a high-volume traffic area and that the majority of the proposed areas of construction consist of bare dirt, lightly vegetated areas dominated by invasive grasses, and landscaped shoulders. Table 1 presents the 52 listed species, and the rationale regarding their potential to occur in the project area.

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
Plants						
Alkali milk-vetch	*Astragalus tener var. tener*	2002	None/ None, 1B.2	Playas, valley foothill grassland, alkaline vernal pools. Blooms March-June	Absent	Playas, valley foothill grassland, and alkaline vernal pools not found onsite
Heartscale	*Atriplex cordulata*	1892	None/ None, 1B.2	Alkaline flats and scalds with sandy soils in chenopod scrub, valley and foothill grassland, meadows. Blooms April-October	Absent	Alkaline flats and scalds with sandy soils in chenopod scrub, valley and foothill grassland, and meadow not found onsite
San Joaquin spearscale	*Atriplex joaquiniana*	1989	None/ None, 1B.2	Seasonal alkali wetlands or alkali sink scrub. Blooms April-October	Absent	Seasonal alkali wetlands or alkali sink scrub not found onsite
Vernal pool smallscale	*Atriplex persistens*	2002	None/ None, 1B.2	Alkaline vernal pools. Blooms June-October	Absent	Alkaline vernal pools not found onsite

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
Big-scale balsamroot	*Balsamorhiza macrolepis var. macrolepis*	1988	None/ None, 1B.2	Strong affinity for serpentine soils, cismontane woodland, valley and foothill grassland. Blooms March-June	Absent	No serpentine soils found onsite
Tiburon paintbrush	*Castilleja affinis ssp. neglecta*	1998	E/T	Rocky serpentine valley and foothill grasslands. Blooms April-June	Absent	No serpentine soils found onsite
Pappose tarplant	*Centromadia parryi ssp. Parryi*	1933	None/ None, 1B.2	Coastal prairie, meadows, and seeps, coastal salt marsh, valley and foothill grasslands. Locations are vernally mesic, and often alkaline. Blooms May-November	Present	Vernally mesic areas found onsite, however presence is unlikely due to degraded roadside habitat by dominated grasses
Soft bird's-beak	*Chloropyron molle ssp. molle*	1888	E/R	Coastal salt marsh. Blooms July-November	Absent	No coastal salt marsh onsite. Possibly extirpated due to increased soil salinity
Bolander's water-hemlock	*Cicuta maculata var. bolanderi*	1974	None/ None, 2.1	Freshwater and brackish marshes. Blooms July-September	Absent	Freshwater and brackish marshes not found onsite
Suisun thistle	*Cirsium hydrophilum var. hydrophilum*	1994	E/None, 1B.1	Coastal salt marsh. Blooms June-September	Absent	No coastal salt marsh found onsite

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
Recurved larkspur	*Delphinium recurvatum*	1940	None/ None, 1B.2	Alkaline soils, often in valley saltbush or valley chenopod scrub, cismontane woodland. Blooms March-June	Absent	Alkaline soils, in valley saltbush or valley chenopod scrub, and cismontane woodland not found onsite. Last seen in the area in 1940
Dwarf downingia	*Downingia pusilla*	1998	None/ None, 2.2	Vernal pools and pool margins, mesic sites in valley and foothill grassland. Blooms March-May	Present	Mesic sites found onsite, however presence is unlikely due to degraded roadside habitat dominated by annual grasses
Mt. Diablo buckwheat	*Eriogonum truncatum*	1888	None/ None, 1B.1	Dry exposed clay or sandy substrates in chaparral, coastal scrub, valley and foothill grassland. Blooms April-May	Absent	Last seen in the area in 1888. Dry exposed clay or sandy substrates in chaparral, coastal scrub, valley and foothill grassland not found onsite
Fragrant fritillary	*Fritillaria liliacea*	1875	None/ None, 1B.2	Coastal scrub, valley and foothill grassland, coastal prairie. Blooms February-April	Absent	Coastal scrub, valley and foothill grassland and coastal prairie not found onsite. Last seen in the area in 1875

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
Adobe-lily	*Fritillaria pluriflora*	1913	None/ None, 1B.2	Usually on clay soils, sometimes serpentine, chaparral, cismontane woodlands, foothill grassland. Blooms February-April	Absent	Chaparral, cismontane woodlands and foothill grassland not found onsite
Diablo helianthella	*Helianthella castanea*	2003	None/ None, 1B.2	Chaparral/oak woodland interface in rocky azonal soils, broadleaved upland forest, coastal scrub, riparian woodland, valley and foothill grassland. Blooms March-June	Absent	Chaparral/oak woodland interface in rocky azonal soils, broadleaved upland forest, coastal scrub, riparian woodland, and valley and foothill grassland not found onsite
Contra Costa goldfields	*Lasthenia conjugens*	1998	E/None, 1B.1	Cismontane woodlands, alkaline playas, valley and foothill grasslands, vernal pools. Depressions with standing water or saturated soils. Blooms March-June	Present	Depressions with standing water and saturated soils found onsite, however presence is unlikely due to degraded roadside habitat by dominated grasses
Delta tule pea	*Lathyrus jepsonii var. jepsonii*	1989	None/ None, 1B.2	Freshwater and brackish marshes. Blooms May-September	Absent	Freshwater and brackish marshes not found onsite

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
Legenere	*Legenere limosa*	1892	None/ None, 1B.1	Beds of vernal pools. Blooms April-June	Absent	Development has resulted in extirpation of natural populations. Vernal pools not found onsite
Mason's lilaeopsis	*Lilaeopsis masonii*	2005	None/R, 1B.1	Tidal zones of freshwater and brackish marshes, riparian scrub. Blooms April-November	Absent	Freshwater and brackish marshes, and riparian scrub not found onsite
Baker's navarretia	*Navarretia leucocephala ssp. bakeri*	1916	None/ None, 1B.1	Vernal pools and swales with adobe or alkaline soils in cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forests. Blooms April-July	Absent	Possibly extirpated, last seen in the area in 1916. Vernal pools and swales with adobe or alkaline soils in cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forests not found onsite
Chaparral ragwort	*Senecio aphanactis*	1874	None/ None, 2.2	Drying alkaline flats within cismontane woodland and coastal scrub. Blooms January-April	Absent	Drying alkaline flats within cismontane woodland and coastal scrub not found onsite. Last observed in the area in 1874

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
Slender-leaved pondweed	*Stuckenia filiformis*	1981	E/E, 1B.1	Shallow clear water of lakes and drainage canals. Blooms May-July	Absent	Shallow clear water of lakes and drainage canals not found onsite
Suisun Marsh aster	*Symphyotrichum lentum*	2009	None/ None, 1B.2	Brackish and freshwater marshes and swamps. Blooms May-November	Absent	Brackish and freshwater marshes and swamps not found onsite
Showy rancheria clover	*Trifolium amoenum*	1892	E/None, 1B.1	Open sunny sites, swales within valley and foothill grassland, coastal bluff scrub. Blooms April-June	Present	Open sunny sites and swales found onsite, however presence is unlikely due to degraded roadside habitat by dominated grasses
Saline clover	*Trifolium hydrophilum*	1960	None/ None, 1B.2	Mesic and alkaline sites. Marshes, swamps, valley and foothill grasslands, vernal pools. Blooms April-June	Present	Mesic areas found onsite, however presence is unlikely due to degraded roadside habitat by dominated grasses.
Invertebrates						

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
Vernal pool fairy shrimp	*Branchinecta lynchi*	1997	T/None	Vernal pools, swales and depressions	Present	Swales and depressions holding water found onsite, however presence is unlikely due to construction activities associated with the highway, and degraded roadside habitat.
Monarch butterfly	*Danaus plexippus*	1998	None/ None	Roosts in wind-protected tree groves (Eucalyptus, Monterey pine, cypress)	Present	Stands of Eucalyptus found at several locations in the Project area
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	2004	T/None	In association with blue elderberry (*Sambucus mexicana*)	Absent	No blue elderberry found onsite
Vernal pool tadpole shrimp	*Lepidurus packardi*	1995	E/None	Vernal pools and swales	Present	Swales and depressions holding water found onsite, however presence is unlikely due to construction activities associated with the highway, and degraded roadside habitat.

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
California linderiella	*Linderiella occidentalis*	2003	None/ Near T	Seasonal pools in unplowed grasslands underlain by hardpan, or in sandstone depressions	Absent	Seasonal pools in unplowed grasslands underlain by hardpan, or in sandstone depressions not found onsite
Wilbur Springs shorebug	*Saldula usingeri*	1983	None/ None	Springs and creeks with high concentrations of Na, Cl and Li	Absent	Springs and creeks with high concentrations of Na, Cl and Li not found onsite
Reptiles/Amphibians						
Western pond turtle	*Emys marmorata*	2004	None/ None, SC	Ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation. Upland habitat to 0.5km from water	Present	Several streams and irrigation ditches with potential for WPT are adjacent to work areas, however due to limited connectivity to documented occurrences this species is unlikely to be found onsite.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	2002	T/T	Chaparral and scrub habitat, also adjacent grasslands, oak savannah and woodland	Present	Several locations are adjacent to chaparral and scrub habitat.

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
California red-legged frog	*Rana draytonii*	2004	T/None, SC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent vegetation	Present	Several wetlands with potential to hold CRLF are adjacent to work areas.
Birds						
Tricolored blackbird	*Agelaius tricolor*	1988	None/ None, SC	Open water adjacent to protected nesting substrate	Absent	Open water adjacent to protected nesting substrate not found onsite
Golden eagle	*Aquila chrysaetos*	1987	None/ CFP	Nests in large trees in open areas and cliff-walled canyons	Present	Potential nesting habitat found onsite
Great blue heron	*Ardea herodias*	1993	None/ None	Colonial nester in tall trees, cliff sides, and sequestered spots on marshes	Absent	Suitable nesting habitat adjacent to marshes not found onsite
Burrowing owl	*Athene cunicularia*	2005	None/ None, SC	Open, dry annual and perennial grasslands, deserts and scrublands with low-growing vegetation. Subterranean nester dependent upon burrowing mammals	Present	Open dry perennial grasslands found onsite
Swainson's hawk	*Buteo swainsoni*	2007	None/T	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural/ranch lands	Present	Potential nesting habitat and recent CNDDB records found onsite

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
White-tailed kite	*Elanus leucurus*	2004	None/ CFP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Dense-topped trees for nesting and perching	Present	Potential nesting habitat found onsite
American peregrine falcon	*Falco peregrinus anatum*	1991	Delisted /CFP	Near wetlands, lakes, rivers, or other water. Nests on cliffs, banks, dunes, mounds and human made structures	Present	Potential nesting habitat found onsite
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	2006	None/ None, SC	Salt, brackish and freshwater marshes, requires thick continuous cover to water, nests in willows	Absent	Salt, brackish and freshwater marshes not found onsite
California black rail	*Laterallus jamaicensis coturniculus*	2006	None/ CFP	Inhabits the margins of salt, brackish and freshwater marshes	Absent	Salt, brackish and freshwater marshes not found onsite
Suisun song sparrow	*Melospiza melodia maxillaris*	1947	None/ None, SC	Brackish and freshwater marshes, nests in cattails, tules and other sedges	Absent	Brackish and freshwater marshes not found onsite
San Pablo song sparrow	*Melospiza melodia samuelis*	1901	None/ None, SC	Inhabits tidal sloughs and salt marshes	Absent	Salt marshes not found onsite
Osprey	*Pandion haliaetus*	1990	None/ None	Large nests built in tree-tops within 15 miles of fish-producing bodies of water	Present	Potential nesting habitat found onsite

Table 1: CNDDB Records from along a 2-Mile Corridor of the Project Area

Common Name	Scientific Name	Year of last CNDDB record within 2-mile buffer	Status (Federal /State)	Supporting Habitat/Blooming Period	Habitat Present/ Absent	Species Presence in the action area/ Rationale
California clapper rail	*Rallus longirostris obsoletus*	1994	E/E CFP	Inhabits the margins of salt, brackish and freshwater marshes, typically associated with pickleweed	Absent	Salt, brackish and freshwater marshes not found onsite
Mammals						
Hoary bat	*Lasiurus cinereus*	1916	None/ None	Roosts in dense foliage of medium to large trees	Present	Dense foliage and medium to large trees found onsite
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	1992	E/CFP	Saline emergent wetlands. Associated with pickleweed	Absent	Saline emergent wetlands not found onsite
Suisun shrew	*Sorex ornatus sinuosus*	1952	None/ None, SC	Tidal marshes with dense low-lying cover and driftweed	Absent	Tidal marshes not found onsite

***Status: Federal Designations:**

(E) Federally Endangered, (T) Federally Threatened

State Designations:

(E) State Endangered, (T) State Threatened, (R) State Rare,

California Department of Fish and Game (CDFG) Designations:

(SC) Species of Special Concern, (CFP) Fully Protected Species

California Native Plant Society (CNPS) California Rare Plant Rank:

(1A) Presumed extinct in California; (1B) Rare, threatened, or endangered in California and elsewhere; (2) Rare, threatened, or endangered in California, but more common elsewhere; (3) More information is needed; (4) Limited distribution, watch list

Threat Rank:

•0.1 Seriously threatened in California (more than 80% of occurrences threatened / high degree and immediacy of threat)

•0.2 Fairly threatened in California (20% to 80% occurrences threatened / moderate degree and immediacy of threat)

•0.3 Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

The Project locations in general do not provide suitable habitat for these species, and it is not expected that any of the listed species will be present in the work areas at the locations described below. In addition, the surrounding high-density development along large stretches of this Project creates a barrier to movement by wildlife from natural habitat. See Exhibit 1 for a graphic display of the proposed Project area and CNDDB records within the 4-mile corridor.

Within the general vicinity of the Project, the following types of habitats may support T/E species. See recommended Avoidance and Minimization Measures (AMMs) for these sensitive habitats and species on pages 54-56:

- Tidal marshes may support Suisun shrew (*Sorex ornatus sinuosus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), California clapper rail (*Rallus longirostris obsoletus*), Suisun song sparrow (*Melospiza melodia maxillaris*), and other sensitive wildlife species, or rare plants such as Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*), or soft bird's-beak (*Chloropyron molle* ssp. *molle*). There were no tidal or salt marshes present within the direct footprint of the Project. Indirect impacts to offsite locations will be avoided through implementation of Project AMMs including general construction best management practices (BMPs).

- Vernal pools may support rare plants and animals including vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), or Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*). There were no vernal pools present within the direct footprint of the Project, however there is potential for these species to occur in tire ruts and seasonally filled depressions. Indirect and direct impacts to offsite locations will be avoided through implementation of Project AMMs, including preconstruction surveys for rare plants, fairy shrimp and tadpole shrimp.

- Open grasslands, oak woodlands, and chaparral may support sensitive species, including golden eagle (*Aquila chrysaetos*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), burrowing owl (*Athene cunicularia*), or rare plants such as Mt. Diablo buckwheat (*Eriogonum truncatum*). While open grasslands, woodlands, and chaparral are present in the general vicinity, there are no direct effects to this habitat anticipated from Project elements. Indirect impacts will be avoided through implementation of Project AMMs including BMPs. Impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) will be avoided through preconstruction surveys and scheduling vegetation clearing or construction activities outside the nesting season for birds, as specified in the Avoidance and Minimization Measures section of this Constraints Memo.

- Tall trees in open habitat may support nesting birds, including Swainson's hawk (*Buteo swainsoni*) or white-tailed kite (*Elanus leucurus*). Stands of eucalyptus (*Eucalyptus* spp.) may support wintering monarch butterflies (*Danaus plexippus*). Tall trees such as eucalyptus are not anticipated to be removed during Project activities. Where tall, ornamental, naturalized, or native trees are present near Project facilities, indirect effects will be avoided through implementation of AMMs, including preconstruction surveys for birds, monarch roosts, and scheduling construction activities outside the nesting season for birds or wintering season for monarchs, as specified in the Avoidance and Minimization Measures section of this Constraints Memo.

- Freshwater marshes and pools may support sensitive species including California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), or tricolored blackbird (*Agelaius tricolor*). Wetland habitats are present adjacent to some Project facilities. Wetlands observed during the site visits were generally small, isolated from open habitats by on-ramps or other developments, and supported by roadside drainage. The majority of the observed wetlands do not contain the specific habitats to support listed species. However, AMMs will be implemented that include the installation of ESA fencing, exclusion fencing, and preconstruction surveys for California red-legged frog and California tiger salamander (in the locations specified in Table 2) in the unlikely event that these species may be present in the Project area.

- Blue elderberry bushes (*Sambucus nigra* ssp. *caerulea*) in the eastern portion of the Project area may support valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). No blue elderberry bushes were observed within the Project footprint, and impacts are not anticipated to the valley elderberry longhorn beetle.

- Serpentine soils may support rare plants including Tiburon paintbrush (*Castilleja affinis* ssp. *neglecta*), showy rancheria clover (*Trifolium amoenum*), or big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*). No serpentine soils were found within the Project footprint and impacts to offsite locations will be avoided with implementation of AMMs, including BMPs.

- Bats, including hoary bat (*Lasiurus cinereus*) and pallid bat (*Antrozous pallidus*), may roost in dense tree groves, abandoned buildings, and under bridge structures. No bat roosts were observed during surveys. However, to avoid potential impacts to bat species, AMMs that include focused surveys of potential roost sites will be conducted prior to construction in the vicinity of Project activities. If identified, bat maternity roosts will be left undisturbed until the juveniles are independent.

Summary of Avoidance and Minimization Measures and Construction Constraints

AMMs are proposed to avoid impacts to species protected by the federal or state Endangered Species Acts, and to avoid impacts to jurisdictional wetlands and waterways, and are outlined in the Avoidance and Minimization Measures section found on pages 54-56. It is anticipated that if the recommendations put forth in this constraints memo are followed then no biological permits, will be required based on the information provided at the time. Depending upon the extent of jurisdictional wetlands and waterways and the ability of Project activities to avoid these features, it is possible that as many as 10 of the work locations may require alterations to the planned designs to avoid obtaining resource agency permits. See Table 3 for potential constraints at these 10 work locations.

Table 2 presents a summary of the AMMs to be employed at each location.

Table 2: Summary of Avoidance and Minimization Measures by Post Mile

Location / Route / Activity / Post-Mile	Avoidance and Minimization Measures				
	Implement specific AMMs (NB –nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS –vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Fencing Type		Biological Monitoring	Seasonal Work Windows
		Silt	ESA		
Location 1: Eastbound Interstate 80, TMS, PM 0.34	NB	-	-	-	-
Location 2: Eastbound Interstate 80, TMS, PM 0.84	NB	-	-	-	-
Location 3: Eastbound Interstate 80, TMS, PM 2.07 - 2.22	NB	-	-	-	-
Location 4: Westbound Interstate 80, TMS, PM 2.07 – 2.22	NB	-	-	-	-
Location 5: Eastbound Interstate 80, TMS PM 2.43	NB	X	-	-	-
Location 6: Westbound Interstate 80, TMS PM 2.43	NB	-	-	-	-
Location 7: Eastbound Interstate 80, TMS, PM 2.87	NB	-	-	-	-
Location 8: Westbound Interstate 80, TMS, PM 2.87	NB	-	-	-	-
Location 9: Eastbound Interstate 80, TMS, PM 3.15	NB	-	-	-	-
Location 10: Westbound Interstate 80, TMS, PM 3.15	NB	-	-	-	-
Location 11: Eastbound Interstate 80, CCTV, PM 3.49	NB	-	-	-	-
Location 12: Eastbound Interstate 80, CMS, TMS, CCTV, PM 3.95-3.99	NB, monarch butterfly roosts	-	-	-	-

Table 2: Summary of Avoidance and Minimization Measures by Post Mile

Location / Route / Activity / Post-Mile	Avoidance and Minimization Measures				
	Implement specific AMMs (NB –nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS –vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Fencing Type		Biological Monitoring	Seasonal Work Windows
		Silt	ESA		
Location 13: Westbound Interstate 80, TMS, PM 3.95	NB	-	-	-	-
Location 14: Eastbound Interstate 80, TMS, PM 4.28	NB	-	-	-	-
Location 15: Westbound Interstate 80, Redwood St. On-ramp Restriping, PM 4.28	NB	-	-	-	-
Location 16: Westbound Interstate 80, TMS, PM 4.50	NB	-	-	-	-
Location 17: Eastbound Interstate 80, Redwood St, TMS, proposed ramp widening, PM 4.58	NB	X	-	-	-
Location 18: Eastbound and Westbound Interstate 80, TMS, PM 5.03	NB	X	-	-	-
Location 19: Eastbound Interstate 80, CCTV, MVP PM 5.4	NB	X	-	-	-
Location 20: Eastbound and Westbound Interstate 80, Columbus Pkwy, TMS, MVP, Restriping, On-ramp Widening PM 5.752	NB	X	-	-	-
Location 21: Eastbound Route 37 to Eastbound Interstate 80, TMS, On-ramp Widening, PM 6.087	NB	X	-	-	-
Location 22: Eastbound Route 37 to Westbound Interstate 80, TMS, On-ramp Widening, PM 5.526	NB, AM	X	-	X	Aug. 15-Oct. 15
Location 23: Westbound Interstate 80, CCTV PM 6.63	NB	-	-	-	-

Table 2: Summary of Avoidance and Minimization Measures by Post Mile

Location / Route / Activity / Post-Mile	Avoidance and Minimization Measures				
	Implement specific AMMs (NB –nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS –vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Fencing Type		Biological Monitoring	Seasonal Work Windows
		Silt	ESA		
Location 24: Eastbound and Westbound Interstate 80, TMS, PM 7.00	NB	-	-	-	-
Location 25: Westbound Interstate 80, CCTV, PM 7.58	NB	-	-	X	Aug. 15-Oct. 15
Location 26: Westbound Interstate 80, American Canyon Rd, TMS, Restriping, MVP, PM 7.952	NB, AM	X	-	X	Aug. 15-Oct. 15
Location 27: Westbound Interstate 80, American Canyon Rd, CMS, PM 8.09	NB, AM	X	X	X	Aug. 15-Oct. 15
Location 28: Eastbound Interstate 80, American Canyon Rd, TMS, MVP, Restriping PM 8.355	NB, AM	X	-	X	Aug. 15-Oct. 15
Location 29: Eastbound and Westbound Interstate 80, TMS, PM 8.60	NB, AM	X	-	X	Aug. 15-Oct. 15
Location 30: Eastbound and Westbound Interstate 80, TMS, CCTV, MVP, PM 9.00-9.07	NB, AM	X	X	X	Aug. 15-Oct. 15
Location 31: Eastbound and Westbound Interstate 80, TMS, CCTV, MVP, PM 9.50-9.53	NB, AM	-	-	X	Aug. 15-Oct. 15
Location 31: Eastbound and Westbound Interstate 80, TMS, CCTV, CMS, MVP, PM 10.00-10.11	NB, AM	-	-	X	Aug. 15-Oct. 15
Location 32: Eastbound and Westbound Interstate 80, TMS, PM 10.50	NB, AM	-	-	X	Aug. 15-Oct. 15
Location 33: Westbound Interstate 80, CCTV, MVP PM 10.77	NB, AM	-	X	X	Aug. 15-Oct. 15

Table 2: Summary of Avoidance and Minimization Measures by Post Mile

Location / Route / Activity / Post-Mile	Avoidance and Minimization Measures				
	Implement specific AMMs (NB –nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS –vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Fencing Type		Biological Monitoring	Seasonal Work Windows
		Silt	ESA		
Location 34: Westbound Interstate 80, Red Top Rd, TMS, PM 11.00	NB, AM	-	-	X	Aug. 15-Oct. 15
Location 35: Westbound Interstate 80, Red Top Rd, TMS, On-ramp Widening, MVP, PM 11.18	NB, AM	X	-	X	Aug. 15-Oct. 15
Location 36: Eastbound Interstate 80, TMS, PM 12.62	NB	X	-	-	-
Location 37: Eastbound Interstate 80, CCTV, PM 13.21	NB	-	-	-	-
Location 38: Eastbound Interstate 80, CMS, MVP, PM 13.48	NB	-	-	-	-
Location 39: Eastbound Interstate 80, TMS, PM 14.8	NB, monarch butterfly roosts	-	-	-	-
Location 40: Westbound Interstate 80, CCTV, MVP, PM 15.4	NB	X	-	-	-
Location 41: Eastbound Interstate 80, CCTV, MVP, PM 15.85	NB	X	-	-	-
Location 42: Eastbound Interstate 80, CCTV, MVP, PM 16.17	NB	X	-	-	-
Location 43: Eastbound Interstate 80, TMS, PM 16.62	NB	X	-	-	-
Location 44: Eastbound Interstate 80, CCTV, MVP, PM 17.02	NB	X	-	-	-
Location 45: Westbound Interstate 80, CCTV, MVP, PM 17.96	NB	-	-	-	-

Table 2: Summary of Avoidance and Minimization Measures by Post Mile

Location / Route / Activity / Post-Mile	Avoidance and Minimization Measures				
	Implement specific AMMs (NB –nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS –vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Fencing Type		Biological Monitoring	Seasonal Work Windows
		Silt	ESA		
Location 46: Eastbound Interstate 80, CCTV, MVP, PM 18.39	NB	X	-	-	-
Location 47: Eastbound Interstate 80, CCTV, MVP, PM 19.17	NB	-	-	-	-
Location 48: Eastbound Interstate 80, CCTV, TMS, MVP, PM 20.16 - 20.50	NB	X	-	-	-
Location 49: Westbound Interstate 80, N. Texas St, CCTV, TMS, MVP, On-ramp Widening, PM 20.79 – 21.17	NB, AM, RP, WPT	X	X	-	-
Location 50: Eastbound Interstate 80, TMS, PM 21.35	NB, AM, RP, WPT	X	-	-	-
Location 51: Eastbound Interstate 80, TMS, PM 21.73	NB	-	-	-	-
Location 52: Eastbound Interstate 80, TMS, PM 22.11	NB	-	-	-	-
Location 53: Westbound Interstate 80, CCTV, MVP, PM 22.08	NB	-	-	-	-
Location 54: Westbound Interstate 80, TMS, PM 22.50	NB, RP	X	-	-	-
Location 55: Eastbound Interstate 80, Lagoon Valley Rd, CCTV, TMS, MVP, Restriping, PM 23.13 – 23.24	NB, RP, monarch butterfly roosts	X	-	-	-
Location 56: Eastbound and Westbound Interstate 80, Pleasant Valley/Rivera Rd, CCTV, MVP, Restriping PM 23.821-23.927	NB	X	-	-	-

Table 2: Summary of Avoidance and Minimization Measures by Post Mile

Location / Route / Activity / Post-Mile	Avoidance and Minimization Measures				
	Implement specific AMMs (NB –nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS –vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Fencing Type		Biological Monitoring	Seasonal Work Windows
		Silt	ESA		
Location 57: Eastbound and Westbound Interstate 80, TMS, CCTV, MVP, PM 24.43 – 24.65	NB, RP	X	X	-	-
Location 58: Eastbound Interstate 80, TMS, PM 25.11	NB	-	-	-	-
Location 59: Westbound Interstate 80, Alamo Dr, On-ramp widening, CCTV, MVP PM 25.117	NB, VPS	-	X	-	-
Location 60: Eastbound Interstate 80, Alamo Dr, On-ramp widening, PM 25.38	NB, VPS	X	-	-	-
Location 61: Westbound Interstate 80, TMS, PM 25.24 – 25.45	NB, VPS	X	-	-	-
Location 62: Eastbound Interstate 80, Davis St, On-ramp Widening, TMS, CCTV, MVP, PM 25.76 – 25.86	NB, VPS, RP	X	-	-	-
Location 63: Westbound Interstate 80, Davis St, On-ramp Widening, TMS, MVP, PM 25.82 - 25.92	NB, VPS	-	-	-	-
Location 64: Westbound Interstate 80, Mason/Depot Rd, On-ramp Widening, TMS, MVP, PM 26.27 – 26.37	NB, VPS, RP	X	-	-	-
Location 65: Eastbound Interstate 80, Cliffside Dr, On-ramp Widening, TMS, CCTV, CMS, MVP, PM 26.20 – 26.36	NB, VPS	-	-	-	-

Table 2: Summary of Avoidance and Minimization Measures by Post Mile

Location / Route / Activity / Post-Mile	Avoidance and Minimization Measures				
	Implement specific AMMs (NB –nesting birds; AM – amphibians [CRLF and CTS]; RP – rare plants; WPT – Western pond turtle; VPS –vernal pool species; Other – bat roosts, monarch butterfly roosts, etc.) [1]	Fencing Type		Biological Monitoring	Seasonal Work Windows
		Silt	ESA		
Location 66: Eastbound and Westbound Interstate 80, Allison Dr/Monte Vista Ave, TMS, On-ramp restriping, PM 26.75-27.3	NB, VPS	X	-	-	-
Location 67: Westbound Interstate 80, Monte Vista Ave, On-ramp widening, TMS, MVP, CCTV, PM 27.18 – 27.30	NB, VPS	X	-	-	-
Location 68: Westbound Interstate 80, TMS, PM 27.73	NB, VPS	X	-	-	-
Location 69: Eastbound Interstate 80, TMS, PM 27.73 – 27.96	NB, VPS	-	X	-	-
Location 70: Westbound Interstate 80, CCTV, PM 27.98	NB, VPS	-	-	-	-
Location 71: Westbound Interstate 80, SB 505 to WB I-80, On-ramp Widening, CCTV, TMS, MVP, PM 28.112	NB, VPS, RP, bat roosts	X	-	-	-

Please consult the entire memorandum for a detailed description of Avoidance and Minimization Measures for the Project area

[1]- Alternatives to surveys may include seasonal work periods and or exclusion fencing, to be evaluated at work locations with survey requirements.

Table 3: Summary of Construction Constraints by Post Mile (PM)

Location	Work in Question	Reason for Construction Constraint	Potential Solution

Table 3: Summary of Construction Constraints by Post Mile (PM)

Location	Work in Question	Reason for Construction Constraint	Potential Solution
Location 17 PM 4.58 EB Redwood Pkwy	On-ramp widening	Impacts to jurisdictional wetland	On-ramp can be widened by approximately 4 feet on the RHS without direct impacts to wetland, remainder of widening should occur on the LHS, preconstruction surveys to determine if wetland will be impacted
Location 26 PM 7.95 WB American Canyon Rd	TMS trench	Impacts to jurisdictional wetland	Run trench to TMS on LHS of on-ramp
Location 27 PM 8.09, WB American Canyon Rd	CMS	Unknown size of work area and potential impacts to jurisdictional wetland	If work area must extend beyond 21 feet from the shoulder it is recommended that this installation is moved 200 yards to the northeast
Location 35 PM 12.62, WB Red Top Rd	On-ramp widening, MVP	Impacts to potentially jurisdictional wetland, and potential for T/E species	Widen on LHS side of onramp, if not possible, it is recommended that the on-ramp widening and MVP is dropped from the Project plan
Location 49 PM 20.79 – 21.17 WB North Texas St	On-ramp widening, MVP	Impacts to potentially jurisdictional wetland, and potential for T/E species	It is recommended that the on-ramp widening and MVP are dropped from the Project plan
Location 60 PM 25.38 EB Alamo Dr	On-ramp widening, MVP	Impacts to wetland, and potential for T/E species	If wetland will and drainage will be impacted it is recommended that AMMs for vernal pool species are implemented.
Location 62 PM 25.76 – 25.86 EB Davis St	On-ramp widening, MVP	Unknown size of work area, potential impacts to jurisdictional wetland and T/E species	Preconstruction surveys to determine if jurisdictional wetland will be impacted, and if it will be, the on-ramp widening is recommended to be dropped from the Project plan
Location 64 PM 26.27 – 26.37 WB Mason/ Depot Rd	On-ramp widening, MVP	Impacts to jurisdictional wetland and drainage, and potential for T/E species	Widen on-ramp on LHS of the road approximately 400 feet south of intersection, then on the RHS once around the corner by approximately 10', preconstruction surveys would be required to ensure jurisdictional wetland won't be impacted

Table 3: Summary of Construction Constraints by Post Mile (PM)

Location	Work in Question	Reason for Construction Constraint	Potential Solution
Location 67 PM 27.18 - 27.30 Monte Vista Ave #1	On-ramp widening, MVP	Impacts to potentially jurisdictional wetland, and potential for T/E species	It is recommended that the on-ramp widening and MVP are dropped from the Project plan
Location 71 PM 28.29 SB I-505	On-ramp widening, MVP	Impacts to waters of the U.S. and a wetland, and potential for T/E species	Preconstruction surveys to ensure waters of the U.S. won't be impacted. If wetland and vernally mesic areas must be impacted it is recommended that AMMs for vernal pool species and rare plants are implemented.

Please consult the entire memorandum for a detailed description of construction constraints for the Project

[1]- Assumes AMMs as specified elsewhere in document are implemented.

Location Descriptions:

The following observations were noted during the field surveys conducted on June 30 and July 27 through 29, 2011.

Location 1: Eastbound Interstate 80, TMS, PM 0.34

A TMS will be installed at EB PM 0.34 before the Carquinez Bridge toll plaza. Utilities to this location will be provided through a trench that will be located immediately adjacent to the shoulder on disturbed and compacted soil. The trench will run from the TMS to the toll plaza. Adjacent areas consist of disturbed road cut, ornamental vegetation associated with the highway, and the eastern landfall of the Carquinez Bridge. Grasslands and oak woodlands are present in the general vicinity but will not be disturbed by the limited construction activities. The existing planted ornamental trees and shrubs at this location, as well as ruderal roadside vegetation, may support nesting birds and would require nesting bird surveys if trenching and construction take place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 2: Eastbound Interstate 80, TMS, PM 0.84

A TMS will be installed at EB PM 0.84 after the Carquinez Bridge toll plaza on I-80, and an additional TMS will be installed on the EB Sonoma Boulevard off-ramp. A trench providing a utility connection to these installations will be located immediately adjacent to the shoulder on disturbed and compacted soil. The trench will run from the I-80 TMS to the Sonoma Boulevard TMS and then northward along the east side of the Sonoma Boulevard off-ramp to an existing power supply at the northeast corner of the intersection of Sonoma Boulevard and Sequoia Avenue. This TMS location is surrounded by landscaping, and the adjacent hill

slope holds a combination of ruderal grassland dominated by *Avena* spp. and sparse chaparral, including coast live oak (*Quercus agrifolia)*. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 3: Eastbound Interstate 80, TMS, PM 2.07 - 2.22

Three TMS stations will be installed on the eastbound side of I-80 on the off-ramp to I-780. One TMS will be installed at the start of the off-ramp, one at the ramp leading to the I-780 northbound (NB) and one at the ramp leading to I-780 SB. Jacking and boring across I-80 will be conducted to provide utilities to these TMS installations from an existing utility source. The trench to these installations and the jack and bore locations will be located immediately adjacent to the shoulder on disturbed and compacted soil. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 4: Westbound Interstate 80, TMS, PM 2.07 – 2.22

Five TMS stations will be installed on the westbound side of I-80. One TMS on the off-ramp to I-780 SB, one on the on-ramp from I-780 SB to WB I-80, one along the I-80 on-ramp between these two locations, one on the San Diego Road off-ramp, and one along the I-80 mainline. A trench to each of these locations will be located immediately adjacent to the shoulder on disturbed and compacted soil. Jacking and boring will carry utilities from the EB side of the freeway to the WB side TMS installation at Location 3. These TMS installations are generally located in an urbanized area dominated by housing and landscaped areas with patches of ruderal grassland dominated by *Avena* spp., and fennel (*Foeniculum vulgare*). Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 5: Eastbound Interstate 80, TMS PM 2.43

The TMS installation at this location will require a trench along the EB off-ramp to the Benicia Road overcrossing. At this location, jacking and boring will take place to provide a utilities connection to a similar installation at Location 6 on the WB side of I-80. A trench to these installations and the jack and bore locations will be located immediately adjacent to the shoulder on disturbed and compacted soil. The trench will run past a concrete-lined drainage ditch. Silt fencing shall be installed prior to any excavations to prevent spoils and spills, and to prevent workers and equipment from entering the drainage (see Figure 1). This TMS installation is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with intermittent ruderal grasses and star thistle (*Centaurea solstitialis*). Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 6: Westbound Interstate 80, TMS PM 2.43

The TMS installation at this location will require a trench along the island between the on-ramp and off-ramp from WB I-80 to NB I-780, and along the shoulder to the jack and bore location from the EB side of I-80, Location 5. This TMS installation is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with intermittent ruderal grasses and star thistle. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 7: Eastbound Interstate 80, TMS, PM 2.87

At the eastbound I-80 Georgia Street off-ramp, a TMS will be installed. A trench will run from the TMS location to an existing power source located on the island that separates the Georgia Street on-ramp and off-ramp. Trenches will also be run along the east side of the off-ramp to the point where it connects to I-80. At this location, jacking and boring will occur to connect utilities to the I-80 WB TMS installation at Location 8. This TMS installation is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with ornamental trees. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 8: Westbound Interstate 80, TMS, PM 2.87

At the westbound I-80 Georgia Street off-ramp and on-ramp a TMS installation will be installed. A trench will be required along the island separating the on-ramp and off-ramp, to the jack and bore location from Location 7. This TMS installation is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with ornamental trees. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 9: Eastbound Interstate 80, TMS, PM 3.15

At the eastbound I-80 off-ramp and on-ramp to Springs Road, a TMS will be installed. A trench will be required along the eastbound sides of the on-ramp and off-ramps, meeting in the middle of the island. At this location, jacking and boring will take place across I-80 to connect to an existing power supply. This TMS installation is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with ornamental trees and annual grasses. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 10: Westbound Interstate 80, TMS, PM 3.15

At the westbound I-80 off-ramp to Springs Road, a TMS will be installed. A trench will run along the eastern side of I-80 to an existing power supply located on the island separating the Springs Road on-ramp and off-ramp. This TMS installation is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with ornamental trees. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 11: Eastbound Interstate 80, CCTV, PM 3.49

A CCTV will be placed on the hill to the north of the Tennessee Street structure. A trench will run along the north side of Tennessee Street to the intersection of Humboldt Street, where utilities will be provided. This CCTV is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with ornamental trees. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. The CCTV should be located on top of a 100-foot pole to preclude the need for regular tree trimming. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 12: Eastbound Interstate 80, CMS, TMS, CCTV, PM 3.95-3.99

An existing CMS at PM 3.99 will be repaired, and a TMS and CCTV will be installed on the eastbound side of I-80. The CCTV will be located on a steep slope near the existing CMS. A trench will run from the CCTV to the highway shoulder, and then jack and bore to the westbound side of I-80 will provide a utilities connection to the TMS at Location 13. This site is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with ornamental trees. The hill slope is dominated by annual grasses, star thistle, and wild mustard (Hirschfeldia incana). The large existing eucalyptus trees (*Eucalyptus globulus*) will be avoided during trenching and repair work. These trees are of sufficient size to require nesting bird surveys if trenching and construction take place during the nesting season. In addition, surveys for monarch butterfly winter roosts should be conducted if construction will occur in winter months (September to April). With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 13: Westbound Interstate 80, TMS, PM 3.95

A TMS will be installed on I-80 WB at this location. A trench will run from the jack and bore location from I-80 EB Location 12 along the highway shoulder to Fleming Avenue, where utilities will be provided. Approximately 11 coast live oak (*Quercus agrifolia)* saplings exist off the shoulder of I-80 WB at this location, and these will be avoided during trenching and TMS installation since all work will occur immediately adjacent to the shoulder. This site is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with ornamental trees and annual grasses. Nesting bird surveys will be required at this location prior to any construction activities or

vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 14: Eastbound Interstate 80, TMS, PM 4.28

A TMS will be installed on the I-80 EB off-ramp to Redwood Parkway. A trench will run from the TMS along the west side of the off-ramp to a service cabinet. From this cabinet, jacking and boring to the WB side of the highway will provide a utilities connection to the TMS at Location 15. This site is generally located in an urbanized area dominated by housing, commercial buildings, and annual grasses. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 15: Westbound Interstate 80, On-ramp Restriping, PM 4.28 – 4.317

The WB Redwood Street on-ramp will be restriped from one lane to two lanes. This site is generally located in an urbanized area dominated by housing, commercial buildings, and annual grasses. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 16: Westbound Interstate 80, TMS, PM 4.50

A TMS will be installed on the westbound Redwood Street off-ramp and on I-80. A trench will run along the east side of the off-ramp and west side of I-80 where it will connect to utilities from Location 17. This site is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with ornamental trees. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 17: Eastbound Interstate 80, TMS, On-ramp widening, PM 4.58

A TMS will be installed before the metering line on the Redwood Street on-ramp to I-80. A trench will run along the right-hand side (RHS) of the on-ramp to the intersection with Admiral Callaghan Lane, where there are existing utilities. Jacking and boring will also take place adjacent to the limit line to carry utilities to the WB side of I-80. It is also proposed that the Redwood Street to EB I-80 on-ramp be widened from one lane to two lanes. To accomplish this, the roadway would be widened by 12 feet, and a retaining wall would be constructed. In addition, clearing and grubbing of ruderal grasses and grading will be required to facilitate construction. Approximately 10 to 12 feet off the RHS of the roadway is a wetland and drainage. According to a field visit conducted by Hal Durio, Caltrans Senior Environmental Planner, on 9/7/2011 this wetland and drainage is ACOE jurisdictional.

It is recommended that if widening were to take place at this location, it occur on the only left-hand side (LHS) of the on-ramp to avoid impacts to this jurisdictional wetland and drainage. If widening solely on the LHS is not feasible, the RHS of the onramp can be widened by approximately 5 feet from the start of the onramp to near the merge point without impacting the wetland. If the onramp must be widened beyond 4 feet on the RHS of the onramp, it is recommended that the onramp widening be dropped from the project plan.

If the onramp is dropped from the plan, the TMS can still be installed. In this case, silt fencing will be installed around the wetland/drainage to prevent workers, equipment, and excavation spoils from entering it (see Figure 2). Any necessary construction BMPs and erosion control would need to be installed, and the California scrub oaks should be avoided if feasible. If the oak trees are to be removed, it is recommended that they be mitigated for at a 1:1 ratio onsite. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 18: Eastbound and Westbound Interstate 80, TMS, PM 5.03

A TMS will be installed across both eastbound and westbound I-80. Jacking and boring will carry utilities from the EB side of I-80 to the WB side. A trench will run along the I-80 EB shoulder to where Admiral Callaghan Lane intersects the access road to Vallejo Corners shopping center. Two storm drains covered by perforated manhole covers are located along this stretch, and these areas will be surrounded by silt fencing to prevent excavation spoils from entering them (see Figure 3). This site is generally located in an urbanized area dominated by housing, commercial buildings, and landscaped areas with ornamental trees. Just south of this location is a large disturbed area with sparse annual grasses, fennel, wild mustard, and shrubs. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 19: Eastbound Interstate 80, CCTV, MVP PM 5.4

A CCTV and MVP will be installed on the island separating EB I-80 and the EB I-80 to the WB SR 37 connector. A small wetland exists in the middle of this island and shall be avoided during all construction and trenching activities. This wetland can be avoided through the installation of silt fencing. A trench will run from the CCTV installation south along EB I-80 to the off-ramp for WB SR 37. Jacking and boring will take place across the SR 37 connector to this installation to an existing service location on Admiral Callaghan Lane. Silt fencing will be installed around the wetland/drainage to prevent workers, equipment, and excavation spoils from entering it (see Figure 4). All work must take place along the disturbed area adjacent to the highway shoulder. This site is generally located in an urbanized area and is bordered by a large commercial development to the east and a golf course to the west. The areas around the CCTV are dominated by annual grasses and several sparse low-lying shrubs. Nesting bird surveys will be required at this location prior to any

construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 20: Eastbound and Westbound Interstate 80, TMS, MVP, Restriping, On-ramp Widening PM 5.74

A TMS installation, MVP, and trenching will occur along the Columbus Parkway WB to the EB I-80 on-ramp. Between the SR 37 connector and the Columbus parkway on-ramp is drainage. This drainage will be avoided during all construction and excavation activities. Silt fencing shall be installed around this to prevent spoils and spills, and to prevent workers and equipment from entering it (see Figure 5). A trench will run from where the Columbus Parkway WB splits at the EB and WB I-80 on-ramps. The trench will run from this split location along the eastern side of the EB 80 on-ramp to the TMS location, and from there jack and bore will carry utilities to the WB side of I-80 to tie into a service cabinet. The EB on-ramp will be restriped from the existing one lane to two lanes. An MVP will be constructed on the LHS of the on-ramp prior to the TMS installation. Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

In addition to the work on the EB side of I-80, the WB Columbus Parkway to the WB I-80 loop on-ramp will be widened to two lanes, and a TMS and MVP will be installed. Widening will occur after the structure up to the limit line. Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. A trench will run from where Columbus Parkway WB splits at the EB and WB I-80 on-ramps. This trench will run to the overpass, then the utility cable will be carried in existing conduit on the structure. Once over the structure, a trench will run on the RHS of the loop on-ramp to the TMS installation. An MVP will be installed before the limit line. This site is generally located in an urbanized area; however, the immediately adjacent areas are dominated by annual grasses, star and bull thistle, and wild mustard. In the center of the loop on-ramp, there are 8 to 12 ornamental trees. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 21: Eastbound Route 37 to Eastbound Interstate 80, TMS, On-ramp Widening, PM 6.01

The EB SR 37 to the EB I-80 on-ramp will be widened 12 feet after the flyover structure to create a third lane. This lane will exist until it reaches a location near the highway merge point, where it will gradually merge into the second as it connects with EB I-80. In addition, clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. As mentioned in Location 20, a drainage exists in between the SR 37 connector and the Columbus Parkway on-ramp. This drainage will be avoided during all construction and excavation activities. Silt fencing shall be installed around the drainage to prevent workers and equipment from entering it (see Figure 5). According to a field visit conducted

by Hal Durio, Caltrans Senior Environmental Planner, on 9/7/2011 this wetland is not ACOE jurisdictional.

To widen this on-ramp, a retaining wall will need to be constructed adjacent to the structure on the steep slope. This retaining wall will be needed for approximately 150 feet. Because the RHS of the connector is flat and does not contain a drainage, it is recommended that any widening take place on RHS. In addition, a trench will run to the TMS, along the RHS from the flyover structure. Jacking and boring from this location across to the WB side of I-80 is required to tie into an existing service cabinet. This site is generally located in an urbanized area and annual grasses, star and bull thistle, and wild mustard dominate the immediately adjacent areas. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 22: Eastbound Route 37 to Westbound Interstate 80, TMS, On-ramp Widening, PM 6.10

The EB SR 37 to WB I-80 connector is proposed to be widened by 12 feet to create a third lane. This lane will begin at the start of the connector and will continue until it reaches a location near the highway merge point where the third lane will gradually merge into the second. The area off the RHS of the road is steep, and if widening takes place, a retaining wall will be required. In addition, clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. A wetland and drainage run at the base of this slope, and according to a field visit conducted by Hal Durio, Caltrans Senior Environmental Planner, on 9/7/2011 this area is not ACOE jurisdictional. In addition, there is a CNDDB record for CRLF within 0.5 miles of this work location. Due to the proximity of this record, extent of the work area, and potential habitat, it is recommended that AMMs specific to CRLF are implemented at this location, including a biological monitor being present during all construction activities.

The area on the RHS of the onramp is flat and dominated by ruderal grasses. Due to this, it is recommended that widening take place on the LHS of the road to avoid all impacts to the wetland. If widening solely on the LHS is not feasible, the roadway can be widened on the RHS by approximately 4 feet without impacting the adjacent drainage. However, silt fencing must be installed between any construction activities and the drainage to prevent workers, equipment, and excavation spoils from entering it.

Trenching will be required to connect to utilities and it is recommended that this trench is located on the LHS of the onramp. This will prevent any impacts to the drainage. As mentioned previously, silt fencing will be required during any construction or excavation activities to prevent spoils and spills, and to prevent workers and equipment from entering the drainage. This site is generally located in an urbanized area dominated by a housing development to the south and ornamental trees. On the RHS of the on-ramp area are a large number of ornamental trees. Nesting bird surveys will be required at this location prior to any

construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 23: Westbound Interstate 80, CCTV PM 6.63

The CCTV will be installed approximately 0.2 miles north of the rest stop on WB I-80. A trench to this location will run from the rest stop on the WB shoulder to the CCTV installation, and beyond to provide utilities to Location 24. No vegetation will be disturbed along the extent of the trenching. The CCTV will be located approximately 30 feet from east to west (ETW) in an area dominated by annual grasses, predominantly wild oat (*Avena fatua*). This site is generally located in a rural area and is surrounded by annual grasslands dominated by *Avena* spp. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 24: Eastbound and Westbound Interstate 80, TMS, PM 7.00

A TMS installation will be constructed on both the EB and WB sides of I-80. It is currently unknown where utilities will be provided; however, any trenches should run immediately adjacent to the shoulder to limit the amount of vegetation that will be affected or disturbed. At the WB TMS installation, jacking and boring will occur to the EB side of the highway to provide a utility connection to the EB TMS installation. This site is generally located in a rural area and is surrounded by annual grasslands dominated by *Avena* spp. approximately 0.25 mile from sparse chaparral. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 25: Westbound Interstate 80, CCTV, PM 7.58

The CCTV will be installed approximately 30 feet from ETW. A trench will run northeast from this location immediately adjacent to the shoulder of WB I-80, where there is power supply at American Canyon Road, Location 27. The CCTV installation will be located in an area dominated by annual grasses. This CCTV is generally located in a rural area and is surrounded by annual grasslands dominated by *Avena* spp. Both the EB side of the highway and approximately 0.25 mile north on the WB side are areas of sparse chaparral and coast live oak. A biological monitor should be present during ground disturbing activities and construction at this location. Many trees and shrubs exist within 50 feet of the shoulder, necessitating nesting bird surveys if trenching and construction take place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 26: Westbound Interstate 80, TMS, Restriping, MVP, PM 7.952

The WB American Canyon on-ramp will be restriped from one lane to two lanes, and a TMS will be installed. In addition, a California Highway Patrol (CHP) enforcement area/MVP is

proposed to be installed along this on-ramp. On the RHS of this on-ramp, there is a small wetland containing cattails (*Typha latifolia*) that shall be avoided and surrounded by silt fencing during construction (see Figure 6). Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction of the MVP. TMS installations will be installed on both the EB and WB sides of I-80 at this location. Trenching will run southwest from American Canyon Road on the LHS of the on-ramp, as well as immediately adjacent to the shoulder to this TMS installation and beyond to Location 25. It is recommended that the MVP and all trenching take place on the LHS of the on-ramp to avoid impacts to the wetland. If it is not feasible for the MVP and/or trenches to be located on the LHS of the onramp it is recommended that the MVP and/or the TMS be dropped from the project plan. As there are no major barriers between this wetland and several nearby creek systems that are suitable for California tiger salamander, and have multiple CNDDB records for California red-legged frog, it is possible that these T/E species utilize these wetlands. In addition, the areas immediately to either side of I-80 between American Canyon road and Red Top road are designated as critical habitat for CRLF. To further reduce the potential for this species to enter the work area, it is recommended that work take place between August 15 - October 15. If construction of the MVP and TMS proceeds, preconstruction surveys for these species are recommended. In addition, a full-time biological monitor should be onsite throughout all construction activities.

This on-ramp and TMS installation is generally located in a rural area and is surrounded by annual grasslands dominated by *Avena* spp. To the east of the frontage road (McGary Road) are several coast live oak and cattle pasture. Jacking and boring will occur at the TMS installation to carry utilities to EB I-80 for the TMS installation at Location 28. Many trees and shrubs are within 50 feet of the shoulder, necessitating nesting bird surveys if trenching and construction take place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

<u>Location 27: Westbound Interstate 80, CMS, PM 8.09</u>

The CMS will be installed on the northern side of the American Canyon Road overpass, immediately adjacent to a wetland that supports cattails and red willow (*Salix laevigata*). According to a field visit conducted by Hal Durio, Caltrans Senior Environmental Planner, on 9/7/2011 this wetland and the surrounding wetlands are ACOE jurisdictional, and if they need to be impacted resource agency permits will be required. To facilitate construction of the CMS, clearing and grubbing of ruderal grasses, along with grading will be required. This wetland can be avoided by trenching along the northern shoulder of American Canyon Road, and then dropping down the hillside adjacent to the structure to the shoulder of I-80 then trenching from the shoulder to the CMS location. Silt fencing and ESA fencing will be installed between the work area and the wetland prior to any trenching or construction activities to prevent spoils and spills, and to prevent workers and equipment from entering the wetland (see Figure 6). It is currently unknown how large of a work area is required for the CMS installation. However, according to Hal Durio there is approximately 21 feet of work space available from the edge of the pavement to the wetland, and that trimming of

willow branches is acceptable. Silt fencing and ESA fencing will be installed between any construction activities and the wetland.

As there are no major barriers between this wetland and several nearby creek systems that are suitable for California tiger salamander, and have multiple CNDDB records for California red-legged frog, it is possible that these T/E species utilize these wetlands. If construction of the CMS proceeds, preconstruction surveys for these species are recommended. In addition, a full-time biological monitor should be onsite throughout all construction activities. To further reduce the potential for these species to enter the work area, it is recommended that work take place between August 15 - October 15.

To connect the CMS to existing utilities a trench will run on the southern side of the American Canyon Overpass, through existing conduit across the structure. A connection to an existing utility source will be made on the southwest corner of the intersection of American Canyon Road and McGary Road. In addition, a trench will run along the eastern side of the American Canyon Road off-ramp from I-80 WB to provide utilities to Location 28. This on-ramp and TMS installation are generally located in a rural area and are surrounded by cattle pasture containing annual grasslands dominated by *Avena* spp. The large coast live oak, walnut trees, and shrubs at the CMS location that are adjacent to McGary Road and along the WB I-80 American Canyon Road off-ramp are of sufficient size to necessitate nesting bird surveys if trenching and construction take place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

<u>Location 28: Eastbound Interstate 80, TMS, MVP, Restriping PM 8.355</u>

The EB American Canyon on-ramp will be restriped from one lane to two lanes, and a TMS will be installed. In addition, a CHP enforcement area/MVP will be installed along this on-ramp. Jacking and boring will be required to provide utility connections from the WB American Canyon Road on-ramp TMS installation to the I-80 EB side. A small wetland is located on the west side of the WB I-80 off-ramp at this location. A trench will run immediately adjacent to the shoulder along the EB American Canyon off-ramp to the EB American Canyon Road on-ramp TMS installation. The MVP will be located in an area dominated by annual grasses on the RHS of the on-ramp. As there are no major barriers between this work location and several nearby creek systems that are suitable for California tiger salamander, and have multiple CNDDB records for California red-legged frog, it is possible that these T/E species utilize these wetlands. Preconstruction surveys for these species are recommended. If located, silt fencing should be installed between any trenching activities and adjacent lands, and all potential refugia should be avoided. In addition, a biological monitor should be onsite throughout all construction activities. To further reduce the potential for these species to enter the work area, it is recommended that work take place between August 15 - October 15.

Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. This on-ramp and TMS installation are generally located in a rural area and are

surrounded by cattle pasture containing annual grasslands dominated by *Avena* spp. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 29: Eastbound and Westbound Interstate 80, TMS, PM 8.60

A TMS will be installed on both the EB and WB sides of I-80. A trench will run immediately adjacent to the WB I-80 shoulder in disturbed and compacted soils. A large wetland containing cattails and tules (*Schoenoplectus acutus*) exists to the west of I-80 at this location. As there are no major barriers between this wetland and several nearby creek systems that are suitable for California tiger salamander, and have CNDDB records for California red-legged frog, it cannot be ruled out that these T/E species utilize these wetlands. However, due to the distance of the records there is a low probability that these species occupy this wetland and surrounding areas. Preconstruction surveys for these species are recommended, and all potential refugia should be avoided during construction activities. In addition, a full-time biological monitor should be onsite throughout all construction activities. To further reduce the potential for these species to enter the work area, it is recommended that work take place between August 15 - October 15.

This location will also require preconstruction surveys, biological monitoring, and the installation of silt fencing between the trenching location and the wetland prior to any trenching or construction activities. Adhering to the above AMMs will prevent spoils, spills, workers and equipment from entering the wetland, and to prevent potential T/E species from entering the trenches (see Figure 7). At the WB TMS location, jack and bore will take place to provide utilities to the EB I-80 TMS installation. This on-ramp and TMS installation are generally located in a rural area and are surrounded by cattle pasture containing annual grasslands dominated by *Avena* spp. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 30: Eastbound and Westbound Interstate 80, TMS, CCTV, MVP, PM 9.00-9.07

A TMS will be installed on EB I-80 at PM 9.00. Jacking and boring across to the WB side of I-80 is required to connect the CCTV at PM 9.07 on the WB side of I-80 to existing utilities. A trench from this location will connect with one at Location 31, ending at the utilities connections on the west side of the highway at Lynch Road. The existing shoulder is wide enough to provide an MVP adjacent to the CCTV installation without any new construction. This on-ramp and TMS installation are generally located in a rural area and are surrounded by cattle pasture containing annual grasslands dominated by *Avena* spp. on both sides of the highway. Adjacent to McGary Road on the EB side is an area dominated by coast live oak and walnut (*Juglans* spp.). To further reduce the potential for CTS and CRLF to enter the work area, it is recommended that work take place between August 15 - October 15. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. As there are no major barriers between this location and several nearby

creek systems with CNDDB records for California red-legged frog, it cannot be ruled out that this species utilizes the creek system to the south of McGary Road. However, due to the distance of the known records, and distance to the creek (0.5 miles) there is a low probability that this species is present at this location. Preconstruction surveys are recommended to identify potential CRLF refugia, and these areas should be avoided during construction and surrounded by silt fencing and ESA fencing to prevent any potential impacts. In addition, a full-time biological monitor should be onsite throughout all construction activities. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 31: Eastbound and Westbound Interstate 80, TMS, CCTV, CMS MVP, PM 9.50-10.11

A TMS will be installed on both the EB and WB sides of I-80 at PM 9.50, and a CCTV will be installed on the WB side at PM 9.53. An MVP will be installed next to the CCTV in a disturbed area dominated by annual grasses and wild mustard. Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. Adjacent areas consist of grasslands and sparse oak woodlands but will not be disturbed by the limited construction activities. To further reduce the potential for CRLF and CTS to enter the work area, it is recommended that work take place between August 15 - October 15. In addition, a full-time biological monitor should be onsite throughout all construction activities. Jacking and boring will take place from the WB side to the EB side at PM 9.50 to carry utilities to the EB TMS installation. A trench will run immediately adjacent to the shoulder of EB I-80 south to location 30 and north to the utilities connections on the west side of the highway at Lynch Road. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

In addition, a TMS will be installed at PM 10.00, a CCTV at PM 10.07 and a CMS at PM 10.11 on the EB side of I-80. Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction for the CMS. Trenching immediately adjacent to the shoulder will connect the three installations, and then jack and bore will take place on the WB side of I-80. Trenches will run immediately adjacent to the shoulder of WB I-80 south to Lynch Canyon Road, where connections will be made to existing utilities. To further reduce the potential for CTS and CRLF to enter the work area, it is recommended that work take place between August 15 - October 15. The location of the MVP, CCTV, and CMS is dominated by annual grasses and star thistle. Adjacent areas consist of annual grasslands dominated by *Avena* spp. and sparse oak woodlands. These areas will not be disturbed by the limited construction activities. It is possible that several ornamental trees, shrubs, and vegetation adjacent to the CCTV and CMS will need to be removed, necessitating nesting bird surveys if trenching and construction take place during the nesting season. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 32: Eastbound and Westbound Interstate 80, TMS, PM 10.50

A TMS will be installed across both the EB and WB sides of I-80. A trench will run along the WB side of I-80 to Lynch Road, where utilities will be provided. Jacking and boring will take place across I-80 to provide utilities to the EB TMS installation. To further reduce the potential for CTS and CRLF to enter the work area, it is recommended that work take place between August 15 - October 15. In addition, a full-time biological monitor should be onsite throughout all construction activities.

The work area is dominated by roadside/ruderal habitat with sparse annual grasses dominated by *Avena* spp., wild mustard, and fennel. Adjacent areas consist of annual grasslands and sparse oak woodlands but will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 33: Westbound Interstate 80, CCTV, MVP PM 10.77

From this CCTV, a trench providing utilities will run immediately adjacent to the shoulder on WB I-80 to an access road at PM 10.62. The trench will then follow the western side of the access road to connect to an existing utility pole. In addition, trenches will run north along WB I-80 to PM 11.00, Location 34. Jacking and boring will take place from the service cabinet near the CCTV installation to the EB side of I-80. From here, a trench will run to the TMS installation at Location 32. To further reduce the potential for CTS and CRLF to enter the work area, it is recommended that work take place between August 15 - October 15. In addition, a full-time biological monitor should be onsite throughout all construction activities.

The area between the access road and EB I-80 is dominated by annual grasses, fennel, and five coast live oak saplings. Adjacent areas consist of annual grasslands dominated by *Avena* spp. and sparse chaparral, but these areas will not be disturbed by the limited construction activities. It is recommended that ESA fencing be installed between the access road and the adjacent pasture/chaparral to avoid disturbing the oaks and the rock pile adjacent to the access road (see Figure 8). ESA fencing is recommended due to the possibility for Alameda whipsnake to utilize adjacent habitat areas. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 34: Westbound Interstate 80, TMS, PM 11.00

From this TMS installation, a trench providing utilities will run immediately adjacent to the shoulder, proceeding south along WB I-80 to connect to existing utilities at Location 33. Adjacent areas consist of annual grasslands with sparse coast live oak, but these areas will not be disturbed by the limited construction activities. Several trees and shrubs along WB I-80 at this location are of sufficient size to necessitate nesting bird surveys at this location.

In addition, there are several nearby CNNDB records for CRLF. As there are no major barriers between these records and this work location it cannot be ruled out that this species utilizes the refugia near this work location. However, due to the distance of the known records (0.4 miles) and distance to water features, there is a low probability that this species at this location. Preconstruction surveys are recommended to identify potential CRLF refugia, and these areas should be avoided during construction and surrounded by silt fencing to prevent any potential impacts. To further reduce the potential for CTS and CRLF to enter the work area, it is recommended that work take place between August 15 - October 15. A full-time biological monitor should be onsite throughout all construction activities. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 35: Westbound Interstate 80, TMS, On-ramp Widening, MVP, PM 11.18

The Red Top Road on-ramp to WB I-80 is proposed to be widened from one lane to two lanes at this location. Widening of 12 feet would take place along the RHS of the roadway, and an additional 10 feet would be required for the MVP/CHP enforcement area that will be located near the limit line. Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. At the base of the on-ramp is a steep slope rising approximately 6 feet to an area dominated by grasses. This steep slope would necessitate a retaining wall, which would run approximately 50 feet from the intersection south along the on-ramp. To widen the road, vegetation would need to be removed adjacent to the roadway. These areas are dominated by grasses and thistles, with approximate covers of 60 percent Harding's bunch grass (*Phalaris aquatic*), 15 percent fennel, and 10 percent artichoke thistle (*Cynara cardunculus*). Harding's bunch grass is a facultative plus wetland indicator species in this region, indicating that this area could be a wetland. In addition, during the site visits the soil at this location was boggy, and it appears that a creek to the west might seasonally discharge water adjacent to the onramp. In addition, there are two CNNDB records within 0.25 miles for CRLF. As there are no major barriers and between these records and this work location it is possible that this species utilizes refugia near this work location. Preconstruction surveys and biological monitoring are recommended to identify potential CRLF refugia, and these areas should be avoided during construction and surrounded by silt fencing to prevent any potential impacts. To further reduce the potential for CTS and CRLF to enter the work area, it is recommended that work take place between August 15 - October 15, and a full-time biological monitor should be onsite throughout all construction activities.

It is recommended that on-ramp widening and installation of the MVP take place on the LHS of the on-ramp to avoid any impacts to this threatened species and the potential wetland. If widening and installation of the MVP on the LHS is not feasible, it is recommended that the on-ramp widening be dropped from the project plan.

It is also recommended that the trench to the TMS location is located on the LHS of the onramp to avoid any potential impacts to the wetland. However, if this is not feasible, the trench can be located on the RHS of the onramp immediately adjacent to the shoulder as long as all work occurs from the roadway. Silt fencing will be installed between the work area and adjacent properties to prevent spoils, spills, workers and equipment from disturbing these

areas (see Figure 9). A trench will run from an existing power pole adjacent to the WB Red Top Road off-ramp along the shoulder of the frontage road, then connect to the trench to the TMS installation. Adjacent areas consist of grasslands and ornamental vegetation associated with the highway and Red Top Road; these areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 36: Eastbound Interstate 80, TMS, PM 12.62

A series of TMS installations will be established along the Green Valley/Lopes Road EB I-80 off-ramp. A trench will run along the RHS of the on-ramp to an existing power supply. Trenching will also take place in the island to connect the TMS installations. Trenches will be located on the perimeter of the island immediately adjacent to the shoulder in compacted areas to avoid disturbing two coast live oak trees. The center of this island is low lying and may pond seasonally. Silt fencing will be installed between the work locations along the shoulder, and the low-lying area in the island and the oaks to prevent any disturbances (see Figure 10). Adjacent areas to the south are dominated by grasslands, while the north is urbanized with small grasslands between commercial and residential developments. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 37: Eastbound Interstate 80, CCTV, PM 13.21

A CCTV will be installed in an area dominated by annual grasses at this location. A trench providing utilities to this location will run immediately adjacent to the shoulder and will continue along EB I-80 to Location 38 at PM 13.48. Adjacent areas are dominated by commercial and residential developments with associated landscaped areas and ornamental vegetation. Ruderal habitat adjacent to the road is dominated by *Avena* spp. and *Epilobium* spp. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 38: Eastbound Interstate 80, CMS, MVP, PM 13.48

The CMS will be installed prior to the Suisun Valley Road Overpass in an area that is covered with gravel. Grading will be required to facilitate construction. The MVP would be located prior to this location in an area covered with gravel and sparse invasive grasses. A trench would run along Suisun Valley Road to existing utilities. Adjacent areas are dominated by commercial and residential developments with associated landscaped areas of ornamental vegetation and annual grasslands dominated by *Avena* spp. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at

this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 39: Eastbound Interstate 80, TMS, PM 14.8

The TMS at this location has already been installed in the roadway; all that remains is to connect it to utilities. A trench to this location will run immediately adjacent to the shoulder in a highly disturbed area. Many large coast live oak, walnut trees (*Juglans* spp.), eucalyptus and oleander bushes (*Nerium oleander*) exist approximately 10 feet off the shoulder and will be avoided during all trenching and construction activities. Adjacent areas are dominated by agricultural land, and these areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. In addition, surveys for monarch butterfly winter roosts should be conducted if construction will occur in winter months (September to April). With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 40: Westbound Interstate 80, CCTV, MVP, PM 15.4

On July 28, 2011, construction was underway to install utility cabinets adjacent to this location. Silt fencing was placed between this work location, and an adjacent drainage and small wetland. To provide a utilities connection to the CCTV, a trench will run immediately adjacent to the shoulder in compacted soil from the utility cabinet to the TMS installation. It is recommended that the existing silt fencing remain in place, and that it should be extended to the TMS installation to prevent spoils and spills, and to prevent workers and equipment from entering the drainage and wetland. Vegetation within the wetland consists of several facultative wetland plants, including mule-fat and rabbit foot grass (*Polypogon monspeliensis*). Adjacent areas are dominated by agricultural land and orchards, which will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 41: Eastbound Interstate 80, CCTV, MVP, PM 15.85

The CCTV at this location will be installed south of the SR 12 overpass and adjacent to a culvert and dry depression that contains facultative wetland plants, including mule-fat, rabbit foot grass and Harding's bunch grass. The trench to this location and the CCTV will be located immediately adjacent to the shoulder in disturbed soil and will avoid direct impacts on the drainage and wetland. Silt fencing will be placed between any construction or excavation work and the drainage. Adjacent areas are dominated by tilled agricultural land and commercial developments, which will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 42: Eastbound Interstate 80, CCTV, MVP, PM 16.17

The CCTV will be installed on top of the slope near the Abernathy Road structure. A trench will then run down the hillside adjacent to the CCTV to an existing utilities connection. A dry swale is adjacent to the electrical box. Silt fencing will be placed between the swale and any trenching or construction to prevent spoils and spills, and to prevent workers and equipment from entering the swale (see Figure 11). Vegetation in and adjacent to the swale is dominated by *Avena* spp. and fennel. It is likely that some vegetation and possibly an ornamental tree will need to be removed for trenching. Adjacent areas are dominated by tilled agricultural land, orchards, and commercial developments, which will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 43: Eastbound Interstate 80, TMS, PM 16.62

A drainage is immediately adjacent to the TMS installation. A trench will run from the TMS location along the loop off-ramp immediately adjacent to the shoulder in disturbed soil to an existing power supply. All trenching at this installation will avoid the wetland, but silt fencing will be placed between any construction or excavation and the wetland to prevent spoils and spills, and to prevent workers and equipment from entering it (see Figure 12). This wetland holds several facultative wetland plants including rabbit's foot grass and Harding's bunch grass. Adjacent areas to the south are dominated by commercial with landscaping and ornamental vegetation, *Avena* spp. and fennel. North of this location are agricultural fields. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 44: Eastbound Interstate 80, CCTV, MVP, PM 17.02

A canal is approximately 40 feet from this location. The CCTV site will be located in a highly disturbed and compacted section of soil approximately 10 feet from the shoulder of EB I-80. A trench will proceed along EB I-80 EB to an existing cabinet located approximately 5 feet off the shoulder. Silt fencing will be placed between any construction or excavation and the canal to prevent spoils and spills, and to prevent workers and equipment from entering the excavation (see Figure 13). Adjacent areas are dominated by commercial development with scattered agricultural fields. Approximately 0.20 mile from the CCTV to the north and south is riparian habitat, which surrounds the canal. Several large coast live oak, walnut, and fig (*Ficus* spp.) grow within this drainage, which will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 45: Westbound Interstate 80, CCTV, MVP, PM 17.96

This CCTV is located within the island separating the WB I-80 Travis Boulevard off-ramp and on-ramp. The center of this island is currently landscaped and surrounded by exclusion fencing. Jacking and boring will take place from an existing power source on the RHS of the loop on-ramp, to the LHS. From there, a trench will proceed adjacent to the shoulder to the CCTV. An MVP will be located on the island in an area currently covered with packed gravel. Due to the large number of trees within the island and the potential nesting habitat for killdeer (*Charadrius vociferous*) on open ground, nesting bird surveys will be required if any construction or excavation takes place during the nesting season. Adjacent areas are dominated by commercial development and landscaped areas. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 46: Eastbound Interstate 80, CCTV, MVP, PM 18.39

A large wetland/drainage area that was holding water on July 28, 2011 is approximately 5 feet from the proposed CCTV location along the Travis Boulevard on-ramp. In this wetland were several wetland plants including cattails and tules. A trench will run immediately adjacent to the shoulder along the on-ramp to the CCTV installation. Silt fencing will be placed between the trench/CCTV installation and the wetland to prevent spoils and spills, and to prevent workers and equipment from entering it (see Figure 14). With this configuration it is unlikely that the CCTV can be installed without impacting the wetland.

It is recommended that the CCTV installation be moved to the tip of the island separating the EB I-80 Travis Boulevard off-ramp and on-ramp, which would avoid all impacts to the wetland. This area is landscaped with ornamental vegetation. In this scenario, jacking and boring would carry utilities across the Travis Boulevard on-ramp to EB I-80, and then a trench would proceed along the LHS of the on-ramp to the CCTV location near the northernmost point of the island. If any construction or excavation is to occur within 30 feet of the wetland, silt fencing will be placed to separate it from the work area. Adjacent areas are dominated by commercial and residential developments with associated landscaped areas. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 47: Eastbound Interstate 80, CCTV, MVP, PM 19.17

The CCTV will be located between the EB I-80 Airbase Parkway on-ramp and off-ramp just south of the Air Base Parkway overpass. Power will be supplied from an existing electrical cabinet near the junction of the EB Air Base Parkway off-ramp and Air Base Parkway. A trench will run from this power source down slope to the CCTV. The vegetation in this area is dominated by annual grasses, ornamental trees, pine, and walnut. It is likely that some vegetation, and possibly a tree will need to be removed to facilitate the installation of the CCTV and the trench. Adjacent areas are dominated by commercial and residential

developments with associated landscaped areas, which will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 48: Eastbound Interstate 80, CCTV, TMS, MVP, PM 20.16 - 20.50

The South Putah Canal is approximately 40 feet from this location. Between the canal and the shoulder is a mix of chaparral plants, coast live oak, annual grasses, and fennel. The nearest potential power location is on the opposite side of the canal, and it is recommended that an overhead line be used to power the CCTV and TMS. Once the utility line crosses the canal, a trench will be run to the shoulder of EB I-80, and then will run in the compacted soil immediately adjacent to the shoulder to the CCTV and TMS. Silt fencing will be placed between any excavation or construction and the canal to prevent disturbance of the canal and adjacent vegetation from spoils and spills, and to prevent workers and equipment from entering the drainage (see Figure 15). Adjacent areas are dominated by residential developments intermixed with cattle pasture dominated by *Avena* spp. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 49: Westbound Interstate 80, CCTV, TMS, MVP, On-ramp Widening, PM 20.79-21.17

A large wetland containing cattails and tules exists in the center of this loop on-ramp, and it connects to a drainage and creek on the east side of I-80. On-ramp widening is proposed to take place from the intersection of Manuel Campos Parkway and North Texas Street WB I-80 on-ramp. After the loop portion of the on-ramp, the second lane would gradually merge with the first lane. Clearing and grubbing of ruderal grasses, along with grading of an area 12 feet from the shoulder, will be required to facilitate construction. In addition, a CHP enforcement area will be created just south of the wetland within the island. With this plan, a portion of this wetland and drainage will be backfilled and roadway will be built over the top of it. The CHP enforcement area will also impact the wetland. It is recommended that the onramp widening and MVP at this location is dropped from the Project plan, as they will impact the wetland.

To provide a utility connection to the TMS a trench will run on the inside of the loop on-ramp. Silt fencing will be placed between any construction or excavation and this wetland to protect the canal and adjacent vegetation from spoils and spills, and to prevent workers and equipment from entering the drainage (see Figure 16). In addition, due to the suitable habitat and several nearby CNDDB records for burrowing owl, western pond turtle, saline clover and San Joaquin spearscale, and suitability for CRLF, CTS, and potential habitat for several rare plants that grow in vernally mesic sites, it is recommended that AMMs specific to these species are implemented at this location. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation

of AMMs and preconstruction surveys, impacts to federal- or state-listed species are not anticipated.

The CCTV will be located on the island separating the WB I-80 North Texas Street off-ramp and on-ramp at PM 20.91. Jacking and boring will take place to provide utilities from inside the loop on-ramp to the CCTV. Trenching will take place immediately adjacent to the shoulder. A wetland exists near the northernmost point of the island, and it is recommended that the CCTV be installed before this point to avoid impacts to the wetland. Silt fencing will need to be installed between any construction or excavation and this wetland. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

The TMS installation will be installed at PM 21.17 near the tip of the island. A trench will run immediately adjacent to the shoulder in disturbed and compacted soil. The wetland should not be disturbed by any trenching or construction activities. Silt fencing and ESA fencing will need to be installed between any construction or excavation and this wetland. Areas adjacent to this work location are dominated by residential developments, a golf course, and annual grasslands/cattle pasture dominated by *Avena* spp. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 50: Eastbound Interstate 80, TMS, PM 21.35

The TMS will be installed across EB I-80, and a trench will run along the shoulder of EB I-80 and the shoulder of the EB I-80 North Texas Road on-ramp. This trench will pass over a culvert and drainage that connects to the large wetland containing cattails, tules, and willow trees on the WB side of the freeway. Silt fencing will be installed between any construction or excavation and this drainage to prevent spoils and spills, and to prevent workers and equipment from entering the drainage (see Figure 16). If construction is to occur in this area, a wetland delineation should be conducted to determine whether it is jurisdictional. If this is a jurisdictional wetland, resource agency permits would be required to conduct road widening. It is recommended that AMMs specific to CTS, CRLF, rare plants and WPT are implemented at this location.

This trench will also continue along EB I-80 to TMS installations at Locations 51 and 52. Areas adjacent to this work location are dominated by residential developments, a golf course, and annual grasslands/cattle pasture dominated by *Avena* spp. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 51: Eastbound Interstate 80, TMS, PM 21.73

The TMS will be installed across EB I-80, and a trench will run along the shoulder of EB I-80, where it will connect with the trench at Locations 50 and 52. The same wetland from

Location 50 runs adjacent to this work location. Areas adjacent to this work location are dominated by residential developments, a golf course, and annual grasslands/cattle pasture, which will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 52: Eastbound Interstate 80, TMS, PM 22.11

The TMS will be installed across EB I-80, and a trench will run along the shoulder of EB I-80, where it will connect with the trench at Locations 50 and 51. This area is located in rural land, and the surrounding areas contain annual grasslands and cattle pastures dominated by *Avena* spp. Approximately 0.25 mile away is a drainage area containing a small oak woodland. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 53: Westbound Interstate 80, CCTV, MVP, PM 22.08

The CCTV is already installed on the hill slope adjacent to PM 22.08, but it is currently unpowered. The MVP will be installed north of the CCTV on WB I-80. During the site visit on July 27, 2011, it was discussed that a trench would run north between WB I-80 and Lyon Road to provide utilities to this installation and the installations at Location 54. The trench will terminate at Lagoon Valley Road. This area is located in rural land, and the surrounding areas contain annual grasslands and cattle pastures dominated by *Avena* spp. Approximately 0.25 mile away is a drainage area containing a small oak woodland. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 54: Westbound Interstate 80, TMS, PM 22.50

Trenching will run from Location 53 south to this TMS. The trench will then proceed northward along WB I-80 to an existing utilities connection at Lagoon Valley Road. The trench will run between WB I-80 and Lyon Road. A small culvert and drainage is located in the island between Lagoon Valley Road and the WB on-ramp. Silt fencing will be placed between any construction or excavation and this drainage to prevent spoils, spills, workers, and equipment from entering the drainage (see Figure 17). Due to several nearby CNDDB records for San Joaquin spearscale, and saline clover and potential habitat in the drainage for these plants for several rare plants that grow in vernally mesic sites, it is recommended that the specific AMMs for these species are followed. However, due to the poor quality, small size of the habitat, and lack of ponded water year-round there is a low probability of any of these species occurring at this work location.

This area is located in rural land, and annual grasslands and cattle pastures with sparse coast live oak and shrubs dominate the surrounding areas. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, and focused preconstruction surveys, impacts to federal- or state-listed species are not anticipated.

Location 55: Eastbound Interstate 80, CCTV, TMS, MVP, On-ramp Restriping, PM 23.13 – 23.24

This CCTV will be installed on the EB side on top of the slope adjacent to the north side of the Lagoon Valley Road/ Cherry Glen Road structure. The MVP will be located just north of the CCTV installation in an area dominated by annual grasses and morning glory (*Calystegia macrostegia*). A trench will run from existing utilities near the intersection of the EB I-80 Lagoon Valley Road off-ramp and on-ramp. This trench will run along the north side of Lagoon Valley Road to the CCTV installation. Another trench will run along the RHS of the WB Lagoon Valley Road on-ramp to the TMS location. In addition, the EB Cherry Glen onramp will be restriped from one lane to two lanes.

Near the TMS location is a large drainage area with Mule-fat and other facultative wetland plants. This drainage will be avoided during trenching activities by placing silt fencing between any construction or excavation and this drainage to prevent spoils and spills, and to prevent workers and equipment from entering the drainage (see Figure 17). Due to several nearby CNDDB records for San Joaquin spearscale, saline clover, and western pond turtle, and potential habitat in the drainage for these species and for several rare plants that grow in vernally mesic sites, it is recommended that the specific AMMs for these species be followed. However due to the poor quality, small size of the habitat, and lack of ponded water year-round there is a low probability of any of these species occurring at this work location.

Areas adjacent to this work location are rural and dominated by annual grasslands, sparse oak woodland, and agricultural fields dominated by *Avena* spp. These areas will not be disturbed by the limited construction activities. Several large eucalyptus and pine trees exist on the island adjacent to the work location. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. In addition, surveys for monarch butterfly winter roosts should be conducted if construction will occur in winter months (September to April). With implementation of AMMs, and focused preconstruction surveys, impacts to federal- or state-listed species are not anticipated.

Location 56: Eastbound and Westbound Interstate 80, CCTV, MVP, Restriping PM 23.821-23.927

This CCTV installation will be located between the WB I-80 Rivera Road & Pleasant Valley Road off-ramp and on-ramp. It will be in a flat area approximately 30 feet from ETW. A small depression on the WB side of I-80 in the middle of the island has the potential to

collect water. Several large coast live oak trees flank this depression. It is recommended that the CCTV emplacement move approximately 120 feet to the north along the island to avoid any impacts to this depression. An MVP will also be located on this island, and it is recommended that it be placed to the north of the CCTV to further avoid impacts to the depression. This depression and the trees should be avoided during any construction or trenching activities. It is unknown at this time where trenching to a utility connection will occur. If any trenching or excavation occurs near the drainage area, it is recommended that silt fencing be installed between the drainage area and the work area (see Figure 18).

Both the EB and WB Pleasant Valley Road will be restriped from one lane to two lanes. Areas adjacent to this work location are rural and dominated by annual grasslands and agricultural fields. In addition, there is a small riparian corridor with coast live oak and walnut trees adjacent to Rivera Road on the WB side of I-80. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 57: Eastbound and Westbound Interstate 80, TMS, CCTV, MVP, PM 24.43 – 24.65

The CCTV installation will be installed at WB PM 24.54 and a TMS installation will be installed on both the EB and WB sides of I-80 at PM 24.43. Another TMS will be installed on the WB I-80 Cherry Glen Road off-ramp at PM 24.65. There is a concrete drainage area that runs down the hillside adjacent to the CCTV location and a potential wetland approximately 50 feet above the drainage. Due to the proximity of the drainage and wetland, it is recommended that the CCTV installation be moved 250 feet north along WB I-80. This placement will prevent direct impacts to the wetland and several species of rare plants that have potential to occur in vernally mesic sites. Due to the degraded habitat and compacted nature of the soil there is a low probability of these species occurring at this location, however it is recommended that specific AMMs for these species are followed. It is recommended that the CCTV and MVP are located in flat area without tire ruts or potential for ponded water to avoid potential impacts to T/E species. Silt fencing and ESA fencing will be placed between any construction or excavation activity and the wetland/drainage area and tire ruts to prevent spoils and spills, and to prevent workers and equipment from entering the drainage.

Utilities will be provided from an existing location on Cherry Glen Road. It is recommended that a trench run immediately adjacent to the shoulder on the south side of Cherry Glen Road to TMS location at PM 24.65. From there, the trench will run southwest along WB I-80 to the CCTV installation, and then onward to the TMS at 24.43. From here, jacking and boring will carry the utilities to the EB side of the highway for the I-80 EB TMS location. This will avoid any potential impacts to the drainage area and the wetland. In addition, the Cherry Glen Road on-ramp to WB I-80 will be restriped from one lane to two lanes. Areas adjacent to this work location are rural and dominated by annual grasslands, agricultural fields, sparse chaparral, and oak woodland. These areas will not be disturbed by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction

activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 58: Eastbound Interstate 80, TMS, PM 25.11

Three TMS installations will be installed at this location—one at the start of the WB I-80 Alamo Drive off-ramp and one at each of the NB and SB Alamo Drive connectors. Current access to utilities is unknown at this location, but it is likely that trenches will be run to connect all three TMS locations. Trenches will run immediately adjacent to the shoulder in compacted and disturbed soil to prevent disturbance of vegetation. This on-ramp is generally located in an urbanized area dominated by commercial buildings and landscaped areas with interspersed ruderal habitat dominated by *Avena* spp. and fennel. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 59: Westbound Interstate 80, On-ramp widening, CCTV, MVP PM 25.17

The Alamo Drive WB I-80 on-ramp will be widened to three lanes from the point where it intersects with the WB off-ramp. The on-ramp will remain three lanes wide until the limit line, where all three lanes will gradually merge together. Several large ornamental trees exist just outside the Caltrans right-of-way. Several coast live oak saplings cross into the right-of-way and will likely need to be removed. It is recommended that these trees be mitigated on a 1:1 ratio onsite. Widening will also take place on the island, and vegetation dominated by California rose (*Rosa californica*) will need to be removed. Clearing and grubbing of ruderal grasses dominated by *Avena* spp., and grading will be required to facilitate construction.

A TMS installation will be installed near the limit line of this on-ramp, and it is recommended that the trench to provide utilities to this installation run along the south side of the on-ramp to avoid further disturbances to the coast live oak trees.

On the island adjacent to WB I-80, a CCTV will be installed on a flat area approximately 30feet from ETW near the Alamo Drive overpass. The trench to provide utilities to this installation will run from the TMS location east along WB I-80 to the CCTV. Trenching will occur immediately adjacent to the shoulder to minimize vegetation disturbance. In addition, there are CNDDB records for vernal pool tadpole shrimp within 1.6 miles from the work location. As this species and *Branchinecta* species have potential to occur in water filled tire ruts and due to the size of the work area, specific AMMs for fairy and tadpole shrimp species should be implemented at this location. In addition, it is recommended that the exact CCTV and MVP installation locations are confirmed by the Caltrans biologist and are installed in flat areas without tire ruts or the potential to pond water in order to avoid potential impacts to these T/E species. Due to the degraded nature of the location, proximity to high traffic areas and developments, and major barriers to dispersal, there is a very low probability of these species occurring at this location. Silt fencing and ESA fencing will be placed between any

construction or excavation activity and the tire ruts to prevent spoils and spills, and to prevent workers and equipment from entering the drainage.

This on-ramp is generally located in an urbanized area dominated by commercial buildings, residential developments, and landscaped areas. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 60: Eastbound Interstate 80, On-ramp widening, TMS, PM 25.38

The existing on-ramp at this location (Alamo Drive) currently has two lanes at the start, but it quickly narrows to one lane. It is proposed that the on-ramp be widened to two lanes until the merge point with the highway. A CHP enforcement area will be located near the merge point on the RHS of the road. To accomplish this, a large drainage ditch and wetland will be backfilled. According to a field visit conducted by Hal Durio, Caltrans Senior Environmental Planner, on 9/7/2011 this area is not ACOE jurisdictional, however if using more than 0.2 acres of fill material in the depression are required a Waters of the U.S. Permit will be required. It is likely that the drainage ditch could be converted to a culvert, but this would still result in impacts to the drainage and wetland. In addition, several large trees including coast live oak, walnut, and fig (*Ficus carica*) exist on the far side of the drainage and will likely need to be removed if the on-ramp is widened. It is recommended that these trees be mitigated at a 1:1 ratio onsite. In addition, there are CNDDB records for vernal pool tadpole shrimp within approximately 1.4 miles from the work location. Due to the proximity of the records, and potential habitat in the wetland and drainage at this location there is a low possibility for this species to be present. It is recommended that silt fencing be placed between any construction or excavation activity and the drainage and wetland to prevent spoils and spills, and to prevent workers and equipment from entering the drainage and preventing impacts to potential T/E species.

Due to the potential for T/E species to occur at this location, it is recommended that specific AMMs for vernal pool tadpole shrimp and vernal pool fairy shrimp are implemented. Regardless of whether the on-ramp is widened, the TMS installation can still be installed, but silt fencing will need to be placed between any construction or excavation activity and the wetland/drainage area to prevent spoils and spills, and to prevent workers and equipment from entering it.

This on-ramp is generally located in an urbanized area dominated by commercial buildings, residential developments, and landscaped areas. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 61: Westbound Interstate 80, TMS, PM 25.24 – 25.45

Two TMS installations will be located immediately across the highway from Location 60. One TMS will be located on the WB Alamo Drive off-ramp at PM 25.24 and the other will

located further north at PM 25.45. It is proposed that utilities will be obtained from the existing utility cabinet at the start of the EB I-80 Alamo Drive. To accomplish this, it is recommend that jacking and boring will likely carry the utilities across the EB Alamo Drive on-ramp to the island separating the Alamo Drive off-ramp from Alamo Drive. A trench will then run immediately adjacent to the shoulder of the off-ramp toward I-80. Jacking and boring would then take place to the WB side of the freeway. Once on the WB side, two trenches will be dug to carry the utilities to the TMS installations—one would travel southwest to PM 25.24 and the other northeast to PM 25.45. This will avoid any impacts to the wetland and drainage adjacent to the EB Alamo Drive on-ramp described in Location 60 (see Figure 19).

In addition, there are CNDDB records for vernal pool tadpole shrimp within 1.25 miles from the work location. As this species and *Branchinecta* species have potential to occur in water filled tire ruts, all areas with potential to hold water should be avoided during trenching and surrounded by silt fencing to avoid potential impacts to T/E species. Due to the degraded nature of the location, it is unlikely that these species would be found onsite. If areas with potential to seasonally hold water must be impacted, it is recommended that specific AMMs for vernal pool species are implemented. If this is not feasible, and the wetland on the EB side of I-80 must be impacted, it is recommended that a utility connection on the WB side of I-80 is obtained. This on-ramp is generally located in an urbanized area dominated by residential developments and landscaped areas with interspersed roadside and ruderal habitats. It is dominated by *Avena* spp. *Epilobium* spp. and fennel. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

<u>Location 62: Eastbound Interstate 80, On-ramp Widening, TMS, CCTV, MVP, PM 25.76-25.86</u>

The Davis Street EB I-80 on-ramp is proposed to be widened from one lane to two lanes from the start of the on-ramp to a location near the merge point. This will require widening the roadway by 12 feet on the RHS. A wetland adjacent to the on-ramp was holding water on the July 27, 2011, site visit. The 12 feet of widening should not directly impact the wetland and its associated drainage. However, due to the steepness of the slope, a retaining wall will need to be constructed adjacent to the on-ramp. All work within the wetland and the drainage area must be avoided and silt fencing must be installed between any construction or excavation activity and the wetland/drainage area to prevent spoils and spills, and to prevent workers and equipment from entering the drainage (see Figure 20). According to a field visit conducted by Hal Durio, Caltrans Senior Environmental Planner, on 9/7/2011 this drainage is ACOE jurisdictional.

Once the extent of the widening and work area is known at this location, preconstruction surveys will be required to determine if this jurisdictional wetland and drainage will be impacted. In addition, there are CNDDB records for vernal pool tadpole shrimp within 1 mile from the work location. As this species, *Branchinecta* species, and several rare plants have

potential to occur in water filled tire ruts, and seasonal ponds and wetlands, AMMs specific to these species are recommended if the wetland will be implemented. Also, wherever feasible all areas with potential to hold water should be avoided during trenching and surrounded by silt fencing to avoid potential impacts to T/E species. If the wetland cannot be avoided it is recommended that the on-ramp widening is dropped from the project plan, to prevent the need for resource agency permits.

Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. Vegetation will be disturbed during construction and it is likely that several coast live oak and other ornamental trees would need to be removed. It is recommended that the oak trees be mitigated at a 1:1 ratio onsite. In addition a TMS will be installed before the merge point. Trenching will take place immediately adjacent to the shoulder along the on-ramp. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

A CCTV will be installed in the island that separates the WB Davis Street off-ramp and on-ramp, and the MVP will be located adjacent to it. A trench will be run along the LHS of the on-ramp, and then jack and bore will take place to carry the utilities to the island. A trench will then run along the perimeter of the island to the CCTV, and this trench would stay in the disturbed areas immediately adjacent to the shoulder. If the on-ramp widening at this location is dropped from the Project plan, the TMS and CCTV can still be installed as long as silt fencing is installed to prevent impacts to the drainage. This on-ramp is generally located in an urbanized area dominated by commercial buildings and landscaped areas, with interspersed roadside and ruderal habitats that are dominated by *Avena* spp. vetch (*Vicia* spp.) and fennel. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

<u>Location 63: Westbound Interstate 80, On-ramp Widening, TMS, MVP, PM 25.82 - 25.92</u>

The WB Davis Street on-ramp is proposed to be widened from one lane to two lanes from where it meets the WB Davis Street off-ramp to the merge point with I-80. The roadway will be widened by 12 feet on the LHS of the on-ramp. Due to the steepness of the slope, a retaining wall will need to be constructed for a 40- to 50-foot-long stretch. It is possible that 10 to 15 trees, including several coast live oak and juniper bushes (*Juniperus* spp.), will need to be removed or trimmed to facilitate roadway construction. It is recommended that the oak trees be mitigated at a 1:1 ratio onsite. In addition, clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. During the site visit no tire ruts, or areas with potential to seasonally hold water were located, however due to the proximity of the CNDDB records for vernal pool tadpole shrimp and vernal pool fairy shrimp it is recommended specific AMMs for these species are implemented. However, due to this on-ramp being located in an urbanized area dominated by residential developments and commercial buildings with landscaped areas there is a very low possibility of these species occurring at this location. Nesting bird surveys will be required at this location prior to any

construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 64: Westbound Interstate 80, On-ramp Widening, TMS, MVP, PM 26.27 – 26.37

The WB Mason/Depot Road on-ramp will be widened from one lane to two lanes from the start of the on-ramp to an area near the merge point with WB I-80. To install the extra lane and shoulder, approximately 18 feet of pavement will be added to the RHS of the on-ramp. Clearing and grubbing of ruderal grasses dominated by *Avena* spp., wild mustard, and vetch, along with grading, will be required to facilitate construction. A wetland exists approximately 25 feet off the existing on-ramp. In addition, a drainage ditch runs at a distance of 6 to 10 feet from the existing on-ramp, and this ditch will need to be relocated. According to a field visit conducted by Hal Durio, Caltrans Senior Environmental Planner, on 9/7/2011 this wetland and drainage are ACOE jurisdictional, and will require resource agency permits if impacted. In addition, there are CNDDB records for vernal pool tadpole shrimp within 0.4 miles from the work location. As this species and *Branchinecta* species have potential to occur in water filled tire ruts, seasonal ponds and drainages, it is recommended that AMMs specific to these species are implemented if any vernally mesic areas will be impacted. In addition, this wetland and vernally mesic area have potential to hold several species of rare plants, and it is recommended that AMMs specific to rare plants are followed if the wetland will be impacted. Also, wherever feasible all areas with potential to hold water should be avoided during trenching and surrounded by silt fencing to avoid potential impacts to T/E species. To avoid impacts to this jurisdictional drainage and T/E species, it is recommended that the on-ramp widening at this location be dropped from the project plan.

If resource agency permits were to be obtained, and widening was to take place, it is likely that the slope of the hillside near the end of the on-ramp will be too steep, necessitating a retaining wall. Several trees and shrubs, including coast live oak, juniper, and oleander, will need to be removed, and it is recommended that the oak trees be mitigated at a 1:1 ratio onsite.

If on-ramp widening does not take place at this location, the TMS can still be installed as long as the trench runs immediately adjacent to the shoulder. Silt fencing will be placed between any construction work and the wetland to prevent any spoils and spills, and to prevent workers and equipment from entering it (see Figure 21). There are CNDDB records for adobe-lily near this location, but as the nearest record is from 1913, this site is disturbed, and this species is predominantly found in chaparral there is a very low possibility it still occurs in the area.

A TMS will also be installed at the WB Mason/Depot Road off-ramp. Jack and bore will take place to carry the utilities across the on-ramp, to a trench that runs to the TMS. This on-ramp is generally located in an urbanized area dominated by residential developments and commercial buildings with landscaped areas. Nesting bird surveys will be required at this

location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 65: Eastbound Interstate 80, On-ramp Widening, TMS, CCTV, CMS, MVP, PM 26.20 – 26.36

The EB I-80 Cliffside Drive on-ramp will be widened from one lane to two lanes from where the on-ramp begins to the merge point with I-80. This widening will add approximately 18 feet to the RHS of the on-ramp. During the site visit no tire ruts or other depressions with potential to seasonally hold water were found, precluding the need for AMMs specific for vernal pool species. In addition, clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. Several trees and shrubs will need to be removed, including a coast live oak, walnut, and several oleander bushes. It is recommended that the oak tree removal be mitigated at a 1:1 ratio onsite. Due to the slope of the hillside adjacent to the on-ramp, it is likely that a retaining wall will need to be constructed. It has not been determined where utilities will be connected. A TMS will be installed near the limit line, and a trench will be run adjacent to the shoulder to the utility source.

A CCTV and CMS will be installed on the island separating the EB I-80 off-ramp and on-ramp. In addition, clearing and grubbing of vegetation, along with grading, will be required to facilitate construction. In addition, a TMS will be installed at the EB off-ramp. It is recommended that a trench run immediately adjacent to the shoulder of EB I-80 and connect these three locations. Then jacking and boring across the on-ramp will take place to tie into the utility source. This on-ramp is generally located in an urbanized area dominated by residential developments and commercial buildings with landscaped areas and interspersed roadside and ruderal habitats that are dominated by *Avena* spp. and star thistle. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 66: Eastbound and Westbound Interstate 80, TMS, On-ramp restriping, PM 26.75-27.3

Three TMS stations will be installed at this location—one on each side of I-80 at PM 26.75 and one on the EB I-80 Allison Drive off-ramp at PM 26.94. A creek runs approximately 60 feet off the EB side of the highway between the two TMS locations. The riparian corridor surrounding this creek has several coast live oak, fig, and other ornamental trees surrounding it. During the site visit no tire ruts or other areas with potential to seasonally hold water were found. However there are CNDDB records for vernal pool tadpole shrimp within 0.1 miles from the work location. As this species and *Branchinecta* species have potential to occur in water filled tire ruts, seasonal ponds and drainages, preconstruction surveys looking for areas with potential to hold water should be conducted. If located, these areas should be avoided during trenching and surrounded by silt fencing to avoid potential impacts to T/E species.

A trench will run immediately adjacent to the shoulder along the EB I-80 off-ramp to Allison Drive to both of the TMS installations, and then jack and bore will carry utilities to the WB side of the highway. Silt fencing will be installed between any construction work and the creek to prevent any spoils and spills, and to prevent workers and equipment from entering it (see Figure 22). In addition, the EB I-80 Allison Drive SB/Monte Vista on-ramp and the Allison Drive NB/Monte Vista on-ramp will be restriped from one lane to two lanes. This on-ramp is generally located in an urbanized area dominated by residential developments and commercial buildings with landscaped areas. The riparian corridor and creek will not be affected by the limited construction activities. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 67: Westbound Interstate 80, On-ramp widening, TMS, MVP, CCTV, PM 27.18-27.30

The southern most Monte Vista Avenue WB I-80 on-ramp will be widened from one lane to two lanes from the start of the on-ramp to near the merge point with I-80. There is a wetland approximately 6 feet from the shoulder, which flows into a wetland near the Allison Drive overpass. If widening were to take place, this will be impacted. From aerial imagery it appears that this drainage and wetland connects to a canal approximately 800 feet to the north. In addition, there are CNDDB records for vernal pool tadpole shrimp and vernal pool fairy shrimp within 0.35 miles and 1.25 miles respectively from the work location. As this species, *Branchinecta* species, and several species of rare plants have potential to occur in water filled tire ruts, seasonal ponds and drainages, AMMs specific to these species are recommended if aquatic resources will be impacted. However, due to the surrounding land use, degraded nature of the site, and prolonged ponding of water, there is a low probability of these species occurring at this location. It is recommended that the on-ramp widening at this location be dropped from the project plan to avoid impacting a potentially jurisdictional wetland and potential T/E species.

If the on-ramp widening is dropped, the TMS can still be installed at this location near the on-ramp merge point. A trench will run from an existing service cabinet near the start of the on-ramp, immediately adjacent to the shoulder to the TMS location. In addition, a CCTV is planned at PM 27.18 on top of the rise adjacent to the Allison Drive overpass. A trench will be run from the TMS to this CCTV. Silt fencing must be installed between any construction or excavation activities and the wetland to prevent spoils, spills, workers, and equipment from entering it (see Figure 23). In addition, all trenching should avoid any tire ruts with potential to seasonally hold water, to minimize potential impacts to T/E species. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. This on-ramp is generally located in an urbanized area dominated by residential developments and commercial buildings with landscaped areas, as well as interspersed roadside and ruderal habitats dominated by *Avena* spp. and star thistle. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 68: Westbound Interstate 80, TMS, PM 27.73

This TMS will be installed along the WB I-80 northern most Monte Vista off-ramp. A trench will run adjacent to the shoulder along the RHS of the off-ramp. A concrete drainage ditch exists near the trenching location for the TMS. Silt fencing will be placed between any construction work and this drainage to prevent any spoils and spills, and to prevent workers and equipment from entering it (see Figure 24). Roadside areas are either bare dirt or ruderal grasses dominated by *Avena* spp. During the site visit no tire ruts or depressions to seasonally hold water were located adjacent to the work location. However, due to the proximity to CNDDB records for vernal pool tadpole shrimp and vernal pool fairy shrimp, preconstruction surveys looking for areas within the work location with potential to hold water are recommended. If these areas are located and will be impacted during construction, it is recommended that AMMs specific to the above mentioned species are implemented. This off-ramp is generally located in an urbanized area dominated by residential developments and commercial buildings with landscaped areas. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 69: Eastbound Interstate 80, TMS, PM 27.73 – 27.96

Three TMS stations will be installed at this location—one at PM 27.77 and two at PM 27.96 (one on the off-ramp and one on the EB I-80 at the NB I-505 connector). Access points to utilities are unknown at this time, but it is recommended that trenching take place immediately adjacent to the shoulder to limit disturbance of vegetation. Due to the proximity to CNDDB records for vernal pool tadpole shrimp and vernal pool fairy shrimp, it is recommended that all trenching activities avoid all areas with potential to seasonally hold water. Preconstruction surveys are recommended to identify areas with potential to hold these T/E species. If located, these areas should be surrounded by silt fencing and ESA fencing to minimize any potential impacts. If these areas cannot be avoided through the use of silt fencing, it is recommended that AMMs specific to vernal pool species are implemented. This on-ramp is generally located in an urbanized area dominated by commercial buildings with landscaped areas and ornamental vegetation, as well as interspersed roadside and ruderal habitats dominated by *Avena* spp. star thistle and fennel. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 70: Westbound Interstate 80, CCTV, PM 27.98

A CCTV will be installed on a flat area near the Nut Tree Road overpass. A trench will run north along Nut Tree Road to connect this installation to existing utilities. The areas surrounding this CCTV are dominated by annual grasses with sparse coast live oak and other ornamental trees. No tire ruts, or other depressions with potential to seasonally hold water were located during the site visit, precluding the need for AMMs specific to vernal pool species. However, it is recommended that all trenching takes place immediately adjacent to

the shoulder to further minimize potential impacts. This on-ramp is generally located in an urbanized area dominated by commercial buildings with landscaped areas and ornamental vegetation. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Location 71: Westbound Interstate 80, On-ramp Widening, CCTV, TMS, MVP, PM 28.29

The plans for this location indicate that the connector from I-505 SB to WB I-80 ramp will be restriped to two lanes from the creek-crossing culvert to near the merge point. During the site visit on July 27, 2011, it was discussed that this on-ramp needs to be widened to three lanes after the creek crossing. Clearing and grubbing of ruderal grasses, along with grading, will be required to facilitate construction. On either side of the on-ramp are low lying areas with some potential to hold water. According to a field visit conducted by Hal Durio, Caltrans Senior Environmental Planner, on 9/7/2011 on the north side of this onramp is a 100 feet long by 10 feet wide area that is ACOE jurisdictional, and an additional area approximately 400 feet long and 20 feet wide wetland. Mule-fat, a facultative wetland plant was found within 20 feet of either side of the road. It is recommended that these areas are avoided during all construction, and surrounded by silt fencing to prevent any direct or indirect impacts and preclude the need for resource agency permits.

During the site visit many tire ruts were holding water adjacent to the roadway. Due to the proximity to CNDDB records for vernal pool fairy shrimp, AMMs specific to these species are recommended to be implemented. In addition, if the wetlands at this location will be impacted, it is recommended that AMMs specific to rare plants with potential to grow in wetlands and vernally mesic areas are implemented. If it is not feasible to widen on both sides of the onramp, it is recommended that the on-ramp widening is dropped from the project plan, and that only restriping from one to two lanes occurs.

A TMS will be installed near the limit line of the on-ramp. In addition, a CCTV will be installed at PM 28.29 in the island separating the I-505 connector and WB I-80. It is recommended that the CCTV be installed within 15 feet of the shoulder to avoid any impacts to the potential wetlands. In addition, all areas with potential to seasonally hold water should be avoided during trenching. If these areas are identified, they should be surrounded by silt fencing to minimize any potential impacts to T/E species. Connection points to utilities are currently unknown, but it is recommended that any trenching take place immediately adjacent to the shoulder to avoid disturbing any vegetation. Silt fencing will be placed between any construction work and the wetlands, drainages and creek to prevent any spoils and spills, and to prevent workers and equipment from entering it (see Figure 71). This on-ramp is generally located in an urbanized area dominated by commercial buildings with landscaped areas and ornamental vegetation, as well as interspersed roadside and ruderal habitats dominated by *Avena* spp. star thistle and fennel. Nesting bird surveys will be required at this location prior to any construction activities or vegetation trimming or removal. Surveys for bat roosts in the culvert will be required as well. With implementation of AMMs, impacts to federal- or state-listed species are not anticipated.

Federal Migratory Bird Treaty Act:
The Federal Migratory Bird Treaty Act (MBTA) 16 U.S.C 703 et seq., Title 50 Code of Federal Regulations Part 10, and California Fish and Game Code Sections 3503, 33513 and 3800 protect the occupied nests and eggs of migratory birds. Birds nest in a variety of places, including trees, shrubs, man-made structures, and on the ground. No bird nests were observed within the Project area during the site visits. All work locations contain larger vegetation, trees, or suitable habitat for ground nesting birds within 500 feet of work areas.

To comply with the MBTA and California Fish and Game Code, active bird nests must be protected. To avoid impacting nests, any trimming, clearing, or grubbing of vegetation in the Project area should occur between September 1 and January 31. If this is not possible, a qualified biologist must perform a preconstruction survey to identify active nests, and those nests must be avoided during construction. Caltrans biologists require notice of 5 working days prior to clearing and grubbing. If no active nests are located, the tree removal/trimming must occur within 3 days of the bird survey. Caltrans will not remove any trees containing active bird nests. The Caltrans standard specification (14-6.02) for bird protection will be included in the bid package.

Waters and Wetlands:
Several of the locations have wetland characteristics and/or drainage areas within the Project area. See location descriptions for recommendations on how to avoid special aquatic areas. See Table 3 and location descriptions for construction constraints. If these special aquatic areas can be completely avoided, this will preclude the need for formal wetland delineation. If there are jurisdictional waters and wetlands and they will be impacted, resource agency permits will be required at these locations. Silt or exclusion fencing will need to be placed at approximately 36 work locations to prevent impacts to water quality, wildlife, or aquatic habitat downstream from drainage areas and wetlands within the Project area. See Table 2 and location descriptions for work locations with the need for silt or exclusion fencing.

Resource Agency Permits:
It is anticipated that if the recommendations put forth in this constraints memo are followed then no biological permits (USACOE 404, USFWS or NOAA Biological Opinion, or CDFG 1602 permit) will be required based on the information provided at the time.

It is recommended that all special aquatic areas are avoided, and that the recommendations provided within the location descriptions, Table 2, and Table 3 are followed. If these special aquatic areas and potentially sensitive resources can be completely avoided through the use of AMMs, preconstruction surveys, and changes to the Project plans, this would preclude the need for wetland delineation. If the Project description and design changes from the dates of this field review (June 30 and July 27 through 29, 2011), then additional field studies may be required.

Avoidance and Minimization:
AMMs will include the following:

- Where Project activities are near suitable vegetation, including trees, shrubs, and grasslands that may support nesting birds, including ground and tree nesting raptors, surveys for nesting birds (where access is possible) will be required if construction occurs during the bird nesting season (February 1 through August 31). Protection of nesting birds should be conducted according to Caltrans standard Specification 14-6.02. Specification 14-6.02 requires protection of "migratory and nongame birds, their occupied nests, and their eggs."

  - If an active nest is found a buffer of at least 100 feet will be placed around the nest. Criteria used to determine the buffer placed around the nest will include, but not be limited to the following; species of bird present, presence of visual screening between the nest and construction activities; ambient conditions affecting the nest; behavior of birds in response to the surveyors or other ambient human activity; and the extent of disruption from the proposed construction. If it is determined that construction will not affect an active nest or disrupt nesting behavior, construction will proceed without any restriction or mitigation measure. If it is determined that construction will affect an active bird nest or disrupt reproductive behavior, then avoidance will be implemented.

- Where there is potential for California red-legged frog and California tiger salamander, pre-construction surveys should be conducted to prevent impacts to suitable refugia for these species. All construction activities for the area between American Canyon road and Red Top Road (Locations 26-35) must only occur between August 1 and October 15 to avoid the unlikely event that CRLF and CTS are present onsite. Additionally, all trenching work at these locations must occur within 3 feet of the end of the paved shoulder within the shoulder backing. A biological monitor must be present during all construction activities including vegetation removal.

- Where there are tall Eucalyptus trees in the project area, a qualified biologist shall identify the presence of potential monarch roosts. Work should be scheduled outside of the wintering season for monarchs at these locations to avoid direct and indirect impacts.

- Where Project activities are proposed for an area that may support vernal pool species, it is recommended that these areas be avoided through the use of silt fencing. However, if it is not feasible for these areas to be avoided it is recommended that a focused survey for vernal pool tadpole shrimp, and vernal pool fairy shrimp takes place. See Table 2 for locations where vernal pool species (VPS) AMMs are recommended. If sensitive vernal pool species are identified, avoidance measures will be implemented (including exclusion zones) if feasible. If these areas cannot be avoided, suitable mitigation measures will be developed in consultation with the USFWS and/or CDFG. Measures will be developed specific to species impacted and may include habitat acquisition.

- Where blue elderberry bushes are located in the project area, they must be avoided to prevent potential impacts to valley elderberry longhorn beetle.

- Where potential bat roosts are present within 500 feet of Project activities, a qualified biologist shall identify the presence of potential bat maternity roosts. During the months of November through February, a qualified biologist shall supervise the installation of screens at potential roosts to prevent bat use (after verifying that no bats will be trapped by screening). If roosts cannot be excluded, a determination will be made by a qualified biologist, in coordination with the CDFG, as to whether or not construction work will affect the site or disrupt reproductive behavior. Criteria used for this evaluation will include, but not be limited to, presence of visual screening between the roost and construction activities, ambient conditions affecting the roost, and the extent of disruption from the proposed construction. If construction activities have the potential to threaten the viability of an active maternity, then a minimum 500-foot buffer will be flagged around the site and designated a construction-free zone until the site is no longer active.

- Where Project activities are proposed for an area that may support rare plants, it is recommended that these areas are avoided through the use of silt fencing. However, if it is not feasible for these areas to be avoided it is recommended that a focused survey for rare plants will be conducted during appropriate blooming periods at least 6 months prior to construction. See Table 2 for locations where rare plant (RP) AMMs are recommended. If plants are identified, avoidance measures will be implemented (including exclusion zones) if feasible. If plants cannot be avoided, suitable mitigation measures will be developed in consultation with the USFWS and/or CDFG. Measures will be developed specific to species impacted and may include plant relocation, seed harvest and replanting, or habitat acquisition.

- Where Project activities have the potential to impact jurisdictional waterways and wetlands, a formal jurisdictional delineation shall be conducted. Where Project activities cannot be modified to avoid impacts to jurisdictional waterways and wetlands, permits will be acquired from appropriate regulatory agencies. Permit conditions and requirements will be incorporated into Project construction documents for compliance and implementation.

- Implement Standard Caltrans Best Management Practices for stormwater pollution prevention.

- Adhere to MBTA regulations to protect nesting birds.

- Perform work from the paved road where possible.

- Install trenching immediately adjacent to the shoulder in previously disturbed and compacted soil to minimize impacts to vegetation.

- Place silt fences a minimum of 50 linear feet in either direction beyond the construction area, and a minimum of 100 linear feet from special aquatic resources.
- Allow all silt fencing to remain in place until the vegetation has been reestablished in the disturbed areas.
- Clean up all leaks, drips, and spills from any equipment immediately.
- Inspections should be regularly conducted by Construction Monitors / Environmental Inspectors to ensure AMMs and BMPs are being followed.

Please allow the Office of Biological Science and Permits the opportunity to review your plans as they progress. If you have any questions or concerns regarding this constraints memorandum, please contact Caltrans Biologist Decie Boone, at: (510) 286-5667.

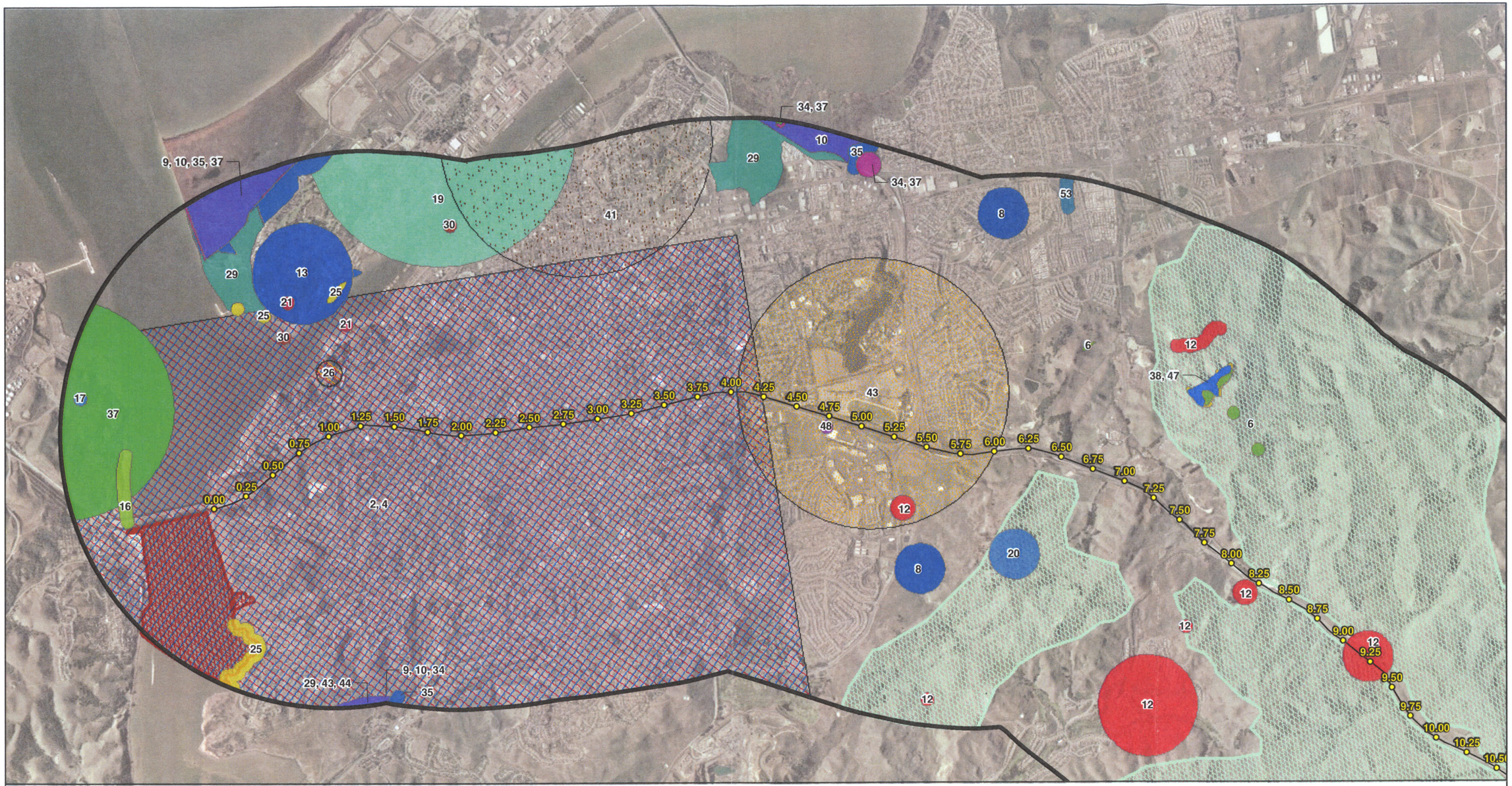
Attachments
1- CNDDB Maps

Figures

1	Location 5
2	Location 17
3	Location 18
4	Location 19
5	Locations 20 & 21
6	Locations 26 & 27
7	Location 29
8	Location 33
9	Location 35
10	Location 36
11	Location 42
12	Location 43
13	Location 44
14	Location 46
15	Location 48
16	Location 49 & 50
17	Location 55
18	Location 56
19	Location 60
20	Location 62
21	Location 64
22	Location 66

23 Location 67
24 Location 68
25 Location 71

ATTACHMENT 1
CNDDB Maps



LEGEND

- Mile Post
- Centerline
- 2 Mile Buffer

CNDDB Results

- 1, Adobe-lily
- 2, Alameda Whipsnake
- 3, Alkali Milk-vetch
- 4, American Peregrine Falcon
- 5, Baker's Navarretia
- 6, Big-scale Balsamroot
- 7, Bolander's Water-hemlock
- 8, Burrowing Owl
- 9, California Black Rail
- 10, California Clapper Rail
- 11, California Linderiella
- 12, California Red-legged Frog
- 13, Chaparral Ragwort
- 14, Coastal Brackish Marsh
- 15, Contra Costa Goldfields
- 16, Delta Tule Pea
- 17, Diablo Helianthella
- 18, Dwarf Downingia
- 19, Fragrant Fritillary
- 20, Golden Eagle
- 21, Great Blue Heron
- 22, Heartscale
- 23, Hoary Bat
- 24, Legenere
- 25, Mason's Lilaeopsis
- 26, Monarch Butterfly
- 27, Mt. Diablo Buckwheat
- 28, Northern Claypan Vernal Pool
- 29, Northern Coastal Salt Marsh
- 30, Osprey
- 31, Pappose Tarplant
- 32, Recurved Larkspur
- 33, Saline Clover
- 34, Saltmarsh Common Yellowthroat
- 35, Salt-marsh Harvest Mouse
- 36, San Joaquin Spearscale
- 37, San Pablo Song Sparrow
- 38, Serpentine Bunchgrass
- 39, Showy Rancheria Clover
- 40, Slender-leaved Pondweed
- 41, Soft Bird's-beak
- 42, Suisun Marsh Aster
- 43, Suisun Shrew
- 44, Suisun Song Sparrow
- 45, Suisun Thistle
- 46, Swainson's Hawk
- 47, Tiburon Paintbrush
- 48, Tricolored Blackbird
- 49, Valley Elderberry Longhorn Beetle
- 50, Vernal Pool Fairy Shrimp
- 51, Vernal Pool Smallscale
- 52, Vernal Pool Tadpole Shrimp
- 53, Western Pond Turtle
- 54, White-tailed Kite
- 55, Wilbur Springs Shorebug

Critical Habitats

- California red-legged frog
- Contra Costa goldfields
- Delta smelt

N

0 2,000 4,000
Feet

PAGE 1

CNDDB RESULTS

Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Mile Post
- Centerline
- 2 Mile Buffer

CNDDB Results

1, Adobe-lily
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5, Baker's Navarretia
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15, Contra Costa Goldfields
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20, Golden Eagle
21, Great Blue Heron
22, Heartscale
23, Hoary Bat
24, Legenere
25, Mason's Lilaeopsis
26, Monarch Butterfly
27, Mt. Diablo Buckwheat
28, Northern Claypan Vernal Pool
29, Northern Coastal Salt Marsh
30, Osprey
31, Pappose Tarplant
32, Recurved Larkspur
33, Saline Clover
34, Saltmarsh Common Yellowthroat
35, Salt-marsh Harvest Mouse
36, San Joaquin Spearscale
37, San Pablo Song Sparrow
38, Serpentine Bunchgrass
39, Showy Rancheria Clover
40, Slender-leaved Pondweed
41, Soft Bird's-beak
42, Suisun Marsh Aster
43, Suisun Shrew
44, Suisun Song Sparrow
45, Suisun Thistle
46, Swainson's Hawk
47, Tiburon Paintbrush
48, Tricolored Blackbird
49, Valley Elderberry Longhorn Beetle
50, Vernal Pool Fairy Shrimp
51, Vernal Pool Smallscale
52, Vernal Pool Tadpole Shrimp
53, Western Pond Turtle
54, White-tailed Kite
55, Wilbur Springs Shorebug

Critical Habitats

California red-legged frog
Contra Costa goldfields
Delta smelt

N

0 2,000 4,000
Feet

PAGE 2

CNDDB RESULTS

Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Mile Post
- Centerline
- 2 Mile Buffer

CNDDB Results

- 1, Adobe-lily
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- 52, Vernal Pool Tadpole Shrimp
- 53, Western Pond Turtle
- 54, White-tailed Kite
- 55, Wilbur Springs Shorebug

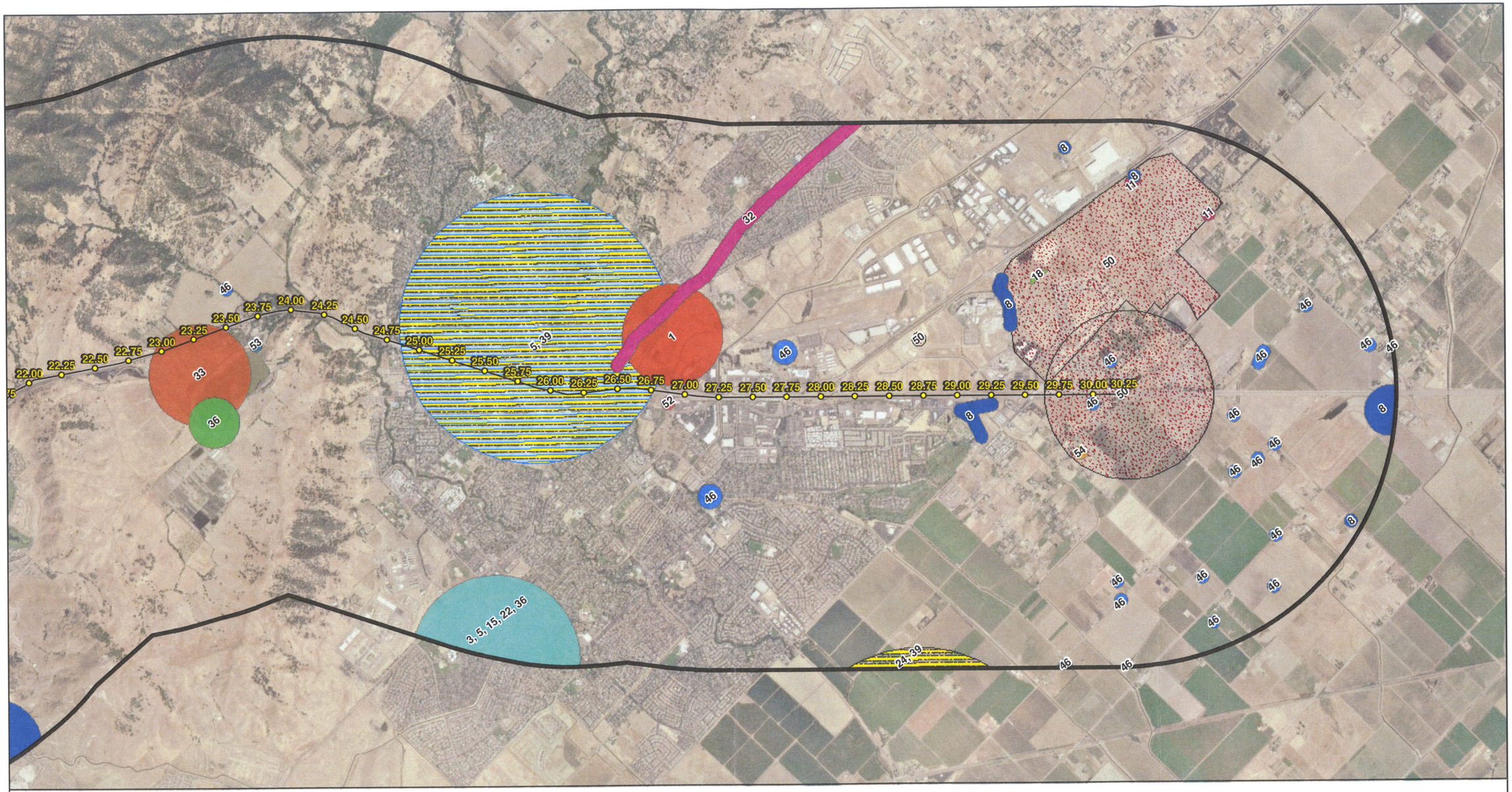
Critical Habitats

- California red-legged frog
- Contra Costa goldfields
- Delta smelt

N

0 2,000 4,000
Feet

PAGE 3
CNDDB RESULTS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California



LEGEND

- Mile Post
- Centerline
- 2 Mile Buffer

CNDDB Results

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50, Vernal Pool Fairy Shrimp
51, Vernal Pool Smallscale
52, Vernal Pool Tadpole Shrimp
53, Western Pond Turtle
54, White-tailed Kite
55, Wilbur Springs Shorebug

Critical Habitats

California red-legged frog
Contra Costa goldfields
Delta smelt

N

0 2,000 4,000
Feet

PAGE 4

CNDDB RESULTS

Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

FIGURES

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

N

0 40 80 120 160
Feet

FIGURE 1: LOCATION 5
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 40 80 120 160
Feet

FIGURE 2: LOCATION 17
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 40 80 120 160
Feet

FIGURE 3: LOCATION 18
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 4: LOCATION 19
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 80 160 240 320
Feet

FIGURE 5: LOCATIONS 20 & 21
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

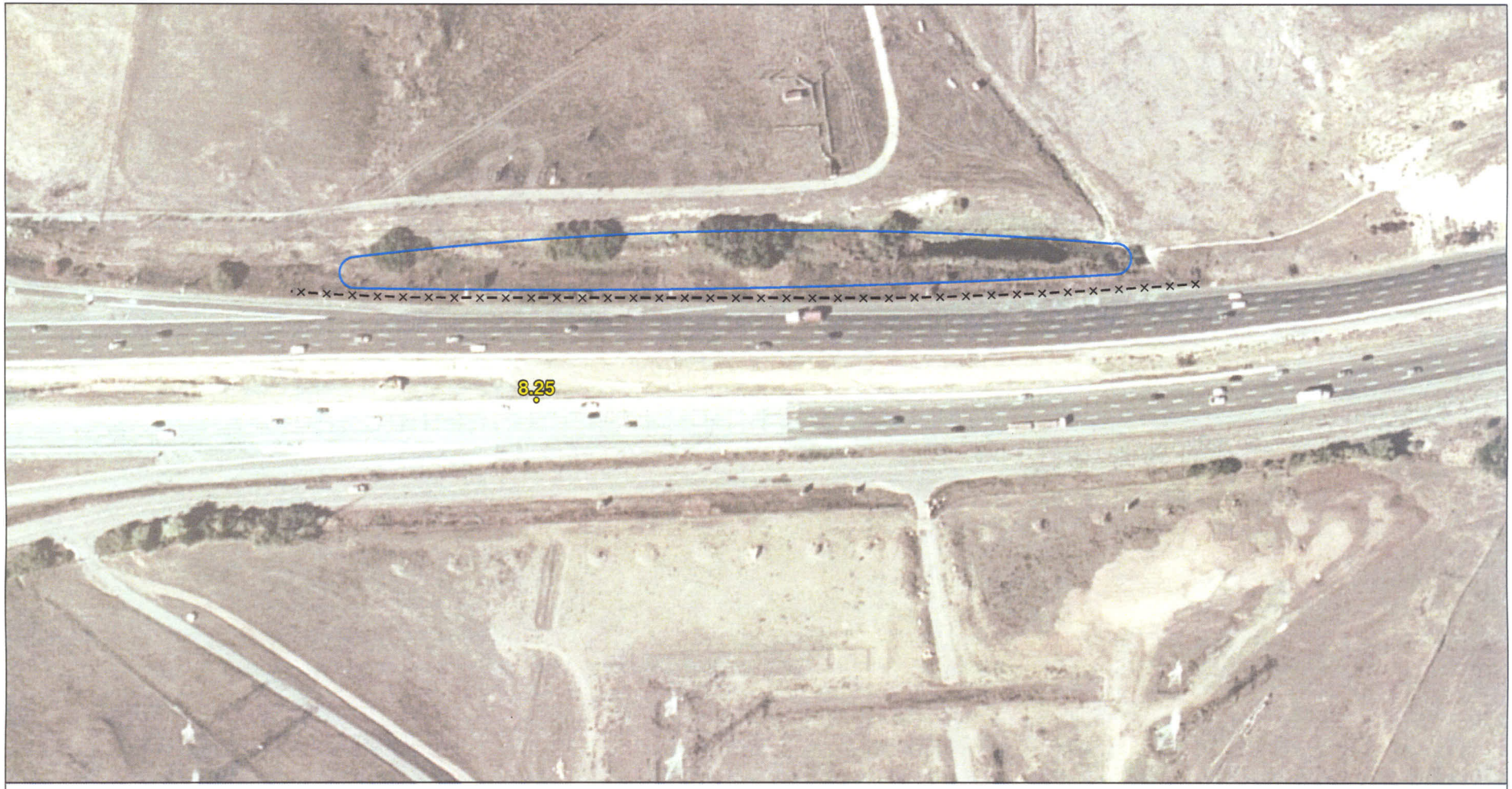
LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 6: LOCATIONS 26 & 27
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California



LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 7: LOCATION 29
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 8: LOCATION 33
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 9: LOCATION 35
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 40 80 120 160
Feet

FIGURE 10: LOCATION 36
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 30 60 90 120
Feet

FIGURE 11: LOCATION 42
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

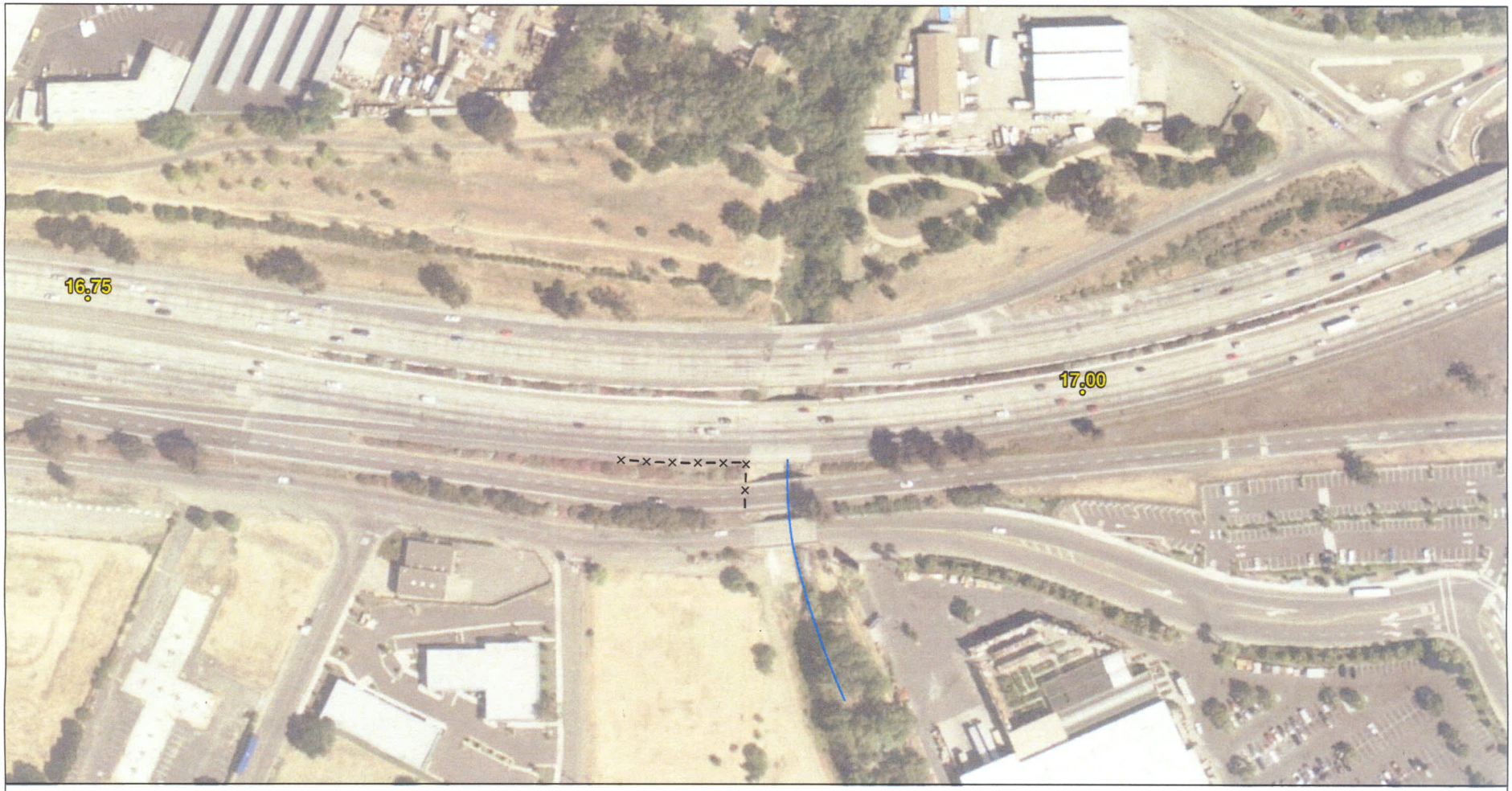
- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

N

0 30 60 90 120
Feet

FIGURE 12: LOCATION 43
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California



LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

N

0 60 120 180 240
Feet

FIGURE 13: LOCATION 44
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 14: LOCATION 46
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 15: LOCATION 48
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

N

0 90 180 270 360
Feet

FIGURE 16: LOCATIONS 49 & 50
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 40 80 120 160
Feet

FIGURE 17: LOCATION 55
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 18: LOCATION 56
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

N

0 70 140 210 280
Feet

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

FIGURE 19: LOCATION 60
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

N

0 40 80 120 160
Feet

FIGURE 20: LOCATION 62
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 70 140 210 280
Feet

FIGURE 21: LOCATION 64
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 22: LOCATION 66
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 40 80 120 160
Feet

FIGURE 23: LOCATION 67
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

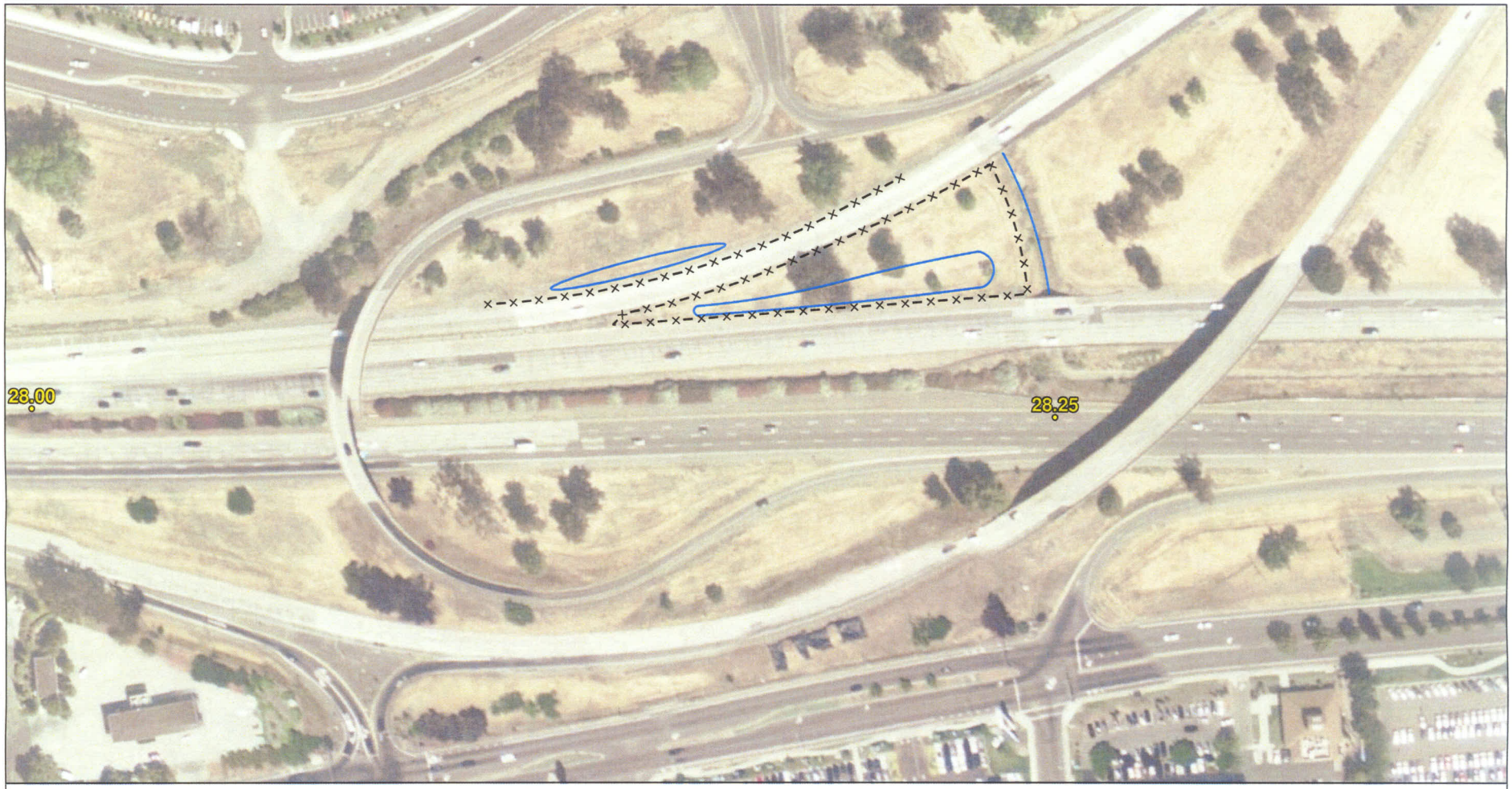
LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 40 80 120 160
Feet

FIGURE 24: LOCATION 68
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California



LEGEND

- Approximate Mile Post
- ESA Fencing
- Silt Fencing
- Wetland or Water Area

Image Source:
Aerials Express, Acquired November, 2011

0 60 120 180 240
Feet

FIGURE 25: LOCATION 71
SILT AND ESA FENCING LOCATIONS
Solano 80 FPI
Interstate 80
PM 0.00 - 28.50, EA 153500
Solano County, California

Geotechnical Design Reports

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MR. VINCE BONNER
District Branch Chief
Design East- Contra Costa

Date: February 2, 2012

Attention: D. Ocampo

File: 04-SOL-80 PM 0.0/R28.4
04-153501
Efis 0400020739
Ramp Metering & TOS

SA

From: SAMUEL AWAD
Transportation Engineer
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

H. Nikoui

HOOSHMAND NIKOUI
Chief, Branch A
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

Subject: Revised Geotechnical Design Report for OHS, CMS and CCTV

1. INTRODUCTION

Per your request dated November 28, 2011. We are submitting this revised Geotechnical Design Report (GDR) to incorporate a new overhead sign structure (OHS 1) along WB I- 80 between Redwood St. Off-ramp and 37/80 Interchange.

This revised report provides geotechnical design recommendations for one overhead sign, namely, OHS 1 (WB 80), four Changeable Message Signs (CMS) Model 500, namely, CMS 1 (WB 80), CMS 2 (EB 80), CMS 3 (EB 80), and CMS 4 (EB 80) and 42 CCTV pole Type 40. These CMSs and CCTV are part of the Highway 80 Ramp Metering System and Traffic Operation System (TOS) project elements along Route 80, Solano County, in Vallejo, Fairfield, and Vacaville from the Contra Cost County line to the Route 80/505 junction, in the eastbound and westbound directions (Figure 1).

Recommendations contain in this report are based on the submitted layout and cross section plans, field mapping of the site, subsurface exploration, laboratory test results and foundation analysis. This geotechnical report addresses our foundation recommendation for the CMS project. Refer to Table 1 for general OHS information and Table 2 for general CMS information.

Table 1- General Overhead Sign (OHS) information

OHS No.	Direction	Post Mile	Post Type	Height, ft
OHS 1	WB	5.0	VII	23

Table 2- General Changeable Message Sign (CMS) information

CMS No.	Direction	Post Mile	Post Type	Height, ft
CMS 1	WB	8.09	Model 500 Full Cantilever	22
CMS 2	EB	10.11	Model 500 Full Cantilever	22
CMS 3	EB	13.48	Model 500 Full Cantilever	22
CMS 4	EB	26.3	Model 500 Full Cantilever	22

2. PROJECT PURPOSE AND NEED

The need for this project is to relieve congestion and reduce accidents. The purpose is to install ramp metering systems to improve highway operations by completing the installation and implementation of a ramp metering system on eastbound and westbound Route 80, in Solano County.

3. SCOPE OF WORK

The following tasks were performed for the preparation of this Geotechnical Design Report:

- Review of as-built plans;
- Field geotechnical exploration, including drilling 5 borings at the project site;
- Laboratory test results on selected samples;
- Geotechnical design analysis; and
- Preparation of this Geotechnical Design Report.

4. SITE GEOLOGY AND SEISMICITY

4.1 Climate

The climate of the job site is influence by the Sacramento Valley to the east and the San Pablo Bay to the west. By the bay, the annual temperature is 58° F, and 61° in the north county, in the Sacramento Valley. The average amount of rainfall is approximately 16 inches in the southern portion of the county and 30 inches in the Vaca Mountains, and 17-20 inches in the county's eastern portion. In the summer, little rainfall occurs. The rainy season begins about October,

(0.87 inches) and ends about April (3.7 inches), with the most rain falling in December (14.2 inches). (Soil Survey of Solano County, USDA, 1977)

All geologic information was taken from Geologic Map and Map Database of Northeastern San Francisco Bay Region, California, most of Solano County and parts of Napa, Marin, Contra Costa, San Joaquin, Sacramento, Yolo, and Sonoma Counties; By R.W. Graymer, D.L. Jones, and E.E. Brabb.

4.2 Site Geology and Seismicity

4.2.1 OHS 1 - Westbound PM 5.0

Geology and Seismicity - This site is located on artificial fill that overlies Alluvial fan deposits of late Pleistocene age. These are poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. (Figure 2)

The project site is located approximately 2.3 miles south southeast of the West Napa fault zone (Napa County Airport section), with a MMax of 7.1 and the Peak Bedrock Acceleration (PBA) is 0.39.

4.2.2 CMS 1- Westbound PM 8.09

Geology and Seismicity- This is to be installed on "...undivided sandstone, siltstone, and shale (Late Cretaceous) - Brownish-gray, fine- to coarse-grained, thin bedded to massive sandstone and greenish-gray to black shale and silty shale. Also, includes minor pebbly sandstone and conglomerate. This unit has yielded foraminifers of Cenomanian to Maastrichtian age."

The project site is located approximately 1.81 miles south of the West Napa Fault zone (Napa County Airport section) and 3.14 miles west of the Green Valley Fault. The West Napa Fault zone is the controlling fault with a MMax of 6.5 and the PBA is 0.43.

4.2.3 CMS 2 - Eastbound PM 10.11

Geology and Seismicity - The CMS is to be installed on "...Landslide deposits (Holocene and Pleistocene). These are chaotic deposits of sand, silt, clay, angular boulders, and blocks of bedrock up to hundreds of meters long deposited by gravity-driven sliding and flow. These deposits are mostly mapped based on their characteristic geomorphic expression."

The project site is located approximately 1.34 miles west of the Green Valley Fault. The Green Valley Fault is the controlling fault with a MMax of 6.9 and the PBA is 0.47.

4.2.4 CMS 3 - Eastbound PM 13.48

Geology and Seismicity - The CMS is to be installed on alluvial fan deposits (Holocene). These are "...moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits."

The project site is located approximately 0.95 miles west of the Vaca Fault zone and 7.81 miles of the Great Valley. The Vaca Fault zone is the controlling fault with a MMax of 6.9 and the PBA is 0.53.

4.2.5 CMS 4 - Eestbound PM 26.30

Geology and Seismicity - The CMS is to be installed on alluvial fan deposits (Holocene). "...moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits."

The project site is located approximately 0.95 miles west of the Vaca Fault zone and 4.85 miles of the Great Valley Fault 4. The Vaca Fault zone is the controlling fault with a MMax of 6.9 and the PBA is 0.53.

4.2.6 Close Circuit Television

There are currently 42 locations for the installations of CCTV. The foundation for all the proposed CCTVs is to be Standard Plans CIDH pile, 7 feet deep. Since the foundations are shallow and there are 42 locations, we have summarized the site geology and foundation soils for all the proposed CCTVs in Table 13. (See Attached Exhibit A)

4.3 Liquefaction

Liquefaction potential varies over the length of the project; the susceptibility levels are presented on the attached Figure 3/ in Table 14 (Attached Exhibit A).

5. SUBSURFACE INVESTIGATION

The subsurface exploration was performed by the Office of Geotechnical Design West (OGDW) for OHS 1, CMS 1, CMS 2, CMS 3 and CMS 4 between June and December 2011. It consists of a total of 5 mud-rotary borings with Standard Penetration Tests (SPT) and Pocket Penetrometer (PP) Tests. Soil samples were taken every 5 feet from the Standard Penetration Test (SPT) sampling. Laboratory tests were used to update the soil information. All foundation soil classifications were based on Caltrans "Soil and Rock Logging, Classification, and Presentation Manual". Refer to the LOTBs in the Structure Plans. The LOTB sheets will be submitted when they are ready.

5.1 Changeable Message Sign No. 1 (OHS 1)

General information of boring drilled near the OHS 1 site is listed in Table 3.

Table 3 - Summary of Field Boring for OHS 1

Boring ID	Total Length (ft)	Date of completion	Hammer Efficiency
RC-11-013	36.5	12/7/11	83%

The boring describes the foundation soils as approximately 14 ft, very stiff sandy lean clay with gravel over 5 feet very dense well graded sand with clay and gravel. The remainder of the boring describes the foundation soils as very stiff sandy lean clay.

The SPT blow counts for sandy and gravelly soil ranged from 9 to as high as of 50 blows per foot. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. The unconfined compressive strength of the clayey soil was estimated varying from 2.50 tsf to 3.00 tsf.

Groundwater was encountered in boring (RC-11-013) at 7 feet below the ground surface at the time of drilling. However, groundwater elevations fluctuate seasonally and may be encountered at higher elevations.

5.2 Changeable Message Sign No. 1 (CMS 1)

General information of boring drilled near the CMS 1 site is listed in Table 4.

Table 4 - Summary of Field Boring for CMS 1

Boring ID	Total Length (ft)	Date of completion	Hammer Efficiency
RC-11-005	46.5	8/8/11	57%

The boring describes the foundation soils as approximately 18 feet of medium stiff to stiff sandy lean clay with gravel. The remainder of the boring describes the foundation soils as very stiff sandy silt with gravel.

The SPT blow counts for sandy and gravelly soil ranged from 13 to as high as of 50 blows per foot. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. The unconfined compressive strength of the clayey soil was estimated varying from 1.25 tsf to 4.00 tsf.

No groundwater was encountered in boring (RC-11-005) during our recent soil exploration. However, groundwater elevations fluctuate seasonally and may be encountered during hole excavation.

5.3 Changeable Message Sign No. 2 (CMS 2)

General information of boring drilled near the CMS 2 site is listed in Table 5.

Table 5 - Summary of Field Boring for CMS 2

Boring ID	Total Length (ft)	Date of completion	Hammer Efficiency
RC-11-011	36.5	8/10/11	57%

The boring describes the foundation soils as approximately 27 feet of medium dense silty sand over by 6 feet of medium dense well graded gravel with sand. The remainder of the boring is medium dense silty sand with gravel

The SPT blow count values for silty and sandy/gravelly soil ranged from a low of 14 to as high as of 28 blows per foot.

Groundwater was encountered in boring (RC-11-011) at 9 feet below the ground surface at the time of drilling. However, groundwater elevations fluctuate seasonally and may be encountered at higher elevations.

5.4 Changeable Message Sign No. 3 (CMS 3)

General information of boring drilled near the CMS 3 site is listed in Table 6.

Table 6 - Summary of Field Boring for CMS 3

Boring ID	Total Length (ft)	Date of completion	Hammer Efficiency
RC-11-004	41.5	7/13/11	57%

The boring describes the foundation soils as approximately 18 feet of medium stiff to hard fat clay with sand over by 5 feet of medium stiff sandy lean clay. The remainder of the boring is medium stiff silt.

The SPT blow count values for silty and sandy/gravelly soil ranged from a low of 6 to as high as of 29 blows per foot Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. The unconfined compressive strength of the clayey soil was estimated varying from 0.50 tsf to 4.00 tsf.

Groundwater was encountered in boring (RC-11-004) at 8 feet below the ground surface at the time of drilling. However, groundwater elevations fluctuate seasonally and may be encountered at higher elevations.

5.5 Changeable Message Sign No. 4 (CMS 4)

General information of boring located near the CMS 4 site is listed in Table 7.

Table 7 - Summary of Field Boring for CMS 4

Boring ID	Total Length (ft)	Date of completion	Hammer Efficiency
RC-11-012	36.5	8/10/11	57%

The boring describes the foundation soils as approximately 28 feet of dense to very dense silty sand. The remainder of the boring is very dense silty sand with gravel.

The SPT blow count values for silty and sandy/gravelly soil ranged from a low of 32 to as high as of 50 blows per foot.

No groundwater was encountered in boring (RC-11-012) during our recent soil exploration. However, groundwater elevations fluctuate seasonally and may be encountered during hole excavation.

6. GEOTECHNICAL TESTING

6.1 In Situ Testing

For all borings (RC-11-013, RC-11-005, RC-11-011, RC-11-004, and RC-11-012), Standard Penetration Test (SPT) was performed at 5-feet interval in soil strata. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. Visual soil classifications were made in the field in accordance with the Unified Soil Classification System. Soil samples were collected at various depths for laboratory testing.

6.2 Laboratory Testing

The laboratory testing program included unit weight tests, moisture content tests, gradation analyses, Atterberg limits tests, corrosion tests. Refer to Attached Exhibt B for the laboratory test results.

7. CORROSION EVALUATION

Corrosion studies were conducted in accordance with the requirements of California Test Method No. 643. The Department considers the site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil samples taken at the site:

> Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

The following tables provide the corrosion test summary:

Table 8 - Summary of Corrosion Test for OHS 1

Boring	*Sample Depth*	*Resistivity (Ohm-Cm)*	*pH*	*Chloride Content (ppm)*	*Sulfate Content (ppm)*
RC-11-013	3-5	2083	7.93	N/A	N/A

Table 9 - Summary of Corrosion Test for CMS 1

Boring	*Sample Depth*	*Resistivity (Ohm-Cm)*	*pH*	*Chloride Content (ppm)*	*Sulfate Content (ppm)*
RC-11-005	5-7	1907	7.1	N/A	N/A

Table 10 - Summary of Corrosion Test for CMS 2

Boring	*Sample Depth*	*Resistivity (Ohm-Cm)*	*pH*	*Chloride Content (ppm)*	*Sulfate Content (ppm)*
RC-11-011	3-5	972	8.9	265	402

Table 11 - Summary of Corrosion Test for CMS 3

Boring	*Sample Depth*	*Resistivity (Ohm-Cm)*	*pH*	*Chloride Content (ppm)*	*Sulfate Content (ppm)*
RC-11-004	5-7	1907	7.1	N/A	N/A

Table 12 - Summary of Corrosion Test for CMS 4

Boring	*Sample Depth*	*Resistivity (Ohm-Cm)*	*pH*	*Chloride Content (ppm)*	*Sulfate Content (ppm)*
RC-11-12	3-5	3534	8.3	N/A	N/A

Based on the test results from the Materials Engineering Testing Services (METS) of Caltrans, the foundation soils at the proposed CMS signs are considered non-corrosive. Refer to Attached Exhibit C for the laboratory test results.

8. FOUNDATION RECOMMENDATION

8.1 Overhead Sign No. 1 (OHS 1)

Based on the provided plans and cross sections with the estimated soil parameters from our geotechnical investigation for OHS1, we recommend that the 5-feet diameter CIDH pile for Type VII post , as specified in May 2006 Caltrans Standard Plans, with a length of 23 ft is suitable for the proposed OHS 1.

8.2 Changeable Message Sign No. 1 (CMS 1)

Based on our estimated soil parameters from our geotechnical investigation for CMS 1, we recommend that the 5-feet diameter CIDH pile for Model 500 Full Cantilever , as specified in May 2006 Caltrans Standard Plans, with a length of 22 ft is suitable for the proposed CMS 1.

8.3 Changeable Message Sign No. 2 (CMS 2)

Based on our estimated soil parameters from our geotechnical investigation for CMS 2, we recommend that the 5-feet diameter CIDH pile for Model 500 Full Cantilever , as specified in May 2006 Caltrans Standard Plans, with a length of 22 ft is suitable for the proposed CMS 2.

8.4 Changeable Message Sign No. 3 (CMS 3)

Based on the estimated soil parameters from our geotechnical investigation and analysis for CMS 3, a portion of the foundation soil does not meet the soil criteria specified in May 2006 Caltrans Standard Plans for the foundation of Model 500 Full Cantilever. We recommend that the design length of the CIDH pile be extended to 27 feet (additional 5 feet to Standard Plans) for the proposed CMS 3.

8.5 Changeable Message Sign No. 4 (CMS 4)

Based on our estimated soil parameters from our geotechnical investigation for CMS 4, we recommend that the 5-feet diameter CIDH pile for Model 500 Full Cantilever , as specified in May 2006 Caltrans Standard Plans, with a length of 22 ft is suitable for the proposed CMS 4.

8.6 Close Circuit Television

Based on the existing As-built LOTBs and geology of the site, refer to Table 13 (Attached Exhibit A). We recommend the 2-feet diameter, 7 ft deep CIDH pile as specified in May 2006 Caltrans Standard Plans for all the proposed CCTVs for this project.

9. CONSTRUCTION CONSIDERATIONS

- CIDH piling shall conform to the provisions in Section 49-4, "Cast-in-Place Concrete Piles," of Standard Specifications.
- Difficult pile installation is anticipated due to the presence of caving soils, high groundwater, and overhead/underground utilities.
- The contractor has the option to use a full-length temporary casing. The use of temporary casing will require that it be removed while the concrete is being placed in order to develop the expected pile capacity and to facilitate the casing removal.
- Because of the high groundwater level, the contractor may choose to use a closed system using a concrete pump or a tremie tube to place concrete at the bottom of the holes.

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If you have any questions or need additional information, please call Samuel Awad at (510) 622-5443, or Hooshmand Nikoui, Branch Chief at (510) 286-4811.

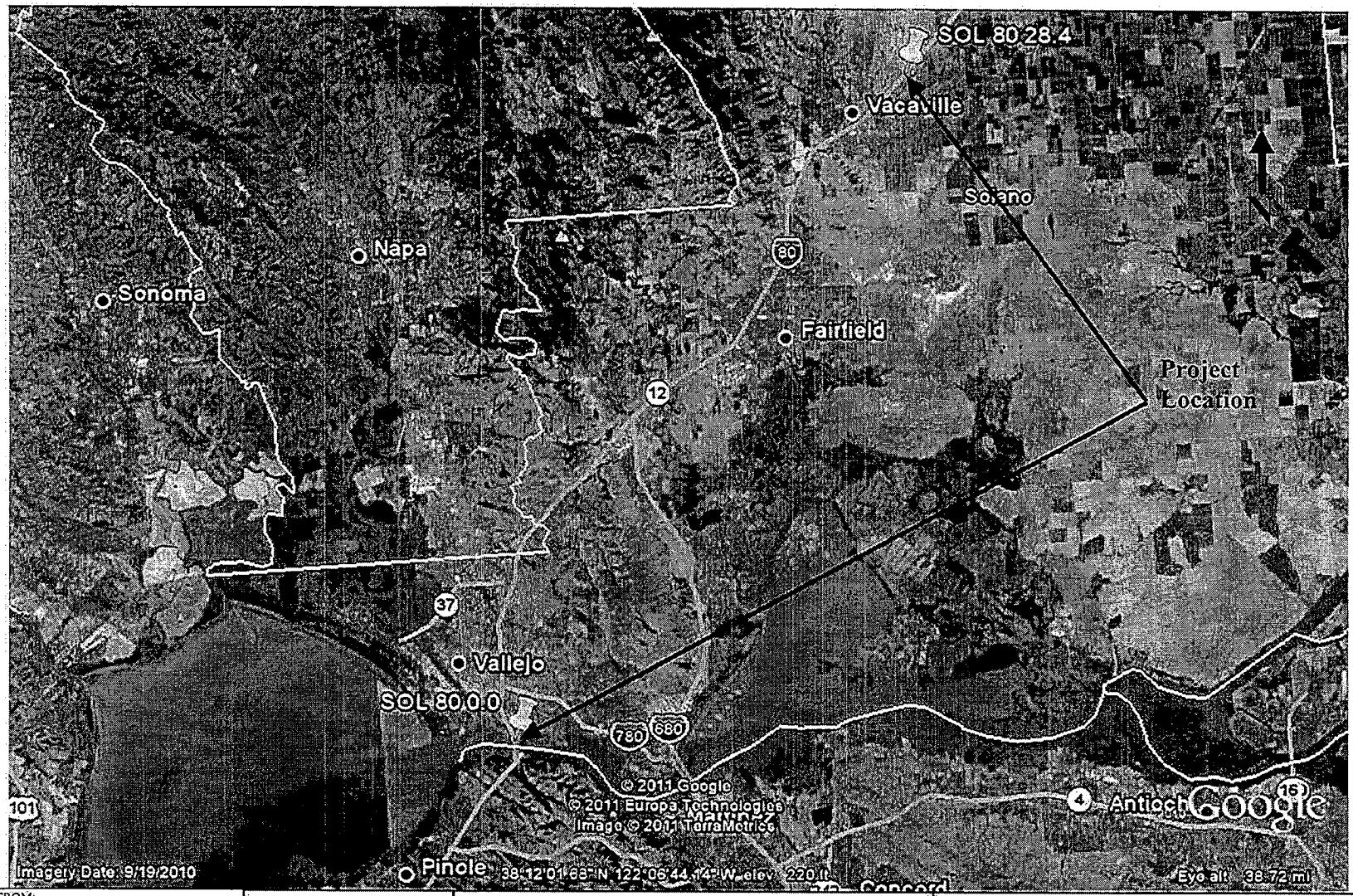
Attachments

c: TPokrywka, HNikoui, SAwad, Daily File, Project File

SAwad /mm/153500

REGISTERED PROFESSIONAL ENGINEER
SAMUEL AWAD
No. 64589
Exp. 06/30/13
CIVIL
STATE OF CALIFORNIA

Figures



MAP TAKEN FROM:
USGS MARE ISLAND QUADRANGLE, 1980

SCALE

Not to Scale

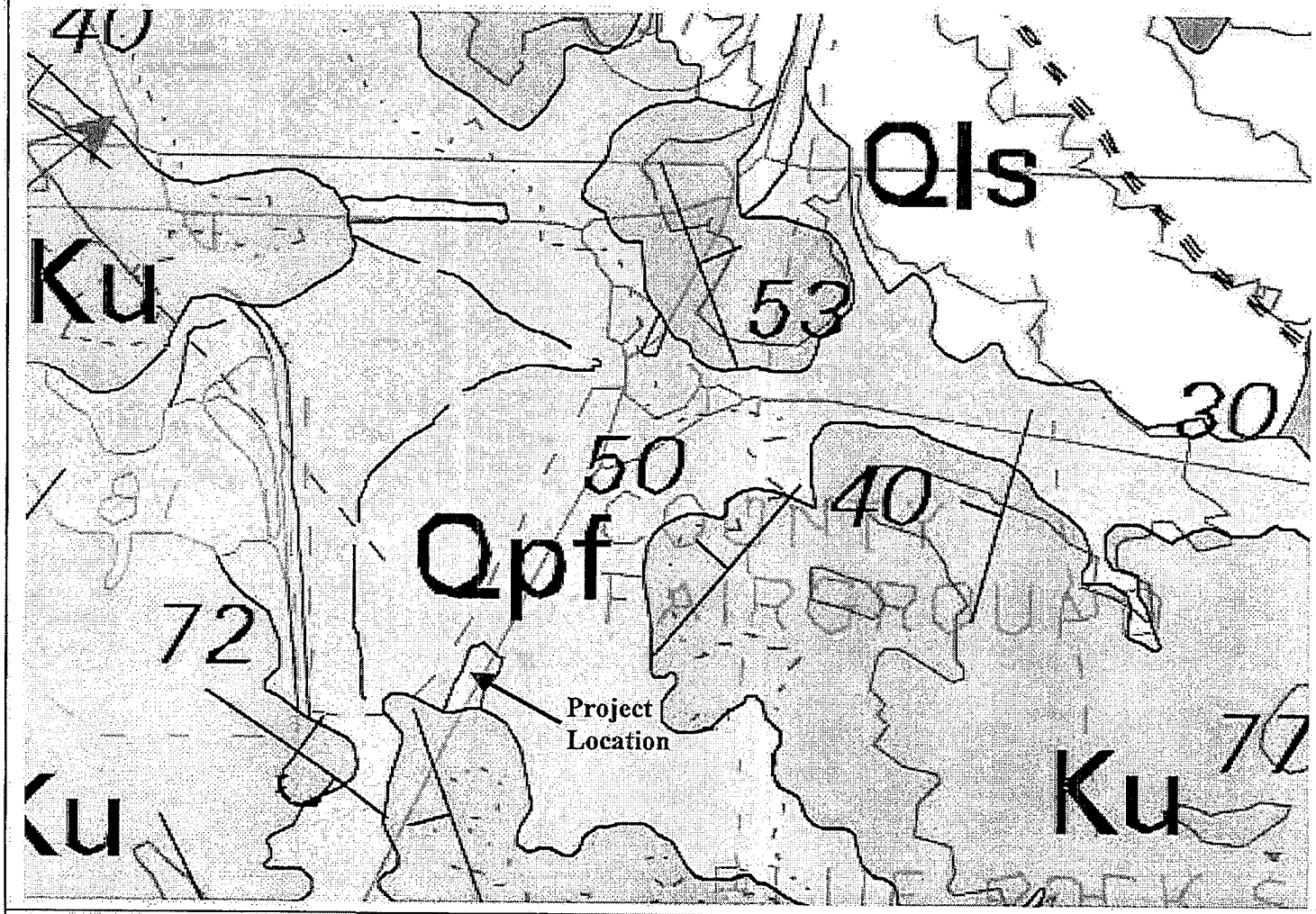
Caltrans

Engineering Service Center
DIVISION OF ENGINEERING SERVICES
OFFICE OF GEOTECHNICAL SERVICES
GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

LOCATION MAP

04-SCL-80/	EFIS 0400020739
PM 0.0-28.4	NOVEMBER 2011

FIGURE 1



Map Taken From: Geologic Map and Map Database of Northeastern San Francisco Bay Region, California, Most of Solano County and Parts of Napa, Marin, Contra Costa, San Joaquin, Sacramento, Yolo, and Sonoma Counties; By R.W. Graymer, D.L. Jones, and E.E. Brabb

MAP TAKEN FROM:
USGS MARE ISLAND QUADRANGLE, 1980

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GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

OVERHEAD SIGN GEOLOGIC MAP

04-SOL-80/ EFIS 0400020739

PM 5.00 JANUARY 2012

FIGURE 2

Qhf **Alluvial fan deposits (Holocene)**—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits

Qhc **Stream channel deposits (Holocene)**—Loose sand, gravel, and cobbles with minor clay and silt deposited within active, natural stream channels

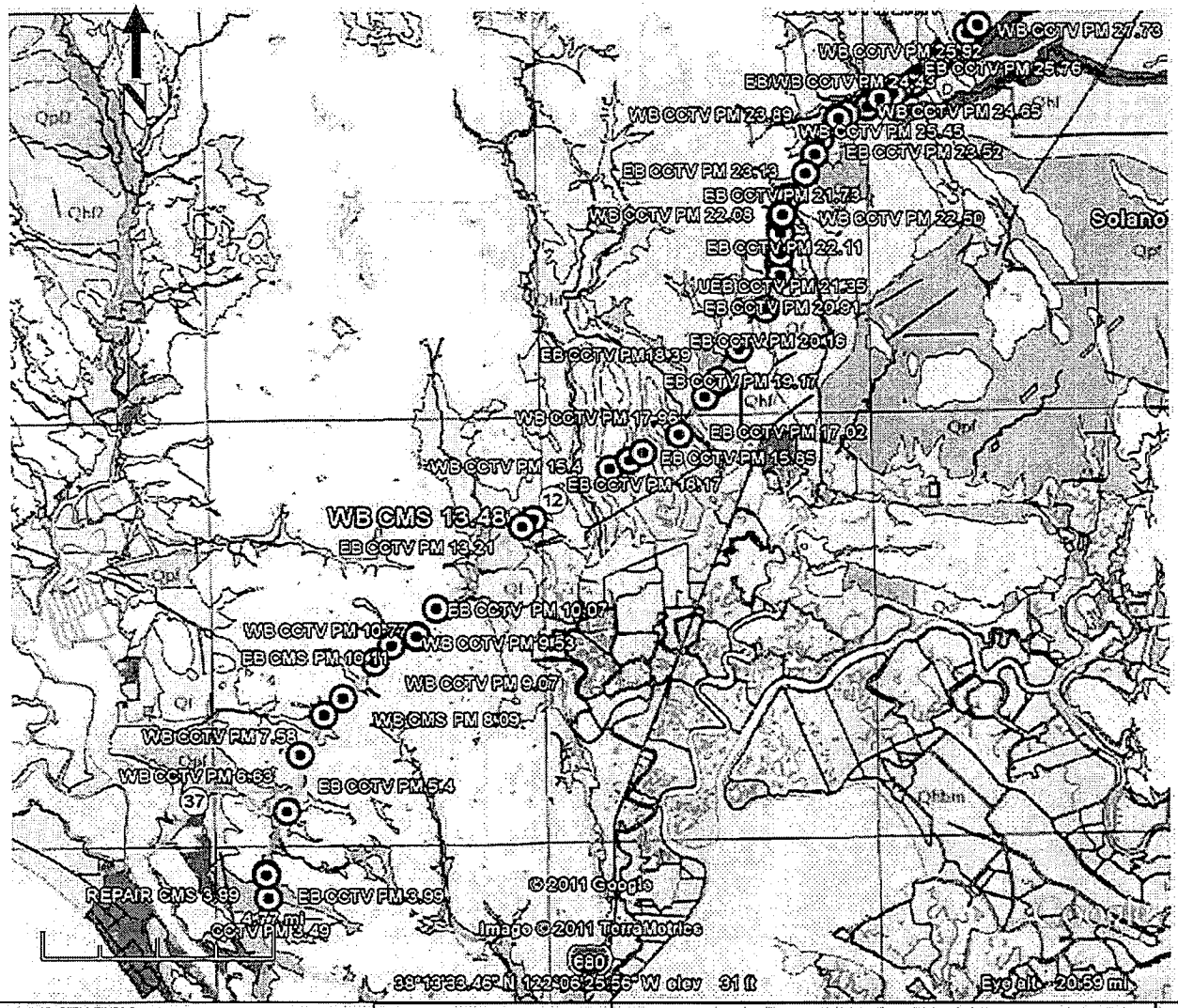
Tpb **Putnam Peak Basalt (Miocene)**—Olivine basalt flow rock. Columnar jointing locally developed. Correlated with the Lovejoy Basalt of the Sierra Nevada foothills (Durrell, 1959; Gromme, 1963; Siegel, 1988) based on geochemical similarities, suggesting that the Putnam Peak Basalt is the remnant of extensive flood basalts that extended from the Sierra Nevada to the Coast Ranges. The age of the Lovejoy Basalt has been controversial, having been reported variously from Eocene to Miocene, but recent Ar/Ar analysis has yielded an age of about 16 Ma (Page and others, 1995; Wagner and others, 2000), suggesting the revised provisional assignment of Miocene age to the Putnam Peak Basalt

Qpf **Alluvial fan deposits (late Pleistocene)**—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)

Tn **Neroly Sandstone (late Miocene)—Vacaville Assemblage-** Blue-gray, fine- to coarse-grained lithic sandstone. In places in the Vacaville area, this unit also includes tuffaceous sandstone, white-weathering, tan tuffaceous mudstone, and pebble to boulder conglomerate. Conglomerate clasts include porphyry andesite and basalt, black hornfels argillite, quartz, white tuff, quartzite, granitic rocks, serpentinite, greenstone, siliceous shale, and minor red chert

Ku **Undivided sandstone, siltstone, and shale (Late Cretaceous)**—Brownish-gray, fine- to coarse-grained, thin bedded to massive sandstone and greenish-gray to black shale and silty shale. Also includes minor pebbly sandstone and conglomerate. This unit has yielded foraminifers of Cenomanian to Maastrichtian age.

SCALE Not to Scale	Caltrans	**Engineering Service Center** DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL SERVICES GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B	KEY 04-SOL-80/ EFIS 040002073 PM 5.00 JANUARY 2012 KEY



WB CMS PM 9.53- Work Location

LIQUEFACTION SUSCEPTIBILITY

- VERY HIGH
- HIGH
- MODERATE
- LOW
- VERY LOW

Lines

Contact, dashed where location uncertainty is greater than about +- 100 m.

MAP TAKEN FROM:
U.S. Geological Survey Open-File Report 2006-1037 Version 1.1
Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California *Geology by* Robert C. Witter[1], Keith L. Knudsen[2], Janet M. Sowers[1], Carl M. Wentworth[3], Richard D. Koehler[1], and Carolyn E. Randolph[1]. *Digital database by* Carl M.Wentworth[3], Suzanna K. Brooks[3], and Kathleen D. Gans[3] 2006

MAP TAKEN FROM:
USGS MARE ISLAND QUADRANGLE, 1980

SCALE

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GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

LIQIFACTION MAP

04-SCL-80/ EFIS 0400020739

PM 26.36 NOVEMBER 2011

FIGURE 3

EXHIBIT A

(Site Geology for All The Proposed CMSs and CCTVs)

Table 13: Closed Circuit Television Geologic Information

Serial No.	PM	Geologic Unit(s)	Unit Symble	Surface Material	Soil[1]	Ground Water	Closest Borehole(s)	Reference	Fault	Distance (km)miles	Peak Bedrock Acceleration	Liquifacton Susceptibility[1]	Flooding Susceptibility[2]	Landslides[3]
1	3.49	Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Lean clay	Silty clay (Clear Lake Clay)	G.W.elvation is 34.5 ft and at depth 11 ft below the ground surface (BH# B-4)	B-4 Tennesse Street OC (5 ft boring)	Tennesse Steet As Built Contract # 58-10TC6 LOTBs 1955	West Napa fault zone (Napa County Airport section)	(5.69) 3.53	0.33	low to moderate	Urban	Flat Land
2	3.97	Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Clay loam	Clay loam (Dibble-Los Osos clay loams)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	West Napa fault zone (Napa County Airport section)	(4.90) 3.04	0.35	low to moderate	Urban	Flat Land
3	5.40	Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Lean clay	Silty clay (Clear Lake Clay)	G.W.elvation range is 153, 115 & 105 ft to 3, 7 & 10 ft the ground surface (BH# B-1, 1968,BH# B-5 & BH# B-3, 1968)	BH# B-1, B-5 & B-3, 1968	Route 37 Gore area As Built. Contract # 61-10T13C19 LOTBs 1960	West Napa fault zone (Napa County Airport section)	(3.42) 2.12	0.41	Low	Urban	Few Landslides
4	6.63	Massive sandstone and shale (Early Cretaceous and Late Jurassic)—Gray and greenish-gray clay shale, siltstone, lithic wacke, and grittstone. Shale has dolomite and calcite concretions in many places. This unit has yielded Buchia of Tithonian to Valanginian age	Kjgv	Clay Loam and Clay	Clay loam (Dibble-Los Osos clay loams)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	West Napa fault zone (Napa County Airport section)	(2.75) 1.71	0.43	Very Low	Urban	Few Landslides
5	7.58	Undivided sandstone, siltstone, and shale (Late Cretaceous)—Brownish-gray, fine- to coarse-grained, thin bedded to massive sandstone and greenish-gray to black shale and silty shale. Also includes minor pebbly sandstone and conglomerate. This unit has yielded foraminifers of Cenomanian to Maastrichtian age.	Ku	Clay Loam and Clay	Clay loam (Fagan clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	West Napa fault zone (Napa County Airport section)	(2.79) 1.73	0.43	Very Low to Low	No flood hazard	Few Landslides
6	9.07	Domengine Sandstone (Eocene)—Gray-weathering, white, clean, quartz, quartz-lithic, and quartz-biotite sandstone, locally crossbedded. In one outcrop in the northern part of the Cordelia quadrangle, the sandstone contains abundant invertebrate fossils (shells). Also in the area, this unit contains near the base a prominent ridge-forming boulder to pebble conglomerate containing clasts of serpentinite, gabbro, pyroxenite, crinoidal limestone, black argillite, and diorite	Td	Clay Loam and Clay	Clay loam (Rincon clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Green Valley fault	(3.64) 2.26	0.42	Moderate	No flood hazard	Mostly Landslides
7	9.53	Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Loam	Loam (Millsholm loam)	G.W.elvation is 260 ft and at depth 20 ft below the ground surface (BH# 3, 1972)	B-3 (50 ft boring) 500 feet east of site	Lynch Road As Built Contract # 10-081104 LOTBs 1972	Green Valley fault	(2.82) 1.75	0.45	Moderate	No flood hazard	Mostly Landslides
8	10.07	Landslide deposits (Holocene and Pleistocene)—Chaotic deposits of sand, silt, clay, angular boulders, and blocks of bedrock up to hundreds of meters long deposited by gravity-driven sliding and flow. These deposits are mostly mapped based on their characteristic geomorphic expression. Only some of the larger landslide deposits are mapped, mostly where the deposits obscure the underlying bedrock. For more complete mapping of landslides see Sims and Nilsen (1972), Frizzell and others (1974), and Sims and Frizzell (1976)	Qls	Clay Loam and Clay	Clay loam (Dibble-Los Osos clay loams)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Green Valley fault	(2.16) 1.34	0.47	Moderate	No flood hazard	Mostly Landslides
9	10.77	Landslide deposits (Holocene and Pleistocene)—Chaotic deposits of sand, silt, clay, angular boulders, and blocks of bedrock up to hundreds of meters long deposited by gravity-driven sliding and flow. These deposits are mostly mapped based on their characteristic geomorphic expression. Only some of the larger landslide deposits are mapped, mostly where the deposits obscure the underlying bedrock. For more complete mapping of landslides see Sims and Nilsen (1972), Frizzell and others (1974), and Sims and Frizzell (1976)	Qls	Clay Loam and Clay	Clay loam (Dibble-Los Osos clay loams)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Green Valley fault	(1.19) 0.74	0.51	Very Low	No flood hazard	Mostly Landslides
10	13.21	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Loam and Clay	Loam and Clay (Antioch-San Ysidro complex)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Green Valley fault	(2.29) 1.42	0.47	Moderate	500 yr Flood Zone	Flat Land
11	15.40	Natural levee deposits (Holocene)—Moderately- to wellsorted sand with some silt and clay deposited by streams that overtop their banks during flooding. Natural levees are often identified by their low, channel parallel ridge geomorphology	Qhl	Silty clay loam	Silty clay loam (Sycamore silty clay loam)	No water recoreded	B-4 (80 ft boring)	HWY 12 gore As Built Contract # 10-071624 LOTBs 1984	Cordelia fault	(3.28) 2.04	0.42	Moderate	Urban	Flat Land
12	15.85	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits.	Qhf	Silty clay loam	Silty clay loam (Yolo silty clay loam)	No water recoreded	B-6 (80 ft boring)	HWY 12 Structure As Built Contract # 10-071624 LOTBs 1984	Cordelia fault	(3.93) 2.44	0.40	Moderate	Urban	Flat Land

Table 13: Closed Circuit Television Geologic Information

Serial No.	PM	Geologic Unit(s)	Unit Symbol	Surface Material	Soil[1]	Ground Water	Closest Borehole(s)	Reference	Fault	Distance (km)miles	Peak Bedrock Acceleration	Liquifacton Susceptibility[1]	Flooding Susceptibility[2]	Landslides[3]
13	16.17	Natural levee deposits (Holocene)—Moderately- to well-sorted sand with some silt and clay deposited by streams that overtop their banks during flooding. Natural levees are often identified by their low, channel parallel ridge geomorphology	Qhl	Silty clay loam	Silty clay loam (Yolo silty clay loam)	No water recorded	B-4 (80 ft boring)	Abernathy Structure As Built Contract # 10-071624 LOTBs 1984	Cordelia fault	(4.35) 2.70	0.39	Moderate	Urban	Flat Land
14	17.02	Natural levee deposits (Holocene)—Moderately- to well-sorted sand with some silt and clay deposited by streams that overtop their banks during flooding. Natural levees are often identified by their low, channel parallel ridge geomorphology Stream channel deposits (Holocene)—Loose sand, gravel, and cobbles with minor clay and silt deposited within active, natural stream channels	Qhl/Qhc	Silty clay loam	Silty clay loam (Sycamore silty clay loam)	G.W.elvation is 20.2 ft and at depth 7.8 ft below the ground surface (B- 6, 1972)	B-6 (70 ft boring)	Ledgewood Creek (Bridge # 23-081/R) As Built Contract # 10-126004 LOTBs 1972	Great Valley fault 4	(10.87) 6.75	0.39	Moderate	Urban	Flat Land
15	17.96	Fine-grained alluvial fan deposits (Holocene)—Mostly silt and clay with interbedded lenses of sand and minor gravel deposited at the distal margin of large alluvial fan complexes	Qhlf	Loam and Clay	Loam and Clay (Antioch-San Ysidro complex)	G.W.elvation is 30 ft and at depth 18 ft below the ground surface (B- 3, 1984) 38 ft below the ground surface (B-10, 1984)	B-1 (38 ft boring)	Travis Blvd. As Built Contract # 10-180304 LOTBs 1984	Great Valley fault 4	(10.73) 6.66	0.39	Moderate	Urban	Flat Land
16	18.39	Artificial fill (Historic)—Undifferentiated man-made deposit of various materials and ages, including some dredge spoils, levee fill, and fill over Bay mud and also road embankments, earthen dams, and railroad grades. Some are compacted and quite firm, but fills made before 1965 are nearly everywhere not compacted and consist simply of dumped materials. Much of this unit is mapped based on topographic expression on the most recent USGS 7.5 minute quadrangles of the map area	af	Loam and Clay	Loam and Clay (Antioch-San Ysidro complex)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(10.57) 6.57	0.40	Moderate	Urban	Flat Land
17	19.17	Sites Formation (Late Cretaceous)—Distinctly and moderately thick bedded, laminated, gray-brown or greenish-gray, fine- to medium-grained biotite wacke, quartz wacke, and lithic wacke and moderately thick (up to 2 meters) beds of dark gray carbonaceous siltstone. This unit contains foraminifers of Late Cretaceous (Coniacian) age (Goudkoff, 1945; Lachenbruch, 1962; Emerson and Roberts, 1962; Sonneman and Switzer, unpub. data, 1961-1962; Almgren, unpub. data, 2002)	Ks	Clay	Clay (Altamont clay)	G.W.elvation is 93.6 ft and at depth 15 ft below the ground surface (B- 4, 1989)	B-4 (28 foot boring)	Airbase Parkway (Bridge # 23-96) As Built Contract # 10-165404 LOTBs 1989	Great Valley fault 4	(10.29) 6.39	0.42	Very low	Urban	Few Landslides
18	20.16	Artificial fill (Historic)—Undifferentiated man-made deposit of various materials and ages, including some dredge spoils, levee fill, and fill over Bay mud and also road embankments, earthen dams, and railroad grades. Some are compacted and quite firm, but fills made before 1965 are nearly everywhere not compacted and consist simply of dumped materials. Much of this unit is mapped based on topographic expression on the most recent USGS 7.5 minute quadrangles of the map area	af	Clay Loam and Clay	Clay loam (Dibble-Los Osos clay loams)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(9.95) 6.18	0.44	Moderate	Urban	Few Landslides
19	20.91	Sites Formation (Late Cretaceous)—Distinctly and moderately thick bedded, laminated, gray-brown or greenish-gray, fine- to medium-grained biotite wacke, quartz wacke, and lithic wacke and moderately thick (up to 2 meters) beds of dark gray carbonaceous siltstone. This unit contains foraminifers of Late Cretaceous (Coniacian) age (Goudkoff, 1945; Lachenbruch, 1962; Emerson and Roberts, 1962; Sonneman and Switzer, unpub. data, 1961-1962; Almgren, unpub. data, 2002)	Ks	Clay Loam and Clay	Clay loam (Dibble-Los Osos clay loams)	No water recorded	B-2 (5 foot boring)	N Texas Street Structure (Bridge # 23-102) As Built Contract # 10-090604 LOTBs 1959	Great Valley fault 4	(9.73) 6.04	0.45	Moderate	Urban	Flat Land
20	21.17	Alluvial fan deposits (Holocene and late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Similar to unit Qhf, this unit is mapped where deposition may have occurred in either Holocene or late Pleistocene time	Qf	Loam and Clay	Loam and Clay (Antioch-San Ysidro complex)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(9.71) 6.03	0.45	Moderate	Urban	Flat Land
21	21.35	Alluvial fan deposits (Holocene and late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Similar to unit Qhf, this unit is mapped where deposition may have occurred in either Holocene or late Pleistocene time	Qf	Clay	Clay (Altamont clay)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(9.67) 6.01	0.45	Moderate	Urban	Flat Land
22	21.73	Alluvial fan deposits (Holocene and late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Similar to unit Qhf, this unit is mapped where deposition may have occurred in either Holocene or late Pleistocene time	Qf	Loam and Clay	Loam and Clay (Antioch-San Ysidro complex)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(9.61) 5.97	0.45	Moderate	Urban	Flat Land
23	22.08	Alluvial fan deposits (Holocene and late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Similar to unit Qhf, this unit is mapped where deposition may have occurred in either Holocene or late Pleistocene time	Qf	Clay Loam and Clay	Clay loam (Dibble-Los Osos clay loams)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(9.56) 5.94	0.45	Moderate	Urban	Flat Land

Table 13: Closed Circuit Television Geologic Information

Serial No.	PM	Geologic Unit(s)	Unit Symble	Surface Material	Soil[1]	Ground Water	Closest Borehole(s)	Reference	Fault	Distance (km)miles	Peak Bedrock Acceleration	Liquifacton Susceptibility[4]	Flooding Susceptibility[2]	Landslides[3]
24	22.11	Funks Formation (Late Cretaceous)—Tan weathering, greenish-gray and gray, carbonaceous, biotite siltstone and mudstone. This unit also includes thin beds of biotite-quartz-feldspar-lithic wacke. The shale beds have foraminifers of Late Cretaceous (Santonian) age (Goudkoff, 1945; Lachenbruch, 1962; Emerson and Roberts, 1962; Sonneman and Switzer, unpub. data, 1961-1962; Almgren, unpub. data, 2002)	Kf	Clay Loam and Clay	Clay loam (Dibble-Los Osos clay loams)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(9.54) 5.93	0.45	Moderate	No flood hazard	Flat Land
25	22.50	Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Clay loam	Clay loam (Rincon clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(9.46) 5.88	0.46	Very low	No flood hazard	Flat Land
26	23.13	Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Clay loam	Clay loam (Rincon clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(9.23) 5.73	0.47	Low	No flood hazard	Flat Land
27	23.52	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Clay Loam	Clay Loam (Brentwood clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(9.10) 5.65	0.47	Moderate	No flood hazard	Flat Land
28	23.89	Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qhf	Clay Loam	Clay Loam (Brentwood clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Vaca fault zone	(2.13) 1.32	0.49	Moderate	No flood hazard	Flat Land
29	24.43	Gulada Formation (Late Cretaceous)—Thick-bedded to massive, coarse- to fine-grained, biotite-quartzfeldspar-lithic wacke. Grades up into gray siltstone and shale bearing radiolarians and foraminifers of Late Cretaceous (Santonian) age (Goudkoff, 1945; Lachenbruch, 1962; Emerson and Roberts, 1962; Sonneman and Switzer, unpub. data, 1961-1962; Almgren, unpub. data, 2002)	Kg	Silty clay loam	Silty clay loam (Yolo silty clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Vaca fault zone	(1.18) 0.73	0.53	Very low	Urban	Few to Mostly Landslides
30	24.65	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Clay Loam and Clay	Clay loam (Dibble-Los Osos clay loams)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Vaca fault zone	(0.91) 0.57	0.54	Very low	100 yr Flood Zone	Few to Mostly Landslides
31	25.11	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Silty clay loam	Silty clay loam (Yolo silty clay loam)	G.W.elvation is 165.0 ft and at depth 19 ft below the ground surface (B- 2 1989) G.W.elvation is 156.0 ft and at depth 27 ft below the ground surface (B- 4, 1989)	B-4 (50 foot boring)	400 feet east of Alamo Creek (Bridge # 23-12) As Built Contract # 62-10T13C11 LOTBs 1964	Vaca fault zone	(0.08) 0.05	0.58	Moderate	Urban	Flat Land
32	25.24	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Silty clay loam	Silty clay loam (Yolo silty clay loam)	G.W.elvation is 173.0 ft and at depth 14 ft below the ground surface (B- 2 1992)	B-2 (65 foot boring)	400 feet east of Alamo Creek (Bridge # 23-12) As Built Contract # 62-10T13C11 LOTBs 1964	Vaca fault zone	(0.06) 0.04	0.58	Moderate	100 yr Flood Zone	Flat Land
33	25.45	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Clay Loam	Clay Loam (Brentwood clay loam)	G.W.elvation is 173.0 ft and at depth 14 ft below the ground surface (B- 2 1992)	B-2 (65 foot boring)	600 feet east of Alamo Creek (Bridge # 23-12) As Built Contract # 62-10T13C11 LOTBs 1964	Vaca fault zone	(0.31) 0.19	0.57	Moderate	Urban	Flat Land
34	25.76	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Clay Loam/Silty Clay Loam	Clay Loam/Silty Clay Loam (Brentwood clay loam/Capay silty clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Vaca fault zone	(0.71) 0.44	0.56	Moderate	Urban	Flat Land

Table 13: Closed Circuit Television Geologic Information

Serial No.	PM	Geologic Unit(s)	Unit Symble	Surface Material	Soil[1]	Ground Water	Closest Borehole(s)	Reference	Fault	Distance (km)miles	Peak Bedrock Acceleration	Liquifacton Susceptibility[3]	Flooding Susceptibility[2]	Landslides[3]
35	25.92	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Clay Loam	Clay Loam (Brentwood clay loam)	G.W.elvation is 155.1 ft and at depth 11 ft below the ground surface (B- 11 1958) G.W.elvation is 154.1 ft and at depth 10 ft below the ground surface (B- 101958)	B-7 (90 foot boring)	480 feet west of Davis Street (Bridge# 23-23 R/L) As Built Contract # 62-10T13C11 LOTBs 1958	Vaca fault zone	(0.99) 0.61	0.55	Moderate	Urban	Flat Land
36	26.20	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Loam	Loam (Millsholm loam)	G.W.elvation is 155.1 ft and at depth 11 ft below the ground surface (B- 11 1958) G.W.elvation is 154.1 ft and at depth 10 ft below the ground surface (B- 101958)	B-2 (75 foot boring)	70 feet east of Davis Street (Bridge# 23-23 R/L) As Built Contract # 62-10T13C11 LOTBs 1958	Vaca fault zone	(1.40) 0.87	0.54	Moderate	Urban	Flat Land
37	26.37	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Loam	Loam (Millsholm loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Vaca fault zone	(1.65) 1.02	0.53	Moderate	100 yr Flood Zone	Few Landslides
38	26.75	Alluvial fan deposits (Holocene and late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Similar to unit Qhf, this unit is mapped where deposition may have occurred in either Holocene or late Pleistocene time	Qf	Clay Loam	Clay Loam (Brentwood clay loam)	G.W.elvation is 135.8 ft and at depth 11.8 ft below the ground surface (P-1 1964)	P-1 (31.5 foot boring)	480 feet east of Creek (Bridge# 25-52 L/R) As Built Contract # 04-239804 LOTBs 1996	Great Valley fault 4	(7.81) 4.85	0.53	Moderate	Urban	Few Landslides
39	26.94	Alluvial fan deposits (Holocene and late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Similar to unit Qhf, this unit is mapped where deposition may have occurred in either Holocene or late Pleistocene time	Qf	Clay Loam	Clay Loam (Brentwood clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(7.83) 4.86	0.53	Moderate	Urban	Few Landslides
40	27.73	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf		Silty clay loam (Yolo silty clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(7.52) 4.67	0.54	Moderate	Urban	Few Landslides
41	27.77	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Silty clay loam	Silty clay loam (Yolo silty clay loam)	No Boring Logs Available	No Boring Logs Available	No Boring Logs Available	Great Valley fault 4	(7.50) 4.66	0.54	Moderate	Urban	Flat Land
42	27.96	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Silty clay loam	Silty clay loam (Yolo silty clay loam)	G.W.elvation is 89.5 ft and at depth 39 ft below the ground surface (03-B-2)	03-B-2 (75 foot boring)	Nut Tree Road (Bridge# 23-145) As Built Contract # 04-263704 LOTBs 2005	Great Valley fault 4	(7.41) 4.60	0.55	Moderate	Urban	Flat Land

1) Info Taken from U.S. Geological Survey Open File Report 2006-1037 Version 1.1 Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California Compiled by Robert C. Witter, et al

2) Info Taken from FloodZ.com FEMA GIS (2003) and DFIRM (2009) Site Data Tables (2004) Prepared for Bay Area Rapid Transit District Phase 2 Extension Project Alameda County, California Prepared by Parsons Brinckerhoff Quade & Douglas, Inc.

3) Info Taken from INVENTORY OF SLIDES AND EARTHFLOWS IN SOLANO COUNTY, CALIFORNIA Prepared by Scott E. Graham, Richard L. Fox, Gregg L. Fuller, Dr. David W. Parsons, and Andrew D. Barton

4. Soil maps can be provided upon request

Table 14: Overhead Sign (OHS) and Changeable Message Signs (CMS) Geologic Information

Serial No.	PM	Geologic Unit(s)	Unit Symbie	Surface Material	Soil[4]	Ground Water	Closest Borehole(s)	Reference	Fault	Distance (km)miles	Peak Bedrock Acceleration	Liquifacton Susceptibility	Flooding Susceptibility	Landslides
1	26.36	Putnam Peak Basalt (Miocene)—Olivine basalt flow rock. Columnar jointing locally developed. Correlated with the Lovejoy Basalt of the Sierra Nevada foothills (Durrell, 1959; Gromme, 1963; Siegel, 1988) based on geochemical similarities, suggesting that the Putnam Peak Basalt is the remnant of extensive flood basalts that extended from the Sierra Nevada to the Coast Ranges. The age of the Lovejoy Basalt has been controversial, having been reported variously from Eocene to Miocene, but recent Ar/Ar analysis has yielded an age of about 16 Ma (Page and others, 1995; Wagner and others, 2000), suggesting the revised provisional assignment of Miocene age to the Putnam Peak Basalt / Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Tpb/Qhf	Loam	Loam (Millsholm loam)	G.W.elvation is 136.7 ft to 16.5 ft bgs (BH# B-1, 1990) G.W.elvation is 128.6 ft to 124.8 ft bgs (BH# B-2, 1991)	BH# B-1, and B-2 (Eastern edge of the proposed retaining wall)	EB Cliffside Dr Onramp As Built Bridge # 23-0051 L/R LOTBs 1993	Vaca fault zone	(1.76) 1.09	0.53	Very Low	Urban	Few Landslides
2	25.83	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Clay Loam/Silty Clay Loam	Clay Loam/Silty Clay Loam (Brentwood clay loam/Capay silty clay loam)	G.W.elvation is 155.1 ft to 10 ft bgs (BH# B-10 and B-11, 1958)	BH# B-7 (north of the proposed retaining wall across freeway)	EB Cliffside Dr Onramp As Built Bridge # 23-23 R/L LOTBs 1958	Vaca fault zone	(1.14) 0.71	0.55	Very Low	Urban	Few Landslides
3	25.83	Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Clay Loam	Clay Loam (Brentwood clay loam)	G.W.elvation is 155.1 ft to 10 ft bgs (BH# B-10 and B-11, 1958)	BH# B-7 (East of the proposed retaining wall across freeway)	WB Davis St. Onramp As Built Bridge # 23-23 R/L LOTBs 1958	Vaca fault zone	(1.14) 0.71	0.55	Very Low	Urban	Few Landslides
4	5.53	Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Lean clay	Silty clay (Clear Lake Clay)	G.W.elvation is 111.2 ft to 12.8 ft bgs (BH#B-1A (#23-174), 1972) Farther east of the retaining wall elevations increase to elevatioon 199.2 ft 13.4 ft bgs	BH# B-1A (#23-174) (300 feet East of the proposed retaining wall)	RTE 37 Connector to WB RTE 80 As Built Contract # 10-127104 Bridge # 23-175 R/L LOTBs 1958	West Napa fault zone (Napa County Airport section)	(3.18) 1.98	0.42	Very Low	Urban	Few Landslides
5	5.00	Artificial fill (Historic)—Undifferentiated man-made deposit of various materials and ages, including some dredge spoils, levee fill, and fill over Bay mud and also road embankments, earthen dams, and railroad grades. Some are compacted and quite firm, but fills made before 1965 are nearly everywhere not compacted and consist simply of dumped materials. Much of this unit is mapped based on topographic expression on the most recent USGS 7.5 minute quadrangles of the map area. And this overlies Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	af/Qpf	Clay/Clay Loam	Clear Lake clay/Dibble-Los Osos clay loams	G.W.elvation is 111.2 ft to 12.8 ft bgs (BH#B-1A (#23-174), 1972) Farther east of the retaining wall elevations increase to elevatioon 199.2 ft 13.4 ft bgs	BH# B-1A (#23-174) (2500 feet North of the proposed retaining wall)	RTE 37 Connector to WB RTE 80 As Built Contract # 10-127104 Bridge # 23-175 R/L LOTBs 1959	West Napa fault zone (Napa County Airport section)	(3.71) 2.30	0.39	Moderate	Urban	Few Landslides

1)Map Taken from U.S. Geological Survey Open File Report 2006-1037 Version 1.1 Map of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California Geology by Robert E. Witter, Et Al

2)Map Taken from Flood Zones - FEMA Q3 (2003) and DFIRM (2009) Base Data - Tele Atlas (2001) This product has been developed to support physical planning at a more detailed level than the map is actually at. http://gis.abag.ca.gov/

3)Map Taken from SOLANO DISTRICT OF SOILS AND EARTH FLOWS IN SOLANO COUNTY, CALIFORNIA / Carl M. Wentworth, Scott E. Graham, Richard J. Fatz, Greg S. Bachman, David W. Fenton, and Andrew D. Barron

4. Soil maps can be provided upon request

EXHIBIT B

(Laboratory Test Results)

MOISTURE CONTENT DETERMINATION
(CTM 226)

County : SOL Route : 80 P.M. : 0.0/28.4 E.A.: 04-153500 Job No. :

Limits : R.E. :

Date Received : Date Calculated : 09/26/11

Date Reported : SEP 29 2011 By : TN PAGE : 2 of 4

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT Wet	GROSS WEIGHT Dry	TARE Weight	NET WEIGHT Wet	NET WEIGHT Dry	MOISTURE Weight	% Moisture
R-11-003	1	5.0'-6.5'	MC	278.5	249.7	100.0	178.5	149.7	28.8	19.2%
	2	10.0'-11.5'	MC	675.2	548.3	100.0	575.2	448.3	126.9	28.3%
	3	15.0'-16.5'	MC	1041.5	862.1	101.5	940.0	760.6	179.4	23.6%
	4	20.0'-21.5'	MC	670.0	561.4	100.2	569.8	461.2	108.6	23.5%
	5	25.0'-26.5'	MC	675.4	564.5	100.5	574.9	464.0	110.9	23.9%
	6	30.0'-31.5'	MC	532.0	433.7	98.7	433.3	335.0	98.3	29.3%
	7	35.0'-36.5'	MC	720.3	602.3	99.8	620.5	502.5	118.0	23.5%
R-11-004	1	5.0'-6.5'	MC	810.3	721.7	101.4	708.9	620.3	88.6	14.3%
CMS 3	2	10.0'-11.5'	MC	928.4	728.7	99.3	829.1	629.4	199.7	31.7%
	3	15.0'-16.5'	MC	1133.6	866.6	103.7	1029.9	762.9	267.0	35.0%
	4	20.0'-21.5'	MC	928.8	733.6	99.7	829.1	633.9	195.2	30.8%
	5	25.0'-26.5'	MC	1046.8	806.0	100.0	946.8	706.0	240.8	34.1%
	6	30.0'-31.5'	MC	1047.9	815.4	101.6	946.3	713.8	232.5	32.6%
	7	35.0'-36.5'	MC	1150.0	932.9	100.7	1049.3	832.2	217.1	26.1%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

LVALDEZ, DL4, REV. 06-2003

MOISTURE CONTENT DETERMINATION
(CTM 226)

County : SOL Route : 80 P.M. : 0.0/28.4 E.A.: 153500 Job No. :

Limits : R.E. :

Date Received : Date Calculated : 09/28/11

Date Reported : SEP 29 2011 By : TN PAGE : 3 of 4

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT Wet	GROSS WEIGHT Dry	TARE Weight	NET WEIGHT Wet	NET WEIGHT Dry	MOISTURE Weight	% Moisture
R-11-005	2	10.0'-11.5'	MC	659.7	526.8	101.0	558.7	425.8	132.9	31.2%
CMS 1	3	15.0'-16.5'	MC	566.0	507.4	101.6	464.4	405.8	58.6	14.4%
	4	20.0'-21.5'	MC	316.0	298.5	100.0	216.0	198.5	17.5	8.8%
	5	25.0'-26.5'	MC	472.8	436.0	99.9	372.9	336.1	36.8	10.9%
	6	30.0'-31.5'	MC	362.8	344.2	103.6	259.2	240.6	18.6	7.7%
	7	35.0'-36.5'	MC	458.1	433.7	99.3	358.8	334.4	24.4	7.3%
	8	40.0'-41.5'	MC	460.8	426.0	101.5	359.3	324.5	34.8	10.7%
	9	45.0'-46.5'	MC	556.8	514.7	101.6	455.2	413.1	42.1	10.2%
R-11-004		40.0'-41.5'	MC	914.6	723.8	100.3	814.3	623.5	190.8	30.6%
CMS 4										

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

LVALDEZ, DL4, REV. 06-2003

MOISTURE CONTENT DETERMINATION
(CTM 226)

County : SOL Route : 80 P.M. : E.A.: 153500 Job No. :

Limits : R.E. :

Date Received : Date Calculated : 09/28/11

Date Reported : SEP 29 2011 By : TN PAGE : 4 of 4

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT Wet	GROSS WEIGHT Dry	TARE Weight	NET WEIGHT Wet	NET WEIGHT Dry	MOISTURE Weight	% Moisture
R-11-011	1	5.0'-6.5'	MC	767.0	644.3	100.3	666.7	544.0	122.7	22.6%
CMS 2	2	10.0'-11.5'	MC	700.1	581.7	100.6	599.5	481.1	118.4	24.6%
-10.11	3	15.0'-16.5'	MC	608.5	518.6	100.3	508.2	418.3	89.9	21.5%
	4	20.0'-21.5'	MC	794.4	677.4	99.8	694.6	577.6	117.0	20.3%
	5	25.0'-26.5'	MC	742.9	640.0	102.0	640.9	538.0	102.9	19.1%
	6	30.0'-31.5'	MC	718.3	606.6	100.6	617.7	506.0	111.7	22.1%
	7	35.0'-36.5'	MC	817.7	675.5	100.1	717.6	575.4	142.2	24.7%
R-11-012	1	5.0'-6.5'	MC	798.5	722.8	101.1	697.4	621.7	75.7	12.2%
CMS 4	2	10.0'-11.5'	MC	666.4	588.3	100.7	565.7	487.6	78.1	16.0%
EB	3	15.0'-16.5'	MC	649.0	567.3	100.3	548.7	467.0	81.7	17.5%
	4	20.0'-21.5'	MC	444.2	391.3	100.2	344.0	291.1	52.9	18.2%
	5	25.0'-26.5'	MC	595.0	503.1	99.8	495.2	403.3	91.9	22.8%
	6	30.0'-31.5'	MC	467.9	410.9	101.0	366.9	309.9	57.0	18.4%
	7	35.0'-36.5'	MC	277.8	247.7	100.6	177.2	147.1	30.1	20.5%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

LVALDEZ, DL4, REV. 06-2003

MOISTURE CONTENT DETERMINATION
(CTM 226)

County : SOL Route : 85/101 P.M. : E.A.: 153500 Job No. : 10135-11P

Limits : R.E. : S. Awad

Date Received : 12/14/11 Date Calculated : 12/19/11

Date Reported : JAN 1 1 2012 By : TN PAGE : 1 of 1

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT Wet	GROSS WEIGHT Dry	TARE Weight	NET WEIGHT Wet	NET WEIGHT Dry	MOISTURE Weight	% Moisture
RC-11-013	1	5.0'-6.5'	MC	1063.2	900.4	98.6	964.6	801.8	162.8	20.3%
	2	10.0'-11.5'	MC	930.9	745.1	100.6	830.3	644.5	185.8	28.8%
	3	15.0'-16.5'	MC	890.2	762.2	101.9	788.3	660.3	128.0	19.4%
	4	20.0'-21.5'	MC	916.1	705.6	100.3	815.8	605.3	210.5	34.8%
	5	25.0'-26.5'	MC	758.1	654.2	99.9	658.2	554.3	103.9	18.7%
	6	30.0'-31.5'	MC	538.8	447.8	101.1	437.7	346.7	91.0	26.2%
	7	35.0'-36.5'	MC	476.6	404.1	99.7	376.9	304.4	72.5	23.8%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

LVALDEZ, DL4, REV. 06-2003

EXHIBIT C

(Corrosion Test Results)

ATTACH FORM DCR-TL-101 HERE

TEST NO. 10135 - 10P

BILLED

DATE RECEIVED 12-9-11

CALC. BY _____ APPROVED BY _____

DATE REPORTED JAN 11 2012

☐ DISTRICT OFFICE ☐ TRANS. LAB.
☐ DIS. MAT LS. ☐ PAV'T. SECTION
☐ RESIDENT ENGINEER ☐ ACCOUNTING
☐ CONSTRUCTION ☐

EXPANSION PRESSURE CH/

20

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT ☐
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT. % BY VOL. TEST NO. DESCRIPTION

REMARKS: Resistity 20832-ON

7.93 PH

SURFACE

BASE

SUBBASE

GRAVEL EQUIVALENT FACTOR

TRAFFIC INDEX

R VALUE: EXUDATION PRESSURE

EXPANSION PRESSURE

AT EQUILIBRUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

REPORT OF TESTS ON

Soil – Corrosion

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATI

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUI

TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED–ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE–GMS				
HEIGHT OF BRIQUETTE–INCHES				
DRY DENSITY OF BRIQ. – # CU. FT.				
STABILOMETER P_H AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				
EXUDATION PRES. P.S.I.				
THICK. BY STAB. FEET				
EXPANSION DIAL READING				
THICK. BY EXP. PRESS. FEET				
R-VALUE BY EXPANSION				

TEST RESULTS			SPEC.
LL.	P.L	P.I.	
CV			
S.E	AS REC'D.		
	CRUSHED		
	COMBINED		
LART	GRADE	100 REV.	
		500 REV.	
DUR	D_f		
	D_t		
% CRUSHED PARTICLES			

SP. GR.	☐ BULK ☐ BULK ☐ APPA
	FINE
AS REC'D.	
CRUSHED	
REL. COMPACTI	
	IN PLAC
DENSITY	
MOISTURE	
% REL. COMP.	
SPEC.	

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD NUMBER C SAwad-5

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☒ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDOTRS. LAB
☐ BRANCH LAB
☐ DIST. LAB

FIELD NO. 12/9/11

DIST. LAB NO.

LOT NO.

SHIPMENT NO.

P.O. OR REQ. NO.

AUTHORIZATION NO.

SAMPLE OF Soil

FOR USE IN Foundation (OHS No. 1)

SAMPLE FROM RC-11-013 (3'-5')

DEPTH

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BULS, STA, ETC.)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS

Corrosion

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED

BY S. Awad TITLE TE

DIST. CO. RTE. PM 04-SOL-80 PM 0.0/R28.4

LIMITS 04-153500 (20739)

CONT. NO. (1)(185)

FED. NO.

RES. ENGR. OR SUPT.

ADDRESS S. Awad

CONTRACTOR

MAIL TO SAME DESTINATION AS SAMPLE

800 700 600 500 400 300 200 100

EXUDATION PRESSURE (PSI)

-TL-361 (Rev. 10/78)

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
10135-4P	SEP 12 2011		☐ RESIDENT ENGINEER
	CALC. BY	DATE REPORTED OCT 13 2011	☐

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm					
2.36 mm					
1.18 mm					
600 µm					
300 µm					
150 µm					
75 µm					
5 µm					
1 µm					

REPORT OF TESTS ON: SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -gms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

REMARKS:
Resistivity - 1907
Specs: 1000 Ω-cm (min)
pH = 7.1
Specs: 5.0 (min)

TEST RESULTS			SPEC.	SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT
LL.	P.L.	P.I.			
CV					FINE / COARSE

SURFACE	S.E.	AS REC'D.		AS REC'D	
BASE		CRUSHED		CRUSHED	
SUBBASE		COMBINED		REL. COMPACTION DATA	
	LART	GRADE 100 REV.			IN PLACE / OPTIMUM
GRAVEL EQUIVALENT FACTOR		500 REV.		DENSITY	
TRAFFIC INDEX	DUR.	D_f		MOISTURE	
R VALUE: EXUDATION PRESSURE		D_a		% REL. COMP.	
EXPANSION PRESSURE		% CRUSHED PARTICLES		SPEC.	
AT EQUILIBRIUM SPEC.		% MOISTURE BY O.D.			

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD NUMBER: C SAWAD-4

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB

FIELD NO.: DIST. APPR. NO. 10135-4P

10135-4P

SAMPLE OF: Soil

FOR USE IN: Foundation

SAMPLE FROM: R-11-005 (5'-9')

DEPTH:

LOCATION OF SOURCE: Native Soil

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS)	AND IS ONE OF A GROUP OF	SAMPLES REPRESENTING (TONS, GALS, BULS, STA. ETC.)
OWNER OR MANUFACTURER		
TOTAL QUANTITY AVAILABLE	TEST RESULTS DESIRED ☑ NORMAL ☐ PRIORITY	DATE NEEDED

REMARKS: Corrosion

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED:

BY: S. Awad TITLE: T.E

DIST. CO. RTE. PM: 04-Sol-80 PM 0.0/R 28.4

LIMITS: 04-15350.0 (207379)

CONT. NO.: pH: 0 RES: 160

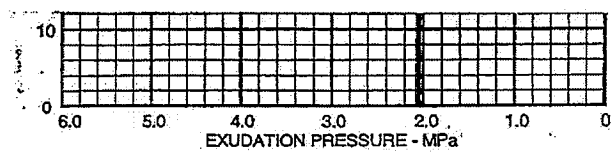
FED. NO.:

RES. ENGR. OR SUPT.: S. Awad

ADDRESS: (510) 622-5443

CONTRACTOR: 111 Grand Ave, Oakland

MAIL TO SAME DESTINATION AS SAMPLE



SEP 12 2011

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	
10135-5P	SEP 12 2011		☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
	CALC. BY	DATE REPORTED OCT 13 2011	☐ RESIDENT ENGINEER

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm					
2.36 mm					
1.18 mm					
600 µm					
300 µm					
150 µm					
75 µm					
5 µm					
1 µm					

REPORT OF TESTS ON: Soil

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE-gms					
HEIGHT OF BRIQUETTE-mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 6900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

REMARKS:
RESISTIVITY = 972
SPEC: 1000 Ω-cm (min)
pH = 8.9
SPEC: 5.6 (min)
(*) SAMPLES SENT TO SACTO/HQ FOR SULFATE and CHLORIDE TESTING.

TEST RESULTS			SPEC.
LL	P.L.	P.I.	
CV			

			SPEC.
SURFACE	S.E.	AS REC'D.	
BASE		CRUSHED	
SUBBASE		COMBINED	
	LART	GRADE 100 REV.	
		500 REV.	
GRAVEL EQUIVALENT FACTOR			
TRAFFIC INDEX	DUR.	D_i	
R VALUE: EXUDATION PRESSURE		D_e	
EXPANSION PRESSURE	% CRUSHED PARTICLES		
AT EQUILIBRIUM SPEC.	% MOISTURE BY O.D.		

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT	
	FINE	COARSE
AS REC'D		
CRUSHED		

REL. COMPACTION DATA	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

2

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CAR NUMBER: C SAWAD-5

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB

FIELD NO. 10135-5P

DIST. TEST NO. 10135-5P

SEP 12 2011

SAMPLE OF: Soil

FOR USE IN: Foundation

SAMPLE FROM: R-11-011

DEPTH: (4'-5')

LOCATION OF SOURCE: Native soil

THIS SAMPLE IS SHIPPED IN (NO CONTAINERS) | AND IS ON E OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BDLS, STA, ETC.)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☑ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS: Corrosion

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED

BY: S. Awad | TITLE: T.E

DIST. CO. RTE. PM: 04-SOL-80 PM 0.0/R28.4

LIMITS

CONT. NO.: 04-153500 (20739)

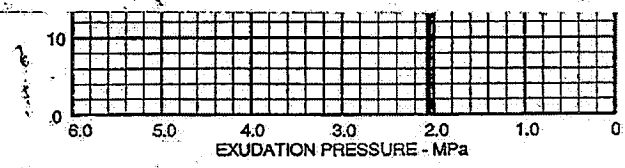
FED. NO.: PH: 0 OBJ: 160

RES. ENGR. OR SUPT.: S. Awad

ADDRESS: (510) 622-5443

CONTRACTOR: 111 Grand Ave, Oakland

MAIL TO SAME DESTINATION AS SAMPLE



Michael Mifkovic/HQ/Caltrans/CAGov
11/10/2011 10:38 AM

To Samuel Awad/D04/Caltrans/CAGov@DOT
cc
bcc
Subject Fw: Soil/Water Test Summary Report EA 04-153500 Soil Foundation R-11-011 to samuel_awad@dot.ca.gov

----- Forwarded by Michael Mifkovic/HQ/Caltrans/CAGov on 11/10/2011 10:38 AM -----

<michael_mifkovic@dot.ca.gov>
10/26/2011 03:42 PM

To <michael_mifkovic@dot.ca.gov>
cc
Subject Re: Soil/Water Test Summary Report EA 04-153500 Soil Foundation R-11-011 to samuel_awad@dot.ca.gov

The following message was sent to samuel_awad@dot.ca.gov at 3:42:46 PM on 10/26/2011

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion And Structural Concrete Field Investigation Branch
Report Date: 10/26/2011
Reported By: Mifkovic, Michael

TEST SUMMARY REPORT - Soil/Water

Bridge Name:
Bridge Number:
EA No.: **04-153500**
EFIS No.: **0400020739**
Dist/Co/Rte/PM or KP: **04 / SOL / 80 / 0.0/28.4**

SIC Number (TL101)	Sample Location	Sample Type	Sample Depth	Minimum Resistivity[1] (ohm-cm)	pH[2]	Chloride Content[3] (ppm)	Sulfate Content[4] (ppm)
CSAWAD	R-11-011	SOIL	4-5'	972	8.9	265	402

This site is not corrosive to foundation elements (see note below for MSE wall backfill).

Note: For MSE wall structure backfill material, minimum resisitivity must be 2000

ohm-cm or greater,
pH must be between 5.5 and 10.0, chloride content must not be greater than 250 ppm, and sulfate content must not be greater than 500 ppm.

[1,2]CTM 643, [3]CTM 422, [4]CTM 417

~~STAR~~ CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	
10135-3P	AUG 05 2011		☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
	CALC. BY	DATE REPORTED OCT 11 2011	☐ RESIDENT ENGINEER

GRADING ANALYSIS

SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm					
2.36 mm					
1.18 mm					
600 µm					
300 µm					
150 µm					
75 µm					
5 µm					
1 µm					

REPORT OF TESTS ON: Soil

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -gms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

REMARKS:
RESISTIVITY = 2862
spec: 1000 Ω-cm (min)
pH = 7.7
spec: 5.6 (min)

TEST RESULTS		SPEC.
LL	P.L. P.I.	
CV		

SURFACE			
BASE			
SUBBASE			
GRAVEL EQUIVALENT FACTOR			
TRAFFIC INDEX			
R VALUE: EXUDATION PRESSURE			
R VALUE: EXPANSION PRESSURE			
R VALUE: AT EQUILIBRIUM		SPEC.	

S.E.	AS REC'D.	
	CRUSHED	
	COMBINED	
LART. GRADE	100 REV.	
	600 REV.	
DUR.	D_f	
	D_c	
% CRUSHED PARTICLES		
% MOISTURE BY O.D.		

SP. GR. ☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE
AS REC'D		
CRUSHED		

REL. COMPACTION DATA

	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

*INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

SAMPLE LOCATION CARD

TL-0101 (REV. 1/97)

CONTROL NUMBER: CS Awad 3

☒ PRELIMINARY TESTS ☐ PROCESS TESTS ☐ ACCEPTANCE TESTS ☐ INDEPENDENT ASSURANCE TESTS ☒ DIST. LAB ☐ TRANS. LAB ☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB

FIELD NO. 10135-3P

LOT NO.

P.O. SEQ. NO.

10135-3P

AUG 05 2011

SAMPLE OF: Soil

FOR USE IN: Foundation

SAMPLE FROM: R-11-004 14-5

DEPTH: CMS 3

LOCATION OF SOURCE: Native Soil

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BOLS, STA. ETC.)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS: Corrosion test

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED: 7/13/11

BY: S. A. TITLE: TE

DIST. CO. RTE. PM

LIMITS

CONT. NO. 04-153500 (20739)

FED. NO.

RES. ENGR. OR SUPT. S. Awad

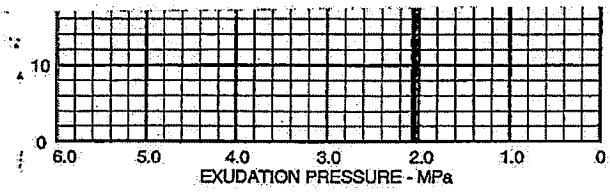
ADDRESS (510) 622-5443

CONTRACTOR

pH = 0

OBJ: 160

MAIL SAME DESTINATION AS SAMPLE



STATE CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
10135-6P	SEP 12 2011		☐ RESIDENT ENGINEER
	CALC. BY	DATE REPORTED OCT 13 2011	☐

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm					
2.36 mm					
1.18 mm					
600 µm					
300 µm					
150 µm					
75 µm					
5 µm					
1 µm					

REPORT OF TESTS ON: SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE-gms					
HEIGHT OF BRIQUETTE-mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

REMARKS:
Resistivity = 3534
Specs: 1000 Ω-cm (min)
PH = 8.3
Specs: 5.6 (min)

TEST RESULTS			SPEC.
LL	P.L.	P.I.	
CV			

SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT	
	FINE	COARSE
AS REC'D		
CRUSHED		

REL. COMPACTION DATA	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

SURFACE	S.E.	AS REC'D.	
BASE		CRUSHED	
SUBBASE		COMBINED	
	LART.	GRADE 100 REV.	
GRAVEL EQUIVALENT FACTOR		500 REV.	
TRAFFIC INDEX	DUR.	D_f	
R VALUE: EXUDATION PRESSURE		D_e	
EXPANSION PRESSURE	% CRUSHED PARTICLES		
AT EQUILIBRIUM SPEC.	% MOISTURE BY O.D.		

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD NUMBER: C SAWAD-6

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
☐ INDEPENDENT ASSURANCE TESTS
☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB

FIELD NO. 10135-6P
DIST. LAB NO. 10135-6P
LOT NO.
P.O.-DPA NO. NO.
AUTHORIZATION NO.

SEP 12 2011

SAMPLE OF: Soil
FOR USE IN: Foundation
SAMPLE FROM: R-11-012 (4-5)
DEPTH:
LOCATION OF SOURCE: Native soil

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BDLS, STA, ETC.)

OWNER OR MANUFACTURER

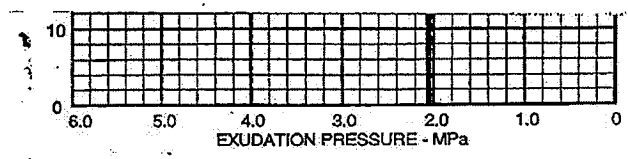
TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☑ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS: Corrosion

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED
BY: S. Awad TITLE: T.E
DIST, CO, RTE, PM: 04-SOL-80 PM 0.0 / R 28.4
LIMITS: 04-153500 (20739)
CONT. NO. PH: 0 ORJ: 160
FED. NO.
RES. ENGR. OR SUPT.: S. Awad
ADDRESS: (510) 622-5443
CONTRACTOR: 111 Grand Ave, Oakland

MAIL TO SAME DESTINATION AS SAMPLE



State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MR. VINCE BONNER
District Branch Chief
Design East- Contra Costa

Date: April 10, 2012

Attention: D. Ocampo

File: 04-SOL-80 PM 0.0/R28.4
04-153501
Efis 0400020739
Ramp Metering & TOS

S. A

From: SAMUEL AWAD
Transportation Engineer
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

H. Nikoui

HOOSHMAND NIKOUI
Chief, Branch A
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

Subject: Geotechnical Design Report for EMSs

1. INTRODUCTION

This memo provides geotechnical design report recommendations for ten Extinguishable Message Signs (EMSs). These EMSs is part of the Highway 80 Ramp Metering System and Traffic Operation System (TOS) project elements along Route 80, Solano County, in Vallejo, Fairfield, and Vacaville from the Contra Cost County line to the Route 80/505 junction, in the eastbound and westbound directions (Figure 1).

Recommendations contain in this report are based on the submitted layout and cross section plans, field mapping of the site, subsurface exploration, laboratory test results and foundation analysis. This geotechnical report addresses our foundation recommendation for the EMS project. Refer to Table 1 for general EHS information.

Table 1- General Extinguishable Message Signs (EMSs) information

EMS No.	Direction	Post Mile	Post Type	Height, ft
EMS 1	SB-505	0.65	NPS 10	13
EMS 2	WB-80	28.19	NPS 10	13
EMS 3	WB-80	28.17	NPS 10	13
EMS 4	SB-505	0.10	NPS 10	13
EMS 5	SB-505	0.04	NPS 10	13
EMS 6	EB-37	11.21	NPS 10	13
EMS 7	EB-37	11.39	NPS 10	13
EMS 8	EB-37	11.48	NPS 10	13
EMS 9	EB-37	11.53	NPS 10	13
EMS 10	EB-37	11.64	NPS 10	13

2. PROJECT PURPOSE AND NEED

The need for this project is to relieve congestion and reduce accidents. The purpose is to install ramp metering systems to improve highway operations by completing the installation and implementation of a ramp metering system on eastbound and westbound Route 80, in Solano County.

3. SCOPE OF WORK

The following tasks were performed for the preparation of this Geotechnical Design Report:

- Review of as-built plans;
- Field geotechnical exploration, including drilling 5 borings at the project site;
- Laboratory test results on selected samples;
- Geotechnical design analysis; and
- Preparation of this Geotechnical Design Report.

4. SITE GEOLOGY AND SEISMICITY

All geologic information was taken from Geologic Map and Map Database of Northeastern San Francisco Bay Region, California, most of Solano County and parts of Napa, Marin, Contra Costa, San Joaquin, Sacramento, Yolo, and Sonoma Counties; By R.W. Graymer, D.L. Jones, and E.E. Brabb.

4.1 Climate

The climate of the job site is influence by the Sacramento Valley to the east and the San Pablo Bay to the west. By the Bay, the annual temperature is 58° F, and 61° in the north county, in the Sacramento Valley. The average amount of rainfall is approximately 16 inches in the southern portion of the county and 30 inches in the Vaca Mountains, and 17-20 inches in the county's eastern portion. In the summer, little rainfall occurs. The rainy season begins about October, (0.87 inches) and ends about April (3.7 inches), with the most rain falling in December (14.2 inches). (Soil Survey of Solano County, USDA, 1977)

4.2 Site Geology and Seismicity

EMS 2, 3, 4, and 5 soils are "...Alluvial fan deposits (Holocene)—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits."

Signs EMS 6 and EMS 7 are located upon "...Artificial fill (Historic)—Undifferentiated man-made deposit of various materials and ages, including some dredge spoils, levee fill, and fill over Bay mud and also road embankments, earthen dams, and railroad grades. Some are compacted and quite firm, but fills made before 1965 are nearly everywhere not compacted and consist simply of dumped materials. Much of this unit is mapped based on topographic expression on the most recent USGS 7.5 minute quadrangles of the map area. This overlies Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols."

Below EMS 9, EMS 8 and EMS 1 are "...Alluvial fan deposits (late Pleistocene)—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols."

And EMS 10 is located on Great Valley complex bedrock which is composed of "...Undivided sandstone, siltstone, and shale (Late Cretaceous)—Brownish-gray, fine- to coarse-grained, thin bedded to massive sandstone and greenish-gray to black shale and silty shale. Also, includes minor pebbly sandstone and conglomerate. This unit has yielded foraminifers..." the upper Cretaceous period.

4.3 Seismicity

Two faults are the controlling faults in the area. To the west, the controlling fault is the West Napa fault zone (Napa County Airport section) and to the east is the Great Valley fault 4. EMS 6 through 10 is closest to the West Napa fault, while EMS 1 through EMS 5 is closer to the Great Valley fault. The distances from the faults and the peak ground acceleration are present in Table 4 (refer to Exhibit A).

4.4 Liquefaction

Liquefaction varies over the length of the project; the susceptibility levels are presented on Figures 4 and 5, and also presented in Table 4 (refer to Exhibit A).

5. SUBSURFACE INVESTIGATION

The subsurface exploration was performed by the Office of Geotechnical Design West (OGDW) for EMS 1 through EMS 10. It consists of a total of 5 mud-rotary borings with Standard Penetration Tests (SPT) and Pocket Penetrometer (PP) Tests. Soil samples were taken every 5 feet from the Standard Penetration Test (SPT) sampling. Laboratory tests were used to update the soil information. All foundation soil classifications were based on Caltrans "Soil and Rock Logging, Classification, and Presentation Manual". Refer to the LOTBs in the Structure Plans. The LOTB sheets will be submitted when they are ready.

5.1 Extinguishable Message Signs (EMS 1 to EMS 5)

General information of borings drilled near the EMS 1 to EMS 5 sites are listed in Table 2.

Table 2- Summary of Field Borings for EMS 1 to EMS 5

Boring ID	Total Length (ft)	Date of completion	Hammer Efficiency
RC-12-001	30.5	2/28/12	68%
RC-12-002	30.5	2/28/12	68%
RC-12-003	30.5	2/28/12	68%
RC-12-004	25.5	2/29/12	68%
RC-12-005	25.5	2/29/12	68%

The borings describe the foundation soils as approximately 9 ft, medium stiff to very stiff sandy lean clay over 5 feet medium dense clayey sand. The remainder of the boring describes the foundation soils as stiff to hard sandy lean clay.

The SPT blow counts for sandy and gravelly soil ranged from 12 to as high as of 43 blows per foot. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. The unconfined compressive strength of the clayey soil was estimated varying from 0.50 tsf to 4.00 tsf.

Groundwater was encountered in borings with ranged from 11 feet to 17 feet below the ground surface at the time of drilling. However, groundwater elevations fluctuate seasonally and may be encountered at higher elevations.

5.2 Extinguishable Message Signs (EMS 6 to EMS10)

The subsurface condition near the EMS 6 to EMS 10 sites, based on (B-1A) (#23-175) LOTB as-built for Contractor No. 10-127104, Bridge # 23-175, and the subsurface exploration was performed by the Office of Geotechnical Design West (OGDW) for OHS 1 (RC-11-013), approximately 1000 feet, west of the proposed EMSs.

B-1A (#23-175) was advanced to a depth of approximately 37 feet below ground surface. The boring describes the foundation soils as approximately 10 feet stiff silt to clayey silt. The reminder of the boring describes the foundation soils as siltstone.

RC-11-013 was advanced to a depth of approximately 36.5 feet below the ground surface. The boring describes the foundation soils as approximately 14 feet very stiff sandy lean clay over 5

feet very dense well graded sand with clay and gravel. The reminder of the boring describes the foundation soils as very stiff sandy lean clay.

6. GEOTECHNICAL TESTING

6.1 In Situ Testing

For all borings (RC-12-001, RC-12-002, RC-12-0003, RC-12-004, and RC-12-005), Standard Penetration Test (SPT) was performed at 5-feet interval in soil strata. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. Visual soil classifications were made in the field in accordance with the Unified Soil Classification System. Soil samples were collected at various depths for laboratory testing.

6.2 Laboratory Testing

The laboratory testing program included unit weight tests, moisture content tests, gradation analyses, Atterberg limits tests, corrosion tests. Refer to Attached Exhibit B for the laboratory test results.

7. CORROSION EVALUATION

Corrosion studies were conducted in accordance with the requirements of California Test Method No. 643. The Department considers the site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil samples taken at the site:

> Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

The following table provides the corrosion test summary:

Table 3 - Summary of Corrosion Test for EMS 1 to EMS 5

Boring	*Sample Depth*	*Resistivity (Ohm-Cm)*	*pH*	*Chloride Content (ppm)*	*Sulfate Content (ppm)*
RC-12-001	3-5	884	7.88	29	118
RC-12-002	3-5	1109	8.25	N/A	N/A
RC-12-003	5-7	530	7.48	164	384
RC-12-004	3-7	1159	7.78	N/A	N/A

Based on the test results from the Materials Engineering Testing Services (METS) of Caltrans, the foundation soils at the proposed EMS signs are considered non-corrosive. Refer to Attached Exhibit B for the laboratory test results.

8. FOUNDATION RECOMMENDATION

Based on the estimated soil parameters from our geotechnical investigation and review of as-built plans, We recommend that the 3-feet diameter CIDH pile for Post Type NPS 10, as specified in May 2006 Caltrans Standard Plans (S49), with a length of 13 feet is suitable for all the proposed EMSs.

9. CONSTRUCTION CONSIDERATIONS

- CIDH piling shall conform to the provisions in Section 49-4, "Cast-in-Place Concrete Piles," of Standard Specifications.
- Difficult pile installation is anticipated due to the presence of caving soils, high groundwater, and overhead/underground utilities.
- The contractor has the option to use a full-length temporary casing. The use of temporary casing will require that it be removed while the concrete is being placed in order to develop the expected pile capacity and to facilitate the casing removal.
- Because of the high groundwater level, the contractor may choose to use a closed system using a concrete pump or a tremie tube to place concrete at the bottom of the holes.

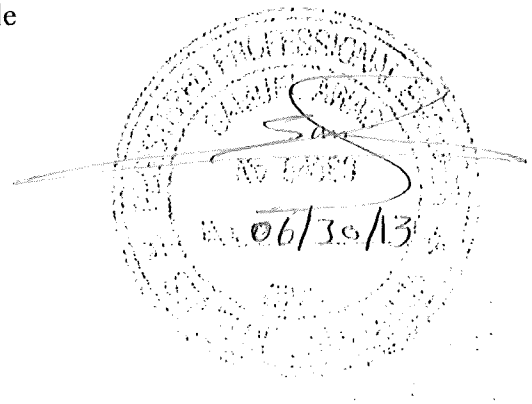
α α α α α

If you have any questions or need additional information, please call Samuel Awad at (510) 622-5443, or Hooshmand Nikoui, Branch Chief at (510) 286-4811.

Attachments

c: TPokrywka, HNikoui, SAwad, Daily File, Project File

SAwad /mm/153501



Figures

MAP TAKEN FROM:
USGS MARE ISLAND QUADRANGLE, 1980

SCALE

Not to Scale

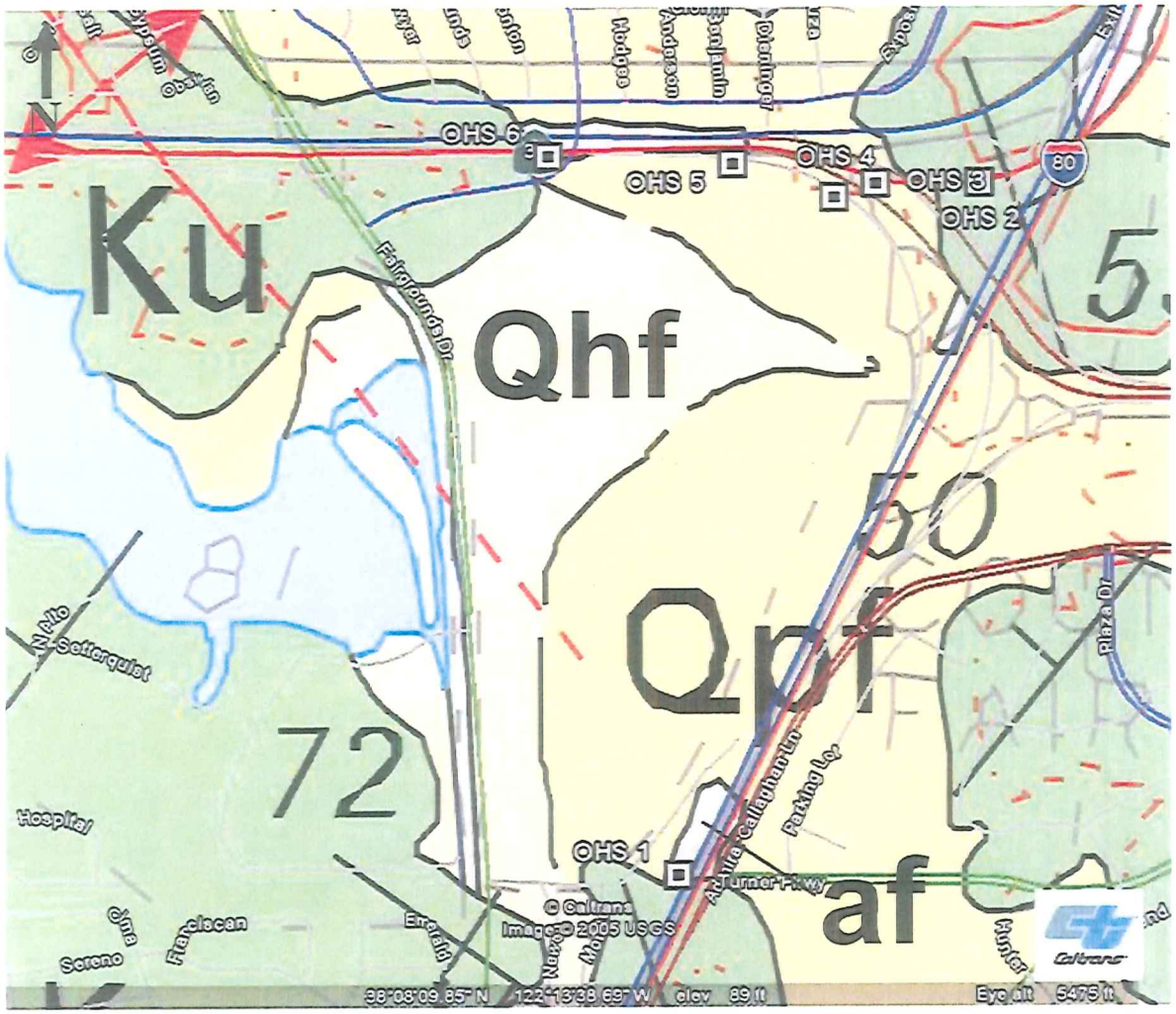
Caltrans

Engineering Service Center
DIVISION OF ENGINEERING SERVICES
OFFICE OF GEOTECHNICAL SERVICES
GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

LOCATION MAP

04-SCL-80/	EFIS 0400020739
PM 0.0-28.4	MARCH 2012

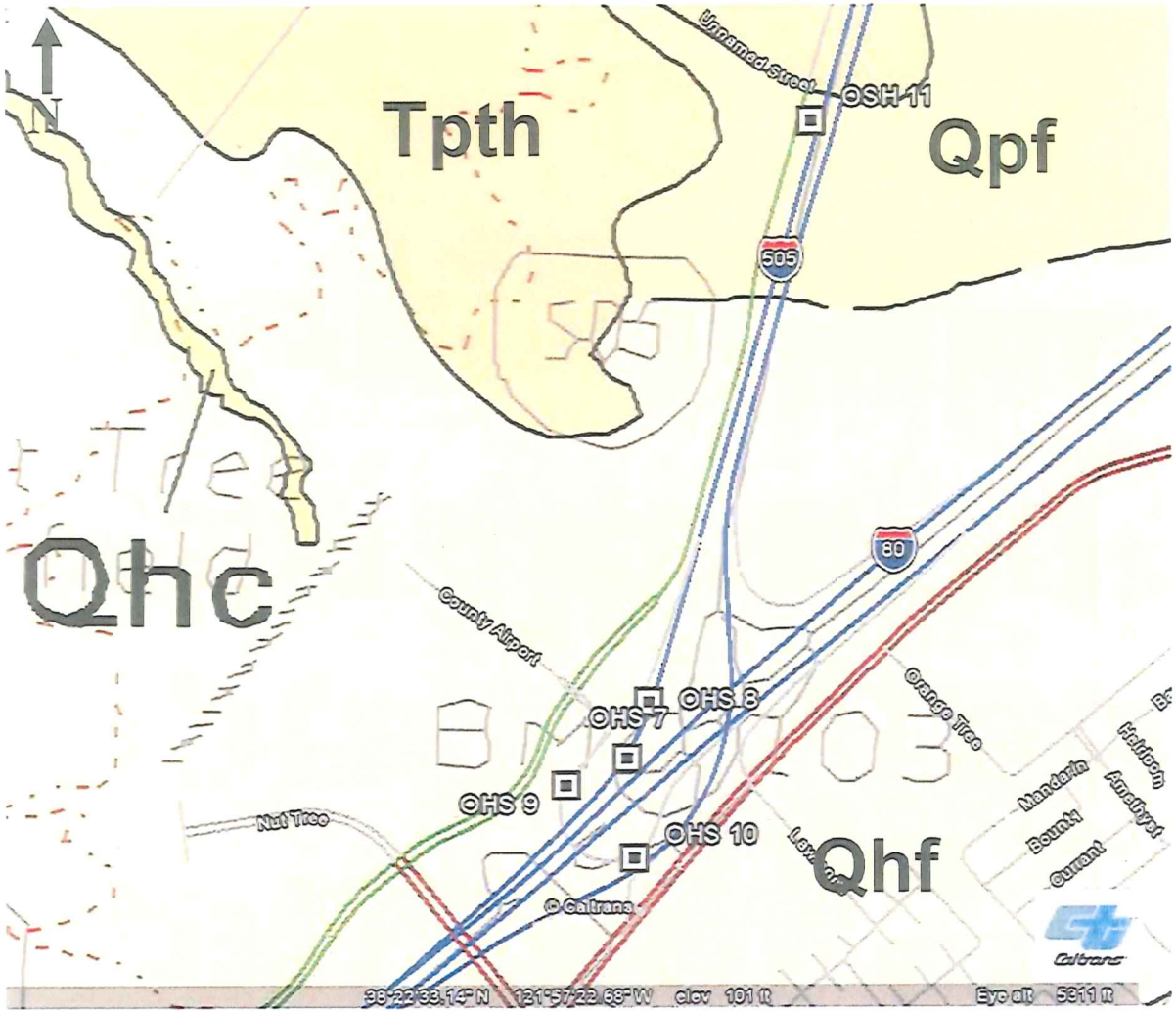
FIGURE 1



Key:

- Work Location
- af — Artificial fill (Holocene, historic)
- Qhf — Alluvial fan deposits (Holocene)
- Qpf — Alluvial fan deposits (late Pleistocene)
- Ku — Sandstone and shale (Late Cretaceous)

MAP TAKEN FROM:			HIGHWAY 80/37 GEOLOGY MAP
SCALE	Caltrans	**Engineering Service Center** DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL SERVICES GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B	04-SCL-80/ EFIS 0400020739
Not to Scale			PM 0.0/28.4 March 2012
			FIGURE 2



Key:

- Work Location
- Qhf — Alluvial fan deposits (Holocene)
- Qhc — Stream channel deposits (Holocene)
- Qpf — Alluvial fan deposits (late Pleistocene)
- Tpth — Tehama Formation (Pliocene)

MAP TAKEN FROM:

SCALE

Not to Scale

Caltrans

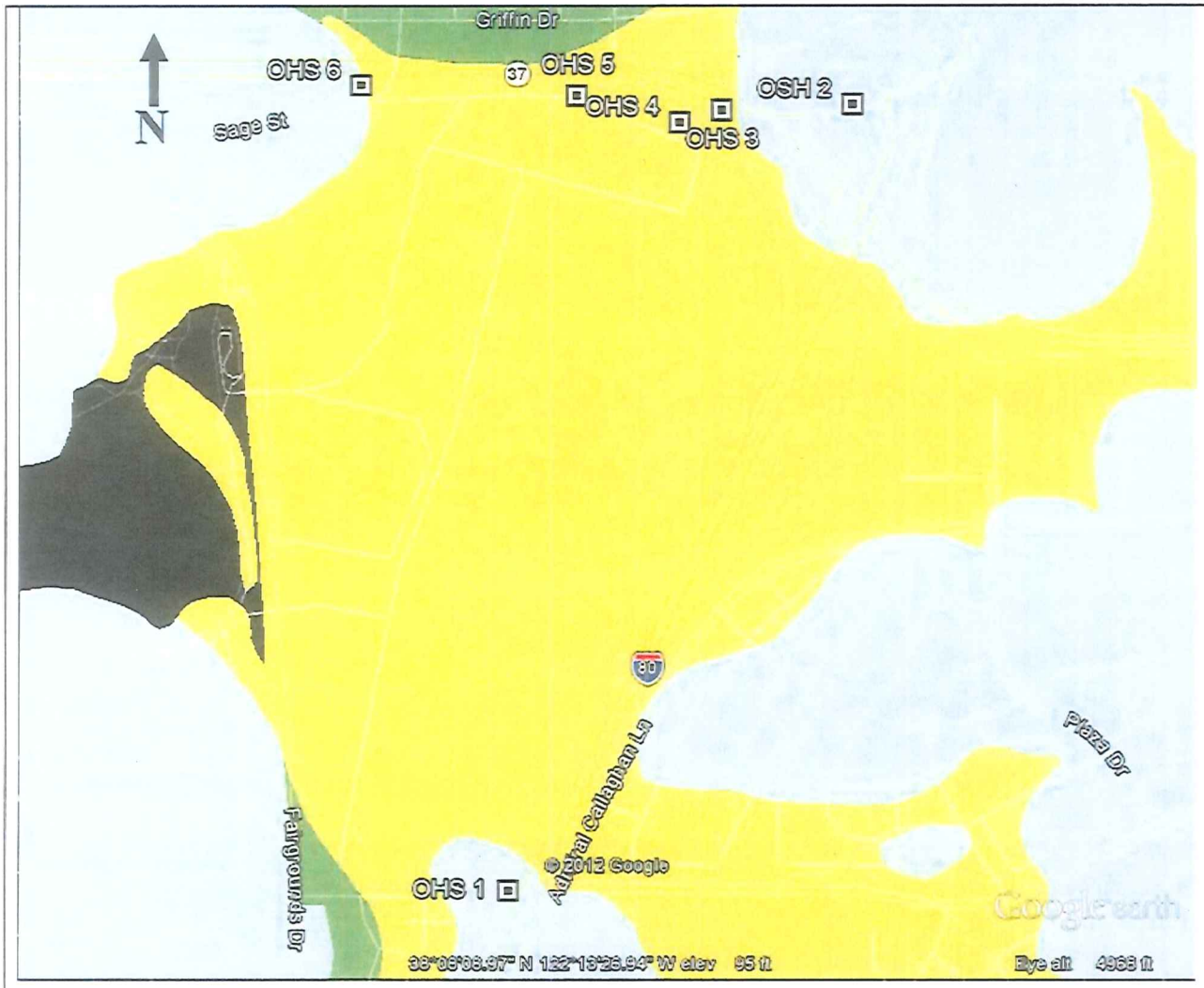
Engineering Service Center
DIVISION OF ENGINEERING SERVICES
OFFICE OF GEOTECHNICAL SERVICES
GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

HIGHWAY 80/505 GEOLOGY MAP

04-SCL-80/ EFIS 0400020739

PM 0.0/28.4 March 2012

FIGURE 3



KEY

Overhead Sign Location

Susceptibility Level

- Very High
- High
- Moderate
- Low
- Very Low

Major Roads

Local Roads

MAP TAKEN FROM:
U.S. Geological Survey Open-File Report 2006-1037 Version 1.1
Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California *Geology by* Robert C. Witter[1], Keith L. Knudsen[2], Janet M. Sowers[1], Carl M. Wentworth[3], Richard D. Koehler[1], and Carolyn E. Randolph[1]. *Digital database by* Carl M.Wentworth[3], Suzanna K. Brooks[3], and Kathleen D. Gans[3] 2006

MAP TAKEN FROM:
USGS MARE ISLAND QUADRANGLE, 1980

SCALE

Not to Scale

Caltrans

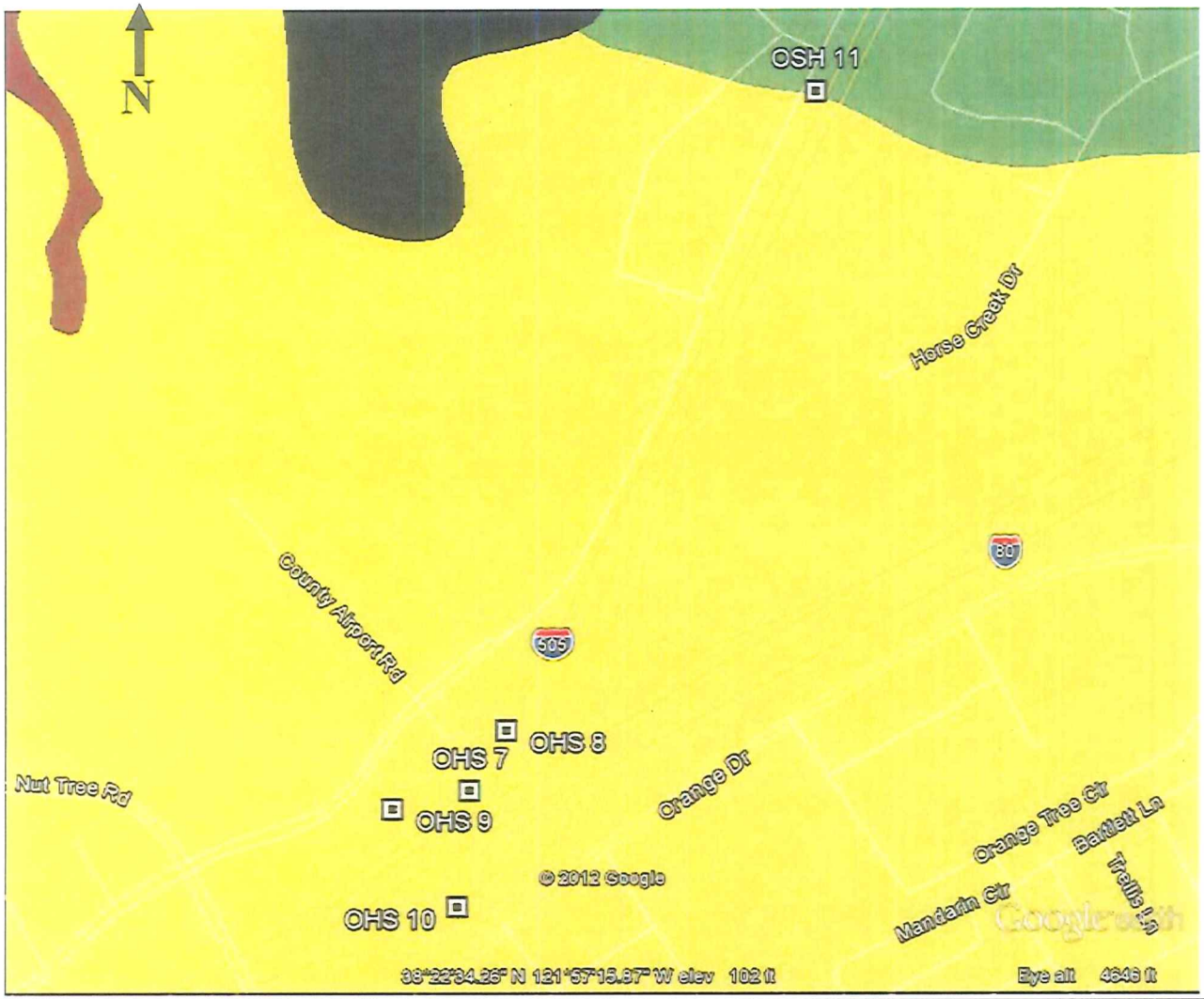
Engineering Service Center
DIVISION OF ENGINEERING SERVICES
OFFICE OF GEOTECHNICAL SERVICES
GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

HWY 37 and 80 LIQIFACTION MAP

04-SCL-80/ EFIS 0400020739

PM 0.0/28.4 March 2012

FIGURE 4



KEY

Overhead Sign Location

Susceptibility Level

- Very High
- High
- Moderate
- Low
- Very Low

Major Roads

Local Roads

MAP TAKEN FROM:
U.S. Geological Survey Open-File Report 2006-1037 Version 1.1
Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California *Geology by* Robert C. Witter[1], Keith L. Knudsen[2], Janet M. Sowers[1], Carl M. Wentworth[3], Richard D. Koehler[1], and Carolyn E. Randolph[1]. *Digital database by* Carl M.Wentworth[3], Suzanna K. Brooks[3], and Kathleen D. Gans[3] 2006

MAP TAKEN FROM:
USGS MARE ISLAND QUADRANGLE, 1980

SCALE

Not to Scale

Caltrans

Engineering Service Center
DIVISION OF ENGINEERING SERVICES
OFFICE OF GEOTECHNICAL SERVICES
GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

HWY 505 and 80 LIQIFACTION MAP

04-SCL-80/ EFIS 0400020739

PM 0.0/28.4 March 2012

FIGURE 5

Exhibit A

(Site Geology for all the proposed EMSs)

Table 4: Extinguishable Message Signs (EMSs) Geologic Information

Serial No.	Highway	PM	Geologic Unit(s)	Unit Symble	Surface Material	Soil	Fault	Fault ID	Maximum Magnitude (MMax)	Fault Type	Distance (km)miles	Peak Ground Acceleration (Italic Probalistic Model)	Liquifacton Susceptibility	Flooding Susceptibility	Landslides
1	505	0.65	**Alluvial fan deposits (late Pleistocene)**—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Silty sandy loam	San Ysidro sandy loam	Great Valley fault 4	23	6.6	Reverse	(7.21) 4.48	0.49	Low	Urban	Not yet evaluated
2	80	28.19	**Alluvial fan deposits (Holocene)**—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Silty Loam	Yolo loam	Great Valley fault 4	23	6.6	Reverse	(7.33) 4.55	0.49	Moderate	Urban	Not yet evaluated
3	80	28.17	**Alluvial fan deposits (Holocene)**—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Silty Loam	Yolo loam	Great Valley fault 4	23	6.6	Reverse	(7.36) 4.57	0.49	Moderate	Urban	Not yet evaluated
4	505	0.10	**Alluvial fan deposits (Holocene)**—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostly undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Silty Loam	Yolo loam	Great Valley fault 4	23	6.6	Reverse	(7.31) 4.54	0.49	Moderate	Urban	Not yet evaluated
5	505	0.04	**Alluvial fan deposits (Holocene)**—Moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. Holocene alluvial fan deposits are mostiv undissected by later erosion. In places, Holocene deposits may only form a thin layer over Pleistocene and older deposits	Qhf	Silty Loam	Yolo loam	Great Valley fault 4	23	6.6	Reverse	(7.33) 4.55	0.49	Moderate	Urban	Not yet evaluated
6	37	11.21	**Artificial fill (Historic)**—Undifferentiated man-made deposit of various materials and ages, including some dredge spoils, levee fill, and fill over Bay mud and also road embankments, earthen dams, and railroad grades. Some are compacted and quite firm, but fills made before 1965 are nearly everywhere not compacted and consist simply of dumped materials. Much of this unit is mapped based on topographic expression on the most recent USGS 7.5 minute quadrangles of the map area. And this overlies **Alluvial fan deposits (late Pleistocene)**—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Af/Qpf	Clay/Clay Loam	Rincon clay loam	West Napa fault zone (Napa County Airport section)	416	6.5	Right Lateral Strike Slip	(2.70) 1.68	*0.51*	Very Low	100 year flood zone	Not yet evaluated
7	37	11.39	**Artificial fill (Historic)**—Undifferentiated man-made deposit of various materials and ages, including some dredge spoils, levee fill, and fill over Bay mud and also road embankments, earthen dams, and railroad grades. Some are compacted and quite firm, but fills made before 1965 are nearly everywhere not compacted and consist simply of dumped materials. Much of this unit is mapped based on topographic expression on the most recent USGS 7.5 minute quadrangles of the map area. And this overlies **Alluvial fan deposits (late Pleistocene)**—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay	Af/Qpf	Clay/Clay Loam	Clear Lake clay,	West Napa fault zone (Napa County Airport section)	416	6.5	Right Lateral Strike Slip	(2.90) 1.80	*0.51*	Moderate	100 year flood zone	Not yet evaluated

Table 4: Extinguishable Message Signs (EMSs) Geologic Information

Serial No.	Highway	PM	Geologic Unit(s)	Unit Symble	Surface Material	Soil	Fault	Fault ID	Maximum Magnitude (MMax)	Fault Type	Distance (km)miles	Peak Ground Acceleration (Italic Probalistic Model)	Liquifacton Susceptibility	Flooding Susceptibility	Landslides
8	37	11.48	**Alluvial fan deposits (late Pleistocene)**—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Lean clay	Clear Lake clay,	West Napa fault zone (Napa County Airport section)	416	6.5	Right Lateral Strike Slip	(3.00) 1.86	*0.51*	Moderate	Urban	Not yet evaluated
9	37	11.53	**Alluvial fan deposits (late Pleistocene)**—Poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. Late Pleistocene age is indicated by erosional dissection and development of alfisols. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf (Clahan and others, 2000)	Qpf	Clay Loam	Clear Lake clay,	West Napa fault zone (Napa County Airport section)	416	6.5	Right Lateral Strike Slip	(3.06) 1.90	*0.51*	Moderate	Urban	Not yet evaluated
10	37	11.64	**Great Valley complex - Undivided sandstone, siltstone, and shale (Late Cretaceous)**—Brownish-gray, fine- to coarse-grained, thin bedded to massive sandstone and greenish-gray to black shale and silty shale. Also includes minor pebbly sandstone and conglomerate. This unit has yielded foraminifers of Cenomanian to Maastrichtian age.	Ku	Clay Loam/Silty Clay Loam	Dibble-Los Osos clay loams	West Napa fault zone (Napa County Airport section)	416	6.5	Right Lateral Strike Slip	(3.16) 1.96	*0.51*	Very Low	Urban	Not yet evaluated

1Map Taken From: U.S. Geological Survey 2002, Geologic Map and Map Database of Northeastern San Francisco Bay Region, California Most of Solano County and Parts of Napa, Marin, Contra Costa, San Joaquin, Sacramento, Yolo, and Sonoma Counties By R.W. Graymer, D.L. Jones, and E.E. Brabb

2Map Taken From: Flood Zones - FEMA Q3 (2003) and DFIRM (2009);Base Data - TeleAtlas (2008);The product has been designed to support planning activities.A more detailed version of this map is available at http://quake.abag.ca.gov

3Map Taken From: SUMMARY DISTRIBUTION OF SLIDES AND EARTH FLOWS IN SOLANO COUNTY, CALIFORNIA By Carl M. Wentworth, Scott E. Graham, Richard J. Pike, Gregg S. Beukelman, David W. Ramsey, and Andrew D. Barron

Exhibit B

(Laboratory Test Result)

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	
10135-12P	MAR 05 2012		☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
	CALC. BY	DATE REPORTED	☐ RESIDENT ENGINEER
		MAR 19 2012	☐

GRADING ANALYSIS						REPORT OF TESTS ON
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT	Soil
						IF CONTRACT, USE CONTRACT ITEM
						SOURCE / CHARGE / EXPENDITURE AUTHORIZATION
75 mm						
63 mm						SPECIAL DESIGNATION (USE WHEN APPLICABLE) / ACTIVITY OR OBJECT / SUBJOB
50 mm						
37.5mm						
25.0 mm						
19.0 mm						
12.5 mm						
9.5 mm						
4.75 mm						
2.36 mm						
1.18 mm						
600 µm						
300 µm						
150 µm						
75 µm						
5 µm						
1 µm						

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE-gms					
HEIGHT OF BRIQUETTE-mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

REMARKS:
Resistivity - 884 Ω-cm (*)
Specs: 1000Ω-cm (min)
pH = 7.88
Specs: 5.6 (min)
(*) Sample will be sent to Mets for Sulfate & Chloride test.

TEST RESULTS			SPEC.
LL	P.L	P.I.	
CV			

SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT	
	FINE	COARSE
AS REC'D		
CRUSHED		
REL. COMPACTION DATA		
	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

SURFACE	S.E.	AS REC'D.	
BASE		CRUSHED	
SUBBASE		COMBINED	
	LART	GRADE 100 REV.	
GRAVEL EQUIVALENT FACTOR		500 REV.	
TRAFFIC INDEX	DUR.	D_1	
R VALUE EXUDATION PRESSURE		D_0	
EXPANSION PRESSURE		% CRUSHED PARTICLES	
AT EQUILIBRIUM SPEC.		% MOISTURE BY O.D.	

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD NUMBER: C SA-Awad-6

MAR 05 2012

10135-12P

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

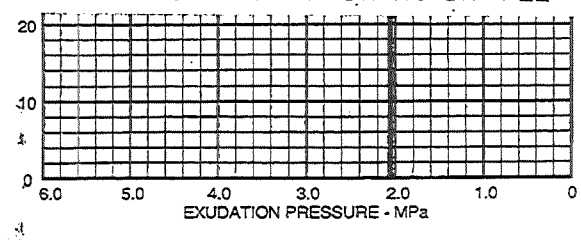
SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ RESEARCH LAB ☐ MATS. LAB ☐ HQ. LAB ☐ HQ. DIVISION NO.

FIELD NO.: 10135-12P
DIST. (BENT) NO.:
CONTRACT NO.:
PROJECT OR R/W NO.:

SAMPLE OF: Soil
FOR USE IN: Foundation
SAMPLE FROM: RC-12-001 (3'-5')
DEPTH:
LOCATION OF SOURCE: Native Soil
THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS): AND IS ONE OF A GROUP OF: SAMPLES REPRESENTING (TONS, GALS, BULS, STA, ETC.): 140
OWNER OR MANUFACTURER:
TOTAL QUANTITY AVAILABLE: TEST RESULTS DESIRED: ☒ NORMAL ☐ PRIORITY: DATE NEEDED:
REMARKS: Corrosion test

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLEED:
BY: S. Awad TITLE: TE
DIST. CO. RTE. PM: 04-153501
LIMITS: 04-SOL-80-PM 0.0/R28.4
CONT. NO.:
FED. NO.:
RES. ENGR. OR SUPT.:
ADDRESS: S. Awad
CONTRACTOR:

MAIL TO SAME DESTINATION AS SAMPLE



STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	
10135 - 13P	MAR 05 2012		☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
	CALC. BY	DATE REPORTED MAR 19 2012	☐ RESIDENT ENGINEER

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm					
2.36 mm					
1.18 mm					
600 µm					
300 µm					
150 µm					
75 µm					
5 µm					
1 µm					

REPORT OF TESTS ON: Soil

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -gms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_v AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

REMARKS:
Resistivity = 1,109 Ω-cm
Specs: 1000 Ω-cm (min)
pH = 8.25
Specs: 5.6 (min)

TEST RESULTS			SPEC.	SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT
LL	P.L.	P.I.			
CV					FINE / COARSE

SURFACE	S.E.	AS REC'D.		AS REC'D	
BASE		CRUSHED		CRUSHED	
SUBBASE		COMBINED		REL. COMPACTION DATA	
	LART	GRADE 100 REV.			IN PLACE / OPTIMUM
GRAVEL EQUIVALENT FACTOR		500 REV.		DENSITY	
TRAFFIC INDEX	DUR.	D_1		MOISTURE	
R VALUE: EXUDATION PRESSURE		D_2		% REL. COMP.	
EXPANSION PRESSURE		% CRUSHED PARTICLES		SPEC.	
AT EQUILIBRIUM SPEC.		% MOISTURE BY O.D.			

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

MAR 05 2012

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD NUMBER: CS Awad-7

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ SPECIAL TESTS

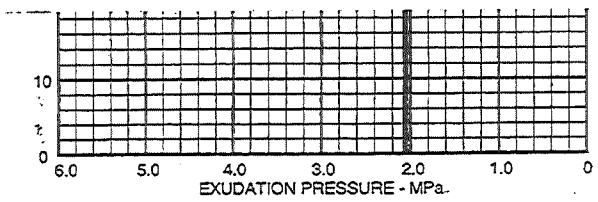
SAMPLE SENT TO: ☐ HDOTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB ☐ SHIPMENT NO. ☐ TRANS. LAB ☐ AUTHORIZATION NO.

FIELD NO. 10135-13P
DIST. LAB NO. 10135-13P
FED. NO.

SAMPLE OF: Soil
FOR USE IN: Foundation
SAMPLE FROM: RC-12-002 (3-5')
DEPTH:
LOCATION OF SOURCE: Native soil
THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS):
AND IS ONE OF A GROUP OF:
SAMPLES REPRESENTING (TONS, GALS., BBLS., STA. ETC.):
OWNER OR MANUFACTURER:
TOTAL QUANTITY AVAILABLE:
TEST RESULTS DESIRED: ☒ NORMAL ☐ PRIORITY
DATE NEEDED:
REMARKS: Corrosion test

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLEED:
BY: S. Awad TITLE: TE
DIST. CO. RTE. PM: 04-Sol-80
LIMITS: 04-153501
CONT. NO.:
FED. NO.:
RES. ENGR. OR SUPT.:
ADDRESS:
CONTRACTOR: S. Awad

MAIL TO SAME DESTINATION AS SAMPLE



STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	
10135-14P	MAR 05 2012		☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
	CALC. BY	DATE REPORTED	☐ RESIDENT ENGINEER
		MAR 19 2012	☐

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm					
2.36 mm					
1.18 mm					
600 µm					
300 µm					
150 µm					
.75 µm					
5 µm					
1 µm					

REPORT OF TESTS ON: Soil

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -gms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

REMARKS:
Resistivity = 530 Ω-cm (*)
Spec: 1000 Ω-cm (min)
pH = 7.48
Spec: 5.6 (min)
(*) Sample will be sent to METS for sulfate & chloride test.

TEST RESULTS	SPEC.	SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT
LL P.L P.I.			
CV			FINE / COARSE

SURFACE	S.E.	AS REC'D.		AS REC'D	
BASE		CRUSHED		CRUSHED	
SUBBASE		COMBINED		REL. COMPACTION DATA	
	LART	GRADE 100 REV.			IN PLACE / OPTIMUM
GRAVEL EQUIVALENT FACTOR		500 REV.		DENSITY	
TRAFFIC INDEX	DUR.	D_i		MOISTURE	
R VALUE: EXUDATION PRESSURE		D_o		% REL. COMP.	
EXPANSION PRESSURE		% CRUSHED PARTICLES		SPEC.	
AT EQUILIBRIUM SPEC.		% MOISTURE BY O.D.			

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARRIER: C S Awad-8

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB

FIELD NO.
DIST. LAB NO. 10135-14P
LAB NO.
OTHER FIELD NO.
DESIGNATION NO.

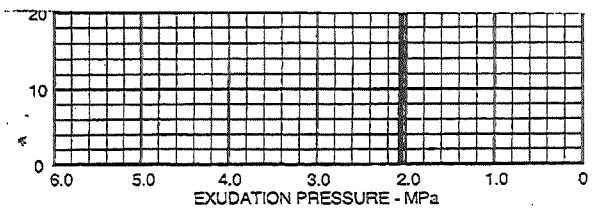
10135-14P

MAR 05 2012

SAMPLE OF: Soil
FOR USE IN: Foundation
SAMPLE FROM: RC-12-003 (5')
DEPTH:
LOCATION OF SOURCE: Native Soil
THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS):
AND IS ONE OF A GROUP OF:
SAMPLES REPRESENTING (TONS, GALS, BBLS, STA, ETC.):
OWNER OR MANUFACTURER:
TOTAL QUANTITY AVAILABLE:
TEST RESULTS DESIRED: ☑ NORMAL ☐ PRIORITY
DATE NEEDED:
REMARKS: Corrosion test

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLEED:
BY: S. Awad TITLE: TE
DIST, CO, RTE, PM: 04-SOL-80
LIMITS: 04-153501
CONT. NO.:
FED. NO.:
RES. ENGR. OR SUPT.:
ADDRESS:
CONTRACTOR: S. Awad

MAIL TO SAME DESTINATION AS SAMPLE



STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	
10135-15P	MAR 0 5 2012		☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
	CALC. BY	DATE REPORTED	☐ RESIDENT ENGINEER
		MAR 1 9 2012	☐

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm					
2.36 mm					
1.18 mm					
600 µm					
300 µm					
150 µm					
75 µm					
5 µm					
1 µm					

REPORT OF TESTS ON

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -grms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

REMARKS:
Resistivity = 1,159 Ω-cm
specs.: 1000 Ω-cm (min)
pH = 7.78
specs: 5.6 (min)

TEST RESULTS			SPEC.	SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT
LL.	P.L.	P.I.			
CV					FINE / COARSE

SURFACE	S.E.	AS REC'D.		AS REC'D	
BASE		CRUSHED		CRUSHED	
SUBBASE		COMBINED		REL. COMPACTION DATA	
	LART	GRADE 100 REV.			IN PLACE / OPTIMUM
GRAVEL EQUIVALENT FACTOR		500 REV.		DENSITY	
TRAFFIC INDEX	DUR.	D_f		MOISTURE	
R VALUE EXUDATION PRESSURE		D_e		% REL. COMP.	
R VALUE EXPANSION PRESSURE		% CRUSHED PARTICLES		SPEC.	
R VALUE AT EQUILIBRIUM SPEC.		% MOISTURE BY O.D.			

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

MAR 0 5 2012

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97) 3/5/12 C. S. Awad - 9

CARD NUMBER

10135-15P

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ DISTRICT HQTRS. LAB
☐ DISTRICT BRANCH LAB
☐ DISTRICT LAB
☐ FIELD LAB

FIELD NO. 10135-15P
LAB NO.
IDENTIFICATION NO.
LOCATION NO.

SAMPLE OF: Soil
FOR USE IN: Foundation
SAMPLE FROM: Re-12-004 (ADF)
DEPTH
LOCATION OF SOURCE: Native Soil

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ON E OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS., BULS., STA. ETC.)

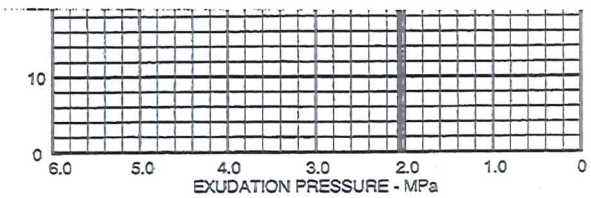
OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS: Corrosion test

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLEED
BY: S. Awad TITLE
DIST, CO, RTE, PM: 04-Sol-80
LIMITS: 04-153501
CONT. NO.
FED. NO.
RES. ENGR. OR SUPT.
ADDRESS
CONTRACTOR: S. Awad

MAIL TO SAME DESTINATION AS SAMPLE



STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT O ESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	
10135-16P	MAR 12 2012		☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
	CALC. BY	DATE REPORTED	☐ RESIDENT ENGINEER
		MAR 28 2012	☐

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm	100				
2.36 mm	99				
1.18 mm	99				
600 µm	95				
300 µm	93				
150 µm	87				
75 µm	76				
5 µm	53				
1 µm	40				

REMARKS: MOISTURE CONTENT = 13.7%

REPORT OF TESTS ON: SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -gms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

TEST RESULTS			SPEC.	SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT
LL.	P.L.	P.I.			
CV					FINE / COARSE
SURFACE	S.E.	AS REC'D.		AS REC'D	
BASE		CRUSHED		CRUSHED	
SUBBASE		COMBINED		REL. COMPACTION DATA	
	LART	GRADE 100 REV.			IN PLACE / OPTIMUM
GRAVEL EQUIVALENT FACTOR		500 REV.		DENSITY	
TRAFFIC INDEX	DUR.	D_1		MOISTURE	
R VALUE: EXUDATION PRESSURE		D_6		% REL. COMP.	
EXPANSION PRESSURE		% CRUSHED PARTICLES		SPEC.	
AT EQUILIBRIUM SPEC.		% MOISTURE BY O.D.			

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTA

SAMPLE IDENTIFICATION CARD

TL-0101 (REV 10/1997)

CARD NUMBER C SA-101

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ DIST. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB

FIELD NO.
DIST. LAB NO. 10135-16P
LOT NO.
SAMPLE NO.
CONTRACT NO.

10135-16P

SAMPLE OF: Foundation Soil
FOR USE IN: Foundation
SAMPLE FROM: Site
DEPTH: RC-12-001 Depth 4-5.5'
LOCATION OF SOURCE

140°F

MAR 12 2012

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BDLS, ETC.)
OWNER OR MANUFACTURER
TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED
REMARKS: Mechanical Analysis

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLED: 03/9/12
BY: SAMUEL AWAD TITLE: TE
DIST, CO, RTE, PM: 04-SOL-80-0.0/R28.4
LIMITS
CONT. NO. 04-153501 (20739) (0/1) (160)
FED. NO.
RES. ENGR. OR SUPT. SAMUEL AWAD
ADDRESS 510-622-5443
CONTRACTOR

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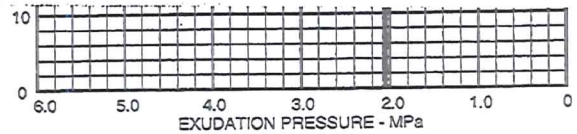

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	
10135-17P	MAR 12 2012		☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
	CALC. BY	DATE REPORTED	☐ RESIDENT ENGINEER
		MAR 28 2012	☐

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm	100				
4.75 mm	97				
2.36 mm	95				
1.18 mm	94				
600 µm	92				
300 µm	88				
150 µm	75				
75 µm	63				
5 µm	35				
1 µm	24				

REMARKS:
MOISTURE CONTENT = 11.5%

REPORT OF TESTS ON: Soil

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -gms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

TEST RESULTS			SPEC.	SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT
LL	P.L	P.I.			
CV					FINE / COARSE

SURFACE	S.E.	AS REC'D.		AS REC'D	
BASE		CRUSHED		CRUSHED	
SUBBASE		COMBINED		REL. COMPACTION DATA	
	LART	GRADE 100 REV.			IN PLACE / OPTIMUM
GRAVEL EQUIVALENT FACTOR		500 REV.		DENSITY	
TRAFFIC INDEX	DUR.	D_i		MOISTURE	
R VALUE: EXUDATION PRESSURE		D_o		% REL. COMP.	
EXPANSION PRESSURE		% CRUSHED PARTICLES		SPEC.	
AT EQUILIBRIUM SPEC.		% MOISTURE BY O.D.			

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV 10/1997)

CARD NUMBER C SA-102

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB

FIELD NO. 10135-17P

DIST. LAB NO. 10135-17P

LOT NO.

P.O. NO.

RESEARCH NO.

MAR 12 2012

SAMPLE OF: Foundation Soil

FOR USE IN: Foundation

SAMPLE FROM: Site

DEPTH: RC-12-002 Depth 9 -10.5'

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BDLS, ETC.)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS: Mechanical Analysis

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED: 03/9/12

BY: SAMUEL AWAD TITLE: TE

DIST, CO, RTE, PM: 04-SOL-80-0.0/R28.4

LIMITS

CONT. NO.: 04-153501

FED. NO.

RES. ENGR. OR SUPT.: SAMUEL AWAD

ADDRESS: 510-622-5443

CONTRACTOR

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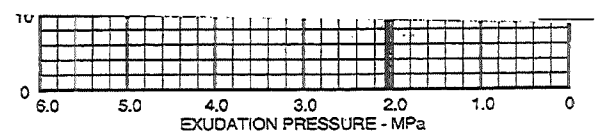

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT O ESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
10135-18P	MAR 12 2012		☐ RESIDENT ENGINEER
	CALC. BY	DATE REPORTED MAR 28 2012	☐

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm	100				
9.5 mm	99				
4.75 mm	97				
2.36 mm	95				
1.18 mm	93				
600 µm	85				
300 µm	58				
150 µm	56				
75 µm	51				
5 µm	34				
1 µm	21				

REMARKS: MOISTURE CONTENT = 17.4

REPORT OF TESTS ON: SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -gms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

TEST RESULTS			SPEC.	SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT
LL.	P.L.	P.I.			
CV					FINE / COARSE

SURFACE	S.E.	AS REC'D.		AS REC'D		
BASE		CRUSHED		CRUSHED		
SUBBASE		COMBINED		REL. COMPACTION DATA		
	LART	GRADE 100 REV.			IN PLACE	OPTIMUM
GRAVEL EQUIVALENT FACTOR		500 REV.		DENSITY		
TRAFFIC INDEX	DUR.	D_f		MOISTURE		
R VALUE: EXUDATION PRESSURE		D_o		% REL. COMP.		
EXPANSION PRESSURE		% CRUSHED PARTICLES		SPEC.		
AT EQUILIBRIUM SPEC.		% MOISTURE BY O.D.				

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATIO

SAMPLE IDENTIFICATION CARD

TL-0101 (REV 10/1997)

CARD NUMBER C SA-104

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BR. LAB ☐ DIS. LAB

FIELD NO.
DIST. LAB NO. 10135-18P
LOCATION NO.
PROJECT NO.

10135-18P

MAR 12 2012

SAMPLE OF: Foundation Soil
FOR USE IN: Foundation
SAMPLE FROM: Site
DEPTH: RC-12-002 Depth 24 -25.5'
LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BDLS, ETC.)
OWNER OR MANUFACTURER
TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED
REMARKS: Mechanical Analysis

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLED: 03/9/12
BY: SAMUEL AWAD | TITLE: TE
DIST. CO. RTE. PM: 04-SOL-80-0.0/R28.4
LIMITS
CONT. NO.: 04-153501
FED. NO.
RES. ENGR. OR SUPT.: SAMUEL AWAD
ADDRESS: 510-622-5443
CONTRACTOR

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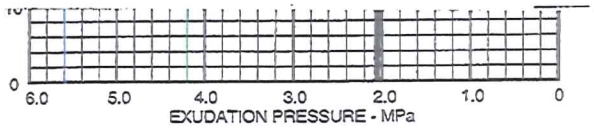

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO. 10135-19P

DATE RECEIVED MAR 12 2012

APPROVED BY

☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB

☐ RESIDENT ENGINEER

CALC. BY

DATE REPORTED MAR 28 2012

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm	100				
2.36 mm	100				
1.18 mm	99				
600 µm	99				
300 µm	97				
150 µm	88				
75 µm	72				
5 µm	41				
1 µm	30				

REMARKS: Moisture Content = 16.9%

REPORT OF TESTS ON: SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPA					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -gms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK, BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK, BY EXP. PRESS. mm					

TEST RESULTS			SPEC.
LL.	P.L.	P.I.	
CV			

SP. GR. ☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT

SURFACE	S.E.	AS REC'D.		AS REC'D	
BASE		CRUSHED		CRUSHED	
SUBBASE		COMBINED		REL. COMPACTION DATA	
	LART	GRADE 100 REV.			IN PLACE / OPTIMUM
GRAVEL EQUIVALENT FACTOR		500 REV.		DENSITY	
TRAFFIC INDEX	DUR.	D_1		MOISTURE	
R VALUE: EXUDATION PRESSURE		D_0		% REL. COMP.	
EXPANSION PRESSURE		% CRUSHED PARTICLES		SPEC.	
AT EQUILIBRIUM SPEC.		% MOISTURE BY O.D.			

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

MAR 12 2012

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV 10/1997)

CARD NUMBER C SA-103

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS
INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB
☐ SPECIAL TESTS

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB

FIELD NO. 10135-19P

DIST. LAB NO. 10135-19P

SAMPLE OF Foundation Soil

FOR USE IN Foundation

SAMPLE FROM Site

DEPTH RC-12-004 Depth 14 - 15.5'

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BBLS, ETC.)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS Mechanical Analysis

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED 03/9/12

BY SAMUEL AWAD TITLE TE

DIST, CO, RTE, PM 04-SOL-80-0.0/R28.4

LIMITS

CONT. NO. 04-153501

FED. NO.

RES. ENGR. OR SUPT. SAMUEL AWAD

ADDRESS 510-622-5443

CONTRACTOR

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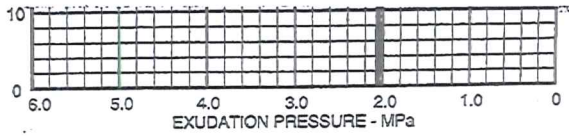

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON SOILS, BASES & SUBBASES

TL-0361 (REV. 1/96)

TEST NO.	DATE RECEIVED	APPROVED BY	
10135-20P	MAR 12 2012		☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
	CALC. BY	DATE REPORTED	☐ RESIDENT ENGINEER
		MAR 28 2012	☐

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
75 mm					
63 mm					
50 mm					
37.5mm					
25.0 mm					
19.0 mm					
12.5 mm					
9.5 mm					
4.75 mm	100				
2.36 mm	100				
1.18 mm	100				
600 µm	99				
300 µm	89				
150 µm	65				
75 µm	46				
5 µm					
1 µm					

REPORT OF TESTS ON: Soil

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	SUBJOB

TEST SPECIMEN	A	B	C	D	E
BATCH MASS					
DATE TESTED					
COMPACTOR FOOT PRESSURE kPa					
INITIAL MOISTURE %					
SOAK WATER mL					
WATER ADDED-mL (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET. WT. OF BRIQUETTE -gms					
HEIGHT OF BRIQUETTE -mm					
DRY DENSITY OF BRIQ.-kg/m³					
STABILOMETER P_H AT 8900 N-kPa					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. MPa					
THICK. BY STAB. mm					
EXPANSION DIAL READING-mm					
THICK. BY EXP. PRESS. mm					

REMARKS: MOISTURE CONTENT = 15.0

TEST RESULTS			SPEC.
LL	P.L.	P.I.	
CV			

SP. GR. ☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT

	FINE	COARSE

SURFACE	S.E.	AS REC'D.	
BASE		CRUSHED	
SUBBASE		COMBINED	
	LART	GRADE 100 REV.	
GRAVEL EQUIVALENT FACTOR		500 REV.	
TRAFFIC INDEX	DUR.	D_1	
R VALUE EXUDATION PRESSURE		D_0	
R VALUE EXPANSION PRESSURE	% CRUSHED PARTICLES		
R VALUE AT EQUILIBRIUM SPEC.	% MOISTURE BY O.D.		

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

AS REC'D		
CRUSHED		
REL. COMPACTION DATA		
	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

MAR 12 2012

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTA

SAMPLE IDENTIFICATION CARD

TL-0101 (REV 10/1997)

CARD NUMBER C SA-105

☐ PRELIMINARY TESTS ☐ PROCESS TESTS ☐ ACCEPTANCE TEST ☐ INDEPENDENT ASSURANCE TEST ☐ DIST. LAB ☐ TRANS. LAB ☐ SPECIAL TEST

SAMPLE SENT TO: ☐ HDQTRS. LAB ☐ BRANCH LAB ☐ DIST. LAB ☐ TRANSPORTATION NO.

FIELD NO. 10135-20P

DIST. LAB NO. 10135-20P

DATE RECEIVED

SAMPLE OF Foundation Soil

FOR USE IN Foundation

SAMPLE FROM Site

DEPTH RC-12-005 Depth 9 - 10.5'

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) | AND IS ONE OF A GROUP OF | SAMPLES REPRESENTING (TONS, GALS, BDLS, ETC.)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE | TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY | DATE NEEDED

REMARKS Mechanical Analysis

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED 03/9/12

BY SAMUEL AWAD TITLE TE

DIST. CO. RTE. PM 04-SOL-80-0.0/R28.4

LIMITS

CONT. NO. 04-153501

FED. NO.

RES. ENGR. OR SUPT. SAMUEL AWAD

ADDRESS 510-622-5443

CONTRACTOR

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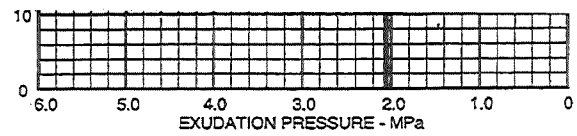

MOISTURE CONTENT DETERMINATION
(CTM 226)

County : SOL Route : 80 P.M. : 0.0/R28.4 E.A.: 153501 Job No. :

Limits : R.E. : SA

Date Received : 03/09/12 Date Calculated : 3/16/12 & 3/19/12

Date Reported : MAR 2 6 2012 By : HB PAGE : 1 OF 3

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT Wet	GROSS WEIGHT Dry	TARE Weight	NET WEIGHT Wet	NET WEIGHT Dry	MOISTURE Weight	% Moisture
RC-12-001	1	4.0' - 5.5'	MC/MA	857.5	766.5	101.1	756.4	665.4	91.0	13.7%
	2	9.0' - 10.5'	MC	1379.8	1193.2	99.7	1280.1	1093.5	186.6	17.1%
	3	14.0' - 15.5'	MC	1234.9	1062.4	101.3	1133.6	961.1	172.5	17.9%
	4	19.0' - 20.5'	MC	1205.9	1047.8	101.7	1104.2	946.1	158.1	16.7%
	5	24.0' - 25.5'	MC	1392.1	1155.8	101.9	1290.2	1053.9	236.3	22.4%
	6	29.0' - 30.5'	MC	1380.3	1114.4	101.5	1278.8	1012.9	265.9	26.3%
RC-12-002	1	4.0' - 5.5'	MC	829.1	758.8	100.5	728.6	658.3	70.3	10.7%
	2	9.0' - 10.5'	MC/MA	729.2	664.5	99.8	629.4	564.7	64.7	11.5%
	3	14.0' - 15.5'	MC	995.2	878.9	101.3	893.9	777.6	116.3	15.0%
	4	19.0' - 20.5'	MC	1052.7	914.0	101.1	951.6	812.9	138.7	17.1%
	5	24.0' - 25.5'	MC/MA	1192.3	1030.4	101.1	1091.2	929.3	161.9	17.4%
	6	29.0' - 30.5'	MC	1610.6	1329.0	98.9	1511.7	1230.1	281.6	22.9%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

LVALDEZ, DL4, REV. 06-2003

MOISTURE CONTENT DETERMINATION
(CTM 226)

County : SOL Route : 80 P.M. : 0.0/R28.4 E.A.: 153501 Job No. :

Limits : R.E. : SA

Date Received : 03/09/12 Date Calculated : 3/19/12 & 3/20/12

Date Reported : MAR 2 6 2012 By : HB PAGE : 2 OF 3

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT Wet	GROSS WEIGHT Dry	TARE Weight	NET WEIGHT Wet	NET WEIGHT Dry	MOISTURE Weight	% Moisture
RC-12-003	1	4.0' - 5.5'	MC	864.9	731.0	100.2	764.7	630.8	133.9	21.2%
	2	9.0' - 10.5'	MC	926.6	804.5	101.9	824.7	702.6	122.1	17.4%
	3	14.0' - 15.5'	MC	871.1	753.3	101.9	769.2	651.4	117.8	18.1%
	4	19.0' - 20.5'	MC	1118.5	965.6	101.9	1016.6	863.7	152.9	17.7%
	5	24.0' - 25.5'	MC	1434.8	1192.6	100.3	1334.5	1092.3	242.2	22.2%
	6	29.0' - 30.5'	MC	901.4	752.7	100.6	800.8	652.1	148.7	22.8%
RC-12-004	1	4.0' - 5.5'	MC	864.2	750.7	101.0	763.2	649.7	113.5	17.5%
	2	9.0' - 10.5'	MC	1128.1	1003.3	100.1	1028.0	903.2	124.8	13.8%
	3	14.0' - 15.5'	MC/MA	1170.0	1015.3	100.9	1069.1	914.4	154.7	16.9%
	4	19.0' - 20.5'	MC	1304.5	1102.7	100.1	1204.4	1002.6	201.8	20.1%
	5	24.0' - 25.5'	MC	1299.6	1079.5	100.3	1199.3	979.2	220.1	22.5%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

LVALDEZ, DL4, REV. 06-2003

MOISTURE CONTENT DETERMINATION
(CTM 226)

County : SOL Route : 80 P.M. : 0.0/R28.4 E.A.: 153501 Job No. :

Limits : R.E. : SA

Date Received : 03/09/12 Date Calculated : 3/19/12 & 3/20/12

Date Reported : MAR 2 6 2012 By : HB PAGE : 3 OF 3

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT Wet	GROSS WEIGHT Dry	TARE Weight	NET WEIGHT Wet	NET WEIGHT Dry	MOISTURE Weight	% Moisture
RC-12-005	1	4.0' - 5.5'	MC	995.1	850.9	98.5	896.6	752.4	144.2	19.2%
	2	9.0' - 10.5'	MC/MA	867.2	767.1	99.3	767.9	667.8	100.1	15.0%
	3	14.0' - 15.5'	MC	1104.0	939.1	101.5	1002.5	837.6	164.9	19.7%
	4	19.0' - 20.5'	MC	1149.4	968.7	101.6	1047.8	867.1	180.7	20.8%
	5	24.0' - 25.5'	MC	1083.9	881.1	100.9	983.0	780.2	202.8	26.0%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

LVALDEZ, DL4, REV. 06-2003

PRELIMINARY SITE INVESTIGATION REPORT

SOL – 80 FPI
SOLANO COUNTY, CALIFORNIA

PREPARED FOR:
CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING
111 GRAND AVENUE, MS8C
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GEOCON PROJECT NO. E8560-06-16
CALTRANS EA 04-153501
CALTRANS PROJECT # 04-0002-0739-1

MARCH 2012

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REPORT LIMITATIONS

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

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

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

GEOCON CONSULTANTS, INC.

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CALIFORNIA DEPARTMENT OF TRANSPORTATION – DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING

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PRELIMINARY SITE INVESTIGATION REPORT

1.0 INTRODUCTION

This Preliminary Site Investigation Report for an area along Interstate 80 (I-80) and State Route 505 (SR-505) in Solano County, California was prepared by Geocon Consultants, Inc. under California Department of Transportation (Caltrans) Contract No. 04A3578 and Task Order No. 16 (TO-16), EA 04-153501.

1.1 Project Description and Proposed Improvements

The project location consists of Caltrans right-of-way (ROW) along an approximately 25-mile section of I-80 from the Contra Costa County line to the junction of I-80 and SR-505 in Solano County. Caltrans proposes to install a ramp metering system and Traffic Operation System (TOS) at 27 existing eastbound and westbound non-metered ramps. Four changeable message signs (CMS), 29 closed-circuit television cameras (CCTV), and 92 traffic monitoring stations will be installed as part of the project. Additionally, six of the onramps will be widened to provide for high-occupancy vehicle (HOV) preferential lanes, and 2 on-ramps will be widened to provide mixed-flow lanes. Thirty-five maintenance vehicle pullouts (MVPs) will also be installed. The project location is depicted on the attached Vicinity Map, Figure 1.

1.2 General Objectives

The purpose of the site investigation was to evaluate concentrations of CAM 17 metals, particularly aerially-deposited lead (ADL), hexavalent chromium, total petroleum hydrocarbons as gasoline (TPHg), as diesel (TPHd), and as motor oil (TPHmo), benzene, toluene, ethylbenzene and xylenes (BTEX), methyl tert-butyl ether (MTBE), and pH in soil, as well as lead, TPHg/d/mo, BTEX, and MTBE in groundwater within the project boundaries.

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

2.0 BACKGROUND

2.1 Hazardous Waste Determination Criteria

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

For waste containing metals, the waste is classified as California hazardous when: 1) the representative total metal content equals or exceeds the respective Total Threshold Limit Concentration (TTLC); or 2) the representative soluble metal content equals or exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard Waste Extraction Test (WET). A waste has the potential of exceeding the STLC when the waste's total metal content is greater than or equal to ten times the respective STLC value since the WET uses a 1:10 dilution ratio. Hence, when a total metal is detected at a concentration greater than or equal to ten times the respective STLC, and assuming that 100 percent of the total metals are soluble, soluble metal analysis is required. A material is classified as RCRA hazardous, or Federal hazardous, when the representative soluble metal content equals or exceeds the Federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP).

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

2.2 DTSC Variance

The DTSC issued a statewide Variance effective July 1, 2009, regarding the management of ADL-impacted soils within Caltrans right-of-way. Under the Variance, soil that is classified as a non-RCRA hazardous waste, based primarily on ADL content, may be suitable for reuse within Caltrans right-of-way. ADL soil that is classified as a RCRA hazardous waste is not eligible for reuse under the Variance and must be disposed of as a RCRA hazardous waste (Caltrans Type Z-3).

ADL soil reused under the Variance must always be at least five feet above the highest groundwater elevation and, depending on lead concentrations, must be covered with at least one foot of non-hazardous soil or a pavement structure. The ADL soil may not be placed in areas where it might contact groundwater or surface water (such as streams and rivers), and must be buried in locations that are protected from erosion that may result from storm water run-on and run-off.

Review of the statewide Variance indicates the following conditions regarding the reuse and management of ADL-impacted soil as fill material for construction and maintenance operations. If ADL soil meets the Variance criteria but is not intended to be reused within Caltrans right-of-way, then the excavated soil must be disposed of as a California hazardous waste (Caltrans Type Z-2). A copy of the Variance is presented as Appendix A.

Caltrans Type Y-1: ADL soil exhibiting a total lead concentration less than or equal to 1,411 milligrams per kilogram (mg/kg), a DI-WET (WET using deionized water as extractant) lead concentration less than or equal to 1.5 milligrams per liter (mg/l), and a pH value greater than or equal to 5.5 may be reused within the same Caltrans corridor and must be covered with at least one foot of non-hazardous soil.

Caltrans Type Y-2: ADL soil exhibiting a total lead concentration less than or equal to 1,411 mg/kg, a DI-WET lead concentration less than or equal to 1.5 mg/l, and a pH value greater than 5 and less than 5.5 may be reused within the same Caltrans corridor and must be covered and protected from infiltration by a pavement structure.

ADL soil exhibiting a total lead concentration less than or equal to 1,411 mg/kg, a DI-WET lead concentration greater than 1.5 mg/l and less than or equal to 150 mg/l, and a pH value greater than 5 may be reused within the same Caltrans corridor and must be covered and protected from infiltration by a pavement structure.

ADL soil exhibiting a total lead concentration greater than 1,411 mg/kg and less than or equal to 3,397 mg/kg, a DI-WET lead concentration less than or equal to 150 mg/l, and a pH value greater than 5 may be reused within the same Caltrans corridor and must be covered and protected from infiltration by a pavement structure.

Caltrans Type Z-2: ADL soil exhibiting a total lead concentration greater than 3,397 mg/kg, a DI-WET lead concentration greater than 150 mg/l, or a pH value less than or equal to 5 is not eligible for reuse under the Variance and must be disposed of as a California hazardous waste.

Caltrans Type Z-3: ADL soil exhibiting a TCLP lead concentration greater than or equal to 5 mg/l is not eligible for reuse under the Variance and must be disposed of as a RCRA hazardous waste.

2.3 Environmental Screening Levels

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

or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is or "may be" warranted (SFRWQCB, 2008).

Residential and commercial/industrial land use ESLs are commonly used by contractors, soil trucking companies, and private and commercial land owners as default acceptance criteria to evaluate suitability of import soil material. The most conservative ESL table was used for comparative purposes: Table A – Shallow Soil (≤3 meters below ground surface; bgs) – Groundwater is a Current or Potential Source of Drinking Water. The respective ESLs are listed at the end of Tables 3 through 7.

3.0 SCOPE OF SERVICES

The scope of services performed under TO-16, EA 04-153501 included the following:

3.1 Pre-field Activities

- Prepared the *Health and Safety Plan*, dated December 2011.
- Retained the services of Advanced Technology Laboratories (ATL), a Caltrans-approved and California-certified analytical laboratory, to perform the chemical analyses of soil samples.
- Retained the services of Lane Safety Co., Inc. to provide traffic control during field operations.
- Notified Underground Service Alert (USA) at least 48 hours prior to field work.

3.2 Field Activities

The field investigation was performed between December 27, 2011 and January 20, 2012, by Geocon staff. The following field activities were performed during the sampling efforts:

- Advanced 515 soil borings at the project location using hand-auger and direct-push techniques. The borings were advanced to a maximum depth of 22 feet.
- Collected 1,058 soil samples for total lead analysis.
- Collected 635 soil samples for selected analysis of CAM 17 metals.
- Collected 35 samples for hexavalent chromium analysis.
- Collected 1 soil sample for TPHd, TPHmo, TPHg, MTBE and BTEX analyses.
- Collected 175 soil samples for pH analysis.
- Collected 1 groundwater sample for total lead analysis.
- Collected one groundwater sample for TPHd, TPHmo, TPHg, MTBE and BTEX analyses.
- Transported samples to a California-certified environmental laboratory for analysis under standard chain-of-custody (COC) documentation.

4.0 INVESTIGATIVE METHODS

4.1 Sampling Procedures

Soil samples were collected from 515 boring locations identified by the Caltrans TO Manager. Differential Global Positioning System (DGPS) coordinates for the boring locations and approximate stationing for MVP, CCTV, and CMS locations were provided by the TO Manager are presented on Tables 1 and 2, respectively. Boring locations are shown on the Site Plan, Figures 2 through 2-32b.

The soil samples for analysis of CAM 17 metals, hexavalent chromium, TPH, BTEX, MTBE were collected in new stainless steel or plastic tubes sealed with Teflon tape and plastic end-caps or in new clean glass jars and sealed. Soil samples for total lead analysis were collected into new resealable plastic bags. Groundwater samples were collected into new glass jars or vials. Sample containers were labeled and transported to a Caltrans-approved, State-certified environmental laboratory using standard COC documentation. Soil borings were backfilled to surface with soil cuttings.

Geocon provided QA/QC procedures during the field activities. These procedures included washing the sampling equipment with a Liqui-Nox® solution followed by a double rinse with deionized water. Decontamination water was disposed of to the ground surface within Caltrans right-of-way in a manner not to create runoff, away from drain inlets or potential water bodies.

4.2 Laboratory Analyses

Laboratory analyses were performed by ATL under standard and expedited turnaround-times (TAT). The laboratory reports and COC documentation are included in Appendix A.

The soil samples were analyzed as follows:

- 1,058 samples for total lead using Environmental Protection Agency (EPA) Test Method 6010 ICAP.
- 635 samples for CAM 17 metals according to Title 22 CCR, EPA Test Methods 6010 ICAP and 7471A.
- 35 samples for hexavalent chromium using EPA Test Method 7196A/3060A.
- 440 samples with total lead concentrations equal to or exceeding 50 mg/kg (i.e. equal to or exceeding ten times the STLC of 5.0 mg/l) were further analyzed for WET lead.
- 152 samples with WET lead concentrations exceeding the STLC of 5.0 mg/l were further analyzed for DI-WET lead.
- 76 samples with total lead values over 100 mg/kg and WET lead values above 5.0 mg/l were further analyzed for TCLP lead.

- 1 sample with total barium concentrations equal to or exceeding 1,000 mg/kg (i.e. equal to or exceeding ten times the STLC value of 100 mg/l) was further analyzed for WET barium.
- 26 samples with total chromium concentrations equal to or exceeding 50 mg/kg (i.e. equal to or exceeding ten times the STLC of 5.0 mg/l) were further analyzed for WET chromium.
- 36 samples with total mercury concentrations equal to or exceeding 2.0 mg/kg (i.e. equal to or exceeding ten times the STLC value of 0.2 mg/l) were further analyzed for WET mercury.
- 9 samples analyzed for WET mercury were further analyzed for TCLP mercury.
- 3 samples with total nickel concentrations equal to or exceeding 200 mg/kg (i.e. equal to or exceeding ten times the STLC value of 20 mg/l) were further analyzed for WET nickel.
- 1 sample for TPHd, TPHmo, and TPHg using EPA Test Method 8015B.
- 1 sample for BTEX and MTBE using EPA Test Method 8021.
- 175 samples were analyzed using EPA Test Methods 9045C and 9040B for pH.

The groundwater sample was analyzed as follows:

- 1 sample was analyzed for total lead according to Title 22 CCR, EPA Test Method 6010B.
- 1 sample was analyzed for TPHd, TPHmo, and TPHg using EPA Test Method 8015B.
- 1 sample was analyzed for BTEX and MTBE using EPA Test Method 8021.

4.3 Laboratory QA/QC

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

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

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

5.0 INVESTIGATIVE RESULTS

5.1 Subsurface Conditions

Observations during field activities indicated that surface soil at the project location generally consists of loose sand and gravel near the soil surface, denser fine-grained materials from 1 to 7 feet, and moist, fine-grained materials and clay below 7 feet. Groundwater was encountered at a depth of 11.5 feet in boring E-CM3 and samples were collected for analyses.

5.2 Laboratory Analytical Results

The analytical results are summarized in Tables 3 to 7 and are summarized below:

For the soil samples:

- The following metals were not detected above their respective laboratory reporting limits: beryllium, and silver.
- Total lead was reported at concentrations ranging from <1.0 to 3,100 mg/kg.
- WET lead was reported at concentrations ranging from <0.5 to 440 mg/l.
- DI-WET lead was reported at concentrations ranging from <0.5 to 1.9 mg/l.
- TCLP lead was detected in 27 of the 76 samples analyzed, with reported concentrations ranging from 0.52 to 11 mg/l.
- Total barium was reported at concentrations ranging from 5.9 to 1,000 mg/kg.
- WET barium was reported at a concentration of 13 mg/l in the single sample analyzed.
- Total chromium was reported at concentrations ranging from <5.0 to 260 mg/kg.
- WET chromium was not detected at or above the laboratory reporting limit of 1.0 mg/l.
- Total mercury was reported at concentrations ranging from <0.10 mg/kg to 35 mg/l.
- WET mercury was not detected at or above the reporting limit of <1.0 mg/l.
- TCLP mercury was reported at concentrations of <0.20 and 1.2 mg/l.
- Total nickel was reported at concentrations ranging from <5.0 to 280 mg/kg.
- WET nickel was reported at concentrations ranging from 1.2 to 2.5 mg/l.
- Remaining CAM 17 metals and hexavalent chromium were reported in the samples at total concentrations below ten times their respective STLCs.
- TPHd, TPHmo, TPHg, BTEX and MTBE were not detected at or above the laboratory reporting limits.

For the groundwater:

- TPHd, TPHmo, BTEX and MTBE were not detected at or above the laboratory reporting limits.
- TPHg was reported at a concentration of 0.06 mg/l.
- Total lead was reported at a concentration of 0.82 mg/l.

5.3 Laboratory Quality Assurance/Quality Control

We reviewed the QA/QC results provided with the laboratory analytical reports. The data indicate non-detect results for the method blanks at or above reporting limits. Dilution was necessary for several samples due to elevated analyte concentrations, and eleven samples were diluted due to failing internal standard in the original run. The Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) was outside recovery criteria for multiple samples, possibly due to matrix interference. The relative percent

differences (RPD) for MS/MSD was outside of recovery limits for multiple samples; therefore the calculation was based on raw values. The data was validated by Laboratory Control Samples (LCS). Remaining samples and internal laboratory QA/QC samples showed acceptable recoveries and relative percent differences (RPDs). Based on this limited data review, no additional qualifications of the soil data are necessary, and the data are of sufficient quality for the purposes of this report.

5.4 Statistical Evaluation for Lead Detected in Soil Samples

Statistical methods were applied to the total lead data to evaluate: 1) the upper confidence limits (UCLs) of the arithmetic means of the total lead concentrations for each sampling depth; and 2) if an acceptable correlation between total and WET lead concentrations exists that would allow the prediction of WET lead concentrations based on calculated UCLs. The lead data for the site were divided into 76 sample populations for statistical evaluation. A summary of datasets is included in Table 1.

5.4.1 Calculating the UCLs for the Arithmetic Mean

The upper one-sided 90% and 95% UCLs of the arithmetic mean are defined as the values that, when calculated repeatedly for randomly drawn subsets of site data, equal or exceed the true mean 90% and 95% of the time, respectively. Statistical confidence limits are the classical tool for addressing uncertainties of a distribution mean. The UCLs of the arithmetic mean concentration are used as the mean concentrations because it is not possible to know the true mean due to the essentially infinite number of soil samples that could be collected from a site. The UCLs therefore account for uncertainties due to limited sampling data. As data become less limited at a site, uncertainties decrease, and the UCLs move closer to the true mean.

Non-parametric bootstrap techniques were used to calculate the UCLs. For those samples in which total lead was not detected, a value equal to one-half of the detection limit was used in the UCL calculation. The bootstrap test results are included in Appendix C. The calculated UCLs and statistics for the datasets are presented in Tables 8 to 15d and Appendix C.

5.4.2 Correlation of Total and WET Lead

Total and corresponding WET lead concentrations are bivariate data with a linear structure. This linear structure should allow for the prediction of WET lead concentrations based on the calculated UCL total lead concentrations.

To estimate the degree of interrelation between total and corresponding WET lead values (x and y, respectively), the *correlation coefficient [r]* is used. The correlation coefficient is a ratio that ranges from +1 to –1. A *correlation coefficient* of +1 indicates a perfect direct relationship between two variables; a *correlation coefficient* of –1 indicates that one variable changes inversely with relation to

the other. Between the two extremes is a spectrum of less-than-perfect relationships, including zero, which indicates the lack of any sort of linear relationship at all. The *correlation coefficient* was calculated for the following six sample population groups:

- MVP, CCTV, and CMS Locations ("MV", "CC", and "CM" borings)
- Route 37 to Westbound (WB) I-80 ("W-R37" and "W-R37-L" borings) [Datasets 5 and 8]
- Alamo Drive to WB I-80 ("W-ALAM" borings) [Dataset 55]
- Cliffside Drive to Eastbound (EB) I-80 ("E-CLIF" borings) [Dataset 65]
- I-505 to WB I-80 ("W-505-L" and "W-505" borings) [Datasets 72 and 73]
- Nut Tree Parkway/Orange Drive to EB I-80 ("E-NUT" borings) [Dataset 76]

The resulting *coefficient of determination* (r^2) values yield corresponding *correlation coefficient* (r) that indicate a linear relationship between total and WET lead concentrations. A *correlation coefficient* greater than or equal to 0.8 is an acceptable indicator that a correlation exists. It is possible to compute the line of dependence or a best-fit line between the two variables. A least squares method was used to find the equation of a best-fit line (regression line) by forcing the y-intercept equal to zero since that is a known point. The equation of the regression line is *y =slope of regression line (x)*, where *x* represents total lead concentrations and *y* represents predicted WET lead concentrations. The following table summarizes the *correlation coefficient (r)* and equation of regression line calculations for the sample groups:

SAMPLE POPULATION	CORRELATION COEFFICIENT (r)	EQUATION OF REGRESSION LINE
MVP, CCTV, AND CMS	0.8415	y=0.0542x
W-R37 AND W-R37-L	0.81	y=0.0451x
W-ALAM	0.8913	y=0.0741x
E-CLIF	0.9595	y=0.0769x
W-505-L AND W-505	0.8265	y=0.0393x
E-NUT	0.8586	y=0.0362x

This equation was used to estimate the expected WET lead concentrations for the total lead UCLs for the data set (see Section 5.4.1). Regression analysis results and scatter plots depicting the (x, y) data points along with the regression lines are included in Appendix C. The predicted WET lead concentrations are summarized in Tables 8 through 15d and Appendix C.

6.0 CONCLUSIONS

Waste classifications are evaluated based on the 90% UCL of the lead content for the relevant excavation depths; this has historically been considered sufficient to satisfy a good faith effort by the EPA as discussed in SW-846. Risk assessment characterization is based on the 95% UCL of the lead content in the waste for the relevant depths; this is in accordance with the Risk Assessment Guidance for Superfund (RAGS) Volume 1 Documentation for Exposure Assessment. Per Caltrans, the 90% UCLs are to be used to evaluate onsite reuse and the 95% UCLs are to be used to evaluate offsite disposal.

6.1 Lead in Soil

6.1.1 MVP, CCTV, and CMS Locations ("MV", "CC", and "CM")

The predicted waste classifications for excavated soil based on the calculated total lead UCLs and predicted WET lead concentrations for data collected from the MVP, CCTV, and CMS areas are discussed below. For sample areas with insufficient sample populations, maximum lead values were used to predict WET lead concentrations. The predicted waste classifications for the MVP, CCTV, and CMS datasets are summarized below and in Table 8:

Non-hazardous

Soil excavated from the following locations would be considered non-hazardous based on total and predicted WET lead content:

- E-CC4 (Dataset 7)
- W-MV3C-LOOP (Dataset 9)
- E-MV3B (Dataset 10)
- W-CC5 (Dataset 12)
- W-CC6 (Dataset 14)
- W-CM1 (Dataset 16)
- E-MV5-AME (Dataset 17)
- W-CC7 (Dataset 19)
- W-CC8 (Dataset 20)
- E-CC9 (Dataset 21)
- E-CM2 (Dataset 22)
- W-CC10 (Dataset 23)
- E-CC11 (Dataset 25)
- E-MV11 (Dataset 26)
- W-CC12 (Dataset 28)
- W-MV12 (Dataset 29)

- E-MV13 (Dataset 30)
- E-CC13 (Dataset 31)
- E-CC14 (Dataset 32)
- E-MV14 (Dataset 33)
- E-CC15 (Dataset 35)
- W-CC16 (Dataset 36)
- E-CC17 (Dataset 37)
- E-CC18 (Dataset 40)
- E-CC19 (Dataset 41)
- C-CC20-TEX (Dataset 42)
- E-CC22 (Dataset 47)
- E-MV21 (Dataset 48)
- W-MV24 (Dataset 49)
- W-CC23 (Dataset 50)
- W-CC24 (Dataset 53)
- W-CC25 (Dataset 57)
- E-CC26 (Dataset 59)
- E-MV28 (Dataset 61)
- E-CC27 (Dataset 62)
- E-CM4-CLIF (Dataset 63)
- E-MV30-LOOP (Dataset 66)
- W-CC28 (Dataset 67)
- W-MV29 (Dataset 68)
- E-MV31 (Dataset 69)
- W-MV-MONTE (Dataset 70)
- W-CC29 (Dataset 71)
- E-MV32 (Dataset 74)
- E-CC30 (Dataset 75)

Hazardous to 0.5 foot

Soil excavated from the following locations would be considered hazardous to a depth of 0.5 foot based on predicted WET lead content:

- E-CC2 (Dataset 3)
- W-CC21 (Dataset 44)

Soil excavated to a depth of 0.5 foot would be classified as a California hazardous waste since the predicted WET lead concentration for each area is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated to a depth of 0.5 foot may be reused onsite (as

Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 0.5 foot) would be considered non-hazardous based on lead content.

Hazardous to 1.0 foot

Soil excavated from the following locations would be considered hazardous to a depth of 1.0 foot based on predicted WET lead content:

- E-MV1-TEN (Dataset 1)
- W-MV2-RED (Dataset 4)
- E-MV3 (Dataset 6)
- E-MV3A (Dataset 11)
- W-MV4 (Dataset 13)
- W-MV6-AME (Dataset 15)
- W-MV7A (Dataset 18)
- W-MV9 (Dataset 24)
- E-MV15 (Dataset 34)
- E-MV16 (Dataset 38)
- E-MV17 (Dataset 39)
- W-MV19A-TEX (Dataset 43)
- W-MV20 (Dataset 45)
- W-MV-21 (Dataset 46)
- W-MV23 (Dataset 51)
- E-MV22 (Dataset 52)
- W-MV25 (Dataset 54)
- W-MV26A (Dataset 56)
- E-MV26B (Dataset 58)
- E-MV27A (Dataset 60)
- W-MV28A (Dataset 64)

Soil excavated to a depth of 1.0 foot would be classified as a California hazardous waste since the predicted WET lead concentration for each area is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated to a depth of 1.0 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 1.0 foot) would be considered non-hazardous based on lead content.

Hazardous to 1.5 feet

Soil excavated from the following location would be considered hazardous to a depth of 1.5 feet based on predicted WET lead content:

- E-CM3 (Dataset 27)

Soil excavated to a depth of 1.5 feet would be classified as a California hazardous waste since the predicted WET lead concentration for this area is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated to a depth of 1.5 feet may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 1.5 feet) would be considered non-hazardous based on lead content.

Hazardous to 4.0 feet

Soil excavated from the following location would be considered hazardous to a depth of 4.0 feet based on predicted WET lead content:

- E-CC1-TEN (Dataset 2)

Soil excavated to a depth of 4.0 feet would be classified as a California hazardous waste since the predicted WET lead concentration for this area is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated to a depth of 4.0 feet may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 4.0 feet) would be considered non-hazardous based on lead content.

6.1.2 Route 37 to WB I-80 – Right Shoulder ("W-R37") [Dataset 5]

The following sub-sections present the predicted waste classification for excavated soil based on distance from Edge of Pavement (EOP) and the calculated total lead UCLs and predicted WET lead concentrations. Waste classifications soil profiles for all EOP distances are included in Appendix C.

0 to 3 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from the EOP to a distance of 3 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 9a.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	158.1	**7.1**	170.0	**Hazardous**
Underlying soil (0.5 to 3.0 ft)	*4.0*	*0.2*	*4.4*	*Non-hazardous*
0 to 1.5 ft	55.5	2.5	59.8	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*3.8*	*0.2*	*4.2*	*Non-hazardous*
0 to 2.5 ft	34.9	1.6	37.6	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*3.5*	*0.2*	*3.8*	*Non-hazardous*
0 to 3.0 ft	*29.7*	*1.3*	*32.0*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 0.5 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 0.5 foot) would be classified as non-hazardous.

If excavations extend to 1.5 feet or deeper and soil is managed as a whole, excavated soil would be classified as non-hazardous based on lead content.

3 to 6 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from 3 feet to 6 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 9b.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	211.8	**9.6**	233.0	**Hazardous**
Underlying soil (0.5 to 3.0 ft)	*52.1*	*2.4*	*57.4*	*Non-hazardous*
0 to 1.5 ft	89.4	4.0	98.0	Non-hazardous

Underlying soil (1.5 to 3.0 ft)	*68.0*	*3.1*	*75.3*	*Non-hazardous*
0 to 2.5 ft	72.0	3.2	78.8	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*112.3*	***5.1***	*126.0*	***Hazardous***
0 to 3.0 ft	*78.7*	*3.6*	*86.7*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 0.5 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 0.5 foot) would be classified as non-hazardous.

If excavations extend to 1.5 feet or deeper and soil is managed as a whole, excavated soil would be classified as non-hazardous based on lead content.

6 to 9 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from 6 feet to 9 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 9c.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	48.2	2.2	52.4	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*43.3*	*2.0*	*47.1*	*Non-hazardous*
0 to 1.5 ft	30.7	1.4	32.7	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*57.6*	*2.6*	*63.3*	*Non-hazardous*
0 to 2.5 ft	40.9	1.8	44.2	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*60.3*	*2.7*	*66.9*	*Non-hazardous*
0 to 3.0 ft	*44.2*	*2.0*	*48.0*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

>9 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from > 9 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 9d.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	55.4	2.5	58.5	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*60.8*	*2.7*	*64.8*	*Non-hazardous*
0 to 1.5 ft	63.8	2.9	67.7	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*56.0*	*2.5*	*59.9*	*Non-hazardous*
0 to 2.5 ft	59.8	2.7	63.5	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*60.2*	*2.7*	*65.2*	*Non-hazardous*
0 to 3.0 ft	*59.9*	*2.7*	*63.8*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

6.1.3 Route 37 to WB I-80 – Left Shoulder ("W-R37-L") [Dataset 8]

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 10.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	184.3	**8.3**	203.0	**Hazardous**

Underlying soil (0.5 to 3.0 ft)	*18.4*	*0.8*	*20.1*	*Non-hazardous*
0 to 1.5 ft	71.8	3.2	79.0	*Non-hazardous*
Underlying soil (1.5 to 3.0 ft)	*20.2*	*0.9*	*22.2*	*Non-hazardous*
0 to 2.5 ft	48.3	2.2	53.0	*Non-hazardous*
Underlying soil (2.5 to 3.0 ft)	*34.6*	*1.6*	*38.5*	*Non-hazardous*
0 to 3.0 ft	*46.0*	*2.1*	*50.6*	*Non-hazardous*

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 0.5 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 0.5 foot) would be classified as non-hazardous.

If excavations extend to 1.5 feet or deeper and soil is managed as a whole, excavated soil would be classified as non-hazardous based on lead content.

6.1.4 Alamo Drive to WB I-80 ("W-ALAM") [Dataset 55]

0 to 3 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from the EOP to a distance of 3 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 11a.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	317.6	**23.5**	348.0	**Hazardous**
Underlying soil (0.5 to 3.0 ft)	*137.8*	***10.2***	*150.7*	***Hazardous***
0 to 1.5 ft	298.5	**22.1**	327.3	**Hazardous**
Underlying soil (1.5 to 3.0 ft)	*37.1*	*2.7*	*39.9*	*Non-hazardous*
0 to 2.5 ft	197.1	**14.6**	215.9	**Hazardous**

Underlying soil (2.5 to 3.0 ft)	*20.9*	*1.5*	*22.0*	*Non-hazardous*
0 to 3.0 ft	*167.8*	***12.4***	*183.6*	**Hazardous**

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 1.5 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 1.5 feet) would be classified as non-hazardous.

3 to 6 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from 3 feet to 6 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 11b.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	608.2	**45.1**	653.0	**Hazardous**
Underlying soil (0.5 to 3.0 ft)	*61.1*	*4.5*	*63.7*	*Non-hazardous*
0 to 1.5 ft	262.9	**19.5**	279.9	**Hazardous**
Underlying soil (1.5 to 3.0 ft)	*41.7*	*3.1*	*43.8*	*Non-hazardous*
0 to 2.5 ft	178.1	**13.2**	189.4	**Hazardous**
Underlying soil (2.5 to 3.0 ft)	*23.2*	*1.7*	*24.1*	*Non-hazardous*
0 to 3.0 ft	*152.3*	***11.3***	*161.9*	**Hazardous**

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 0.5 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing

the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 0.5 foot) would be classified as non-hazardous.

6 to 9 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the maximum total lead values and predicted WET lead concentrations for data collected from this portion of the Site from 6 feet to 9 feet from the EOP. Weighted averages are calculated by using the maximum total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 11c.

Excavation Depth	Maximum Total Lead (mg/kg)	Predicted WET Lead (mg/l)	Waste Classification
0 to 0.5 ft	670.0	**49.6**	**Hazardous**
Underlying soil (0.5 to 3.0 ft)	*42.4*	*3.1*	*Non-hazardous*
0 to 1.5 ft	*265.3*	***19.7***	**Hazardous**
Underlying Soil (1.5 to3.0 ft)	*28.7*	*2.1*	*Non-hazardous*
0 to 2.5 ft	*171.6*	***12.7***	**Hazardous**
Underlying Soil (2.5 to3.0 ft)	*24.0*	*1.8*	*Non-hazardous*
0 to 3.0 ft	147.0	10.9	**Hazardous**

Based on the data presented in the above table, soil excavated to a depth of 0.5 foot would be classified as a California hazardous waste since the maximum-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 0.5 foot) would be classified as non-hazardous.

>9 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from >9 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 11d.

Excavation Depth	90% UCL	90% UCL	95% UCL	Waste

	Total Lead (mg/kg)	Predicted WET Lead (mg/l)	Total Lead (mg/kg)	Classification
0 to 0.5 ft	444.7	**33.0**	465.0	**Hazardous**
Underlying soil (0.5 to 3.0 ft)	*39.5*	*2.9*	*40.9*	*Non-hazardous*
0 to 1.5 ft	190.0	**14.1**	198.3	**Hazardous**
Underlying soil (1.5 to 3.0 ft)	*24.0*	*1.8*	*24.8*	*Non-hazardous*
0 to 2.5 ft	124.7	**9.2**	130.1	**Hazardous**
Underlying soil (2.5 to 3.0 ft)	*18.3*	*1.4*	*18.8*	*Non-hazardous*
0 to 3.0 ft	*107.0*	***7.9***	*111.6*	**Hazardous**

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 0.5 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 0.5 foot) would be classified as non-hazardous.

6.1.5 Cliffside Drive to EB I-80 ("E-CLIF") [Dataset 65]

The following sub-sections present the predicted waste classification for excavated soil based on the calculated total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site by distance from EOP. Waste classifications for soil profiles are included in Appendix C.

0 to 3 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from the EOP to a distance of 3 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 12a.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	829.7	**63.8**	890.3	**Hazardous**
Underlying soil (0.5 to 3.0 ft)	*134.0*	***10.3***	*149.5*	***Hazardous***
0 to 1.5 ft	395.2	**30.4**	428.1	**Hazardous**
Underlying soil (1.5 to 3.0 ft)	*104.7*	***8.0***	*117.8*	***Hazardous***
0 to 2.5 ft	291.6	**22.4**	318.5	**Hazardous**
Underlying soil (2.5 to 3.0 ft)	*41.6*	*3.2*	*45.3*	*Non-hazardous*
0 to 3.0 ft	*250.0*	***19.2***	*272.9*	**Hazardous**

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 2.5 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 2.5 feet) would be classified as non-hazardous.

3 to 6 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from 3 feet to 6 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 12b.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	42.0	3.2	45.3	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*31.7*	*2.4*	*34.9*	*Non-hazardous*
0 to 1.5 ft	48.7	3.7	53.4	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*18.1*	*1.4*	*19.9*	*Non-hazardous*
0 to 2.5 ft	38.8	3.0	42.6	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*6.5*	*0.5*	*6.6*	*Non-hazardous*
0 to 3.0 ft	*33.4*	*2.6*	*36.6*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

6 to 9 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the maximum total lead values and predicted WET lead concentrations for data collected from this portion of the Site from 6 feet to 9 feet from the EOP. Weighted averages are calculated by using the maximum total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 12c.

Excavation Depth	Maximum Total Lead (mg/kg)	Predicted WET Lead (mg/l)	Waste Classification
0 to 0.5 ft	93.4	**7.2**	**Hazardous**
Underlying soil (0.5 to 3.0 ft)	*35.6*	*2.7*	*Non-hazardous*
0 to 1.5 ft	*80.2*	***6.2***	**Hazardous**
Underlying Soil (1.5 to3.0 ft)	*10.3*	*0.8*	*Non-hazardous*
0 to 2.5 ft	*53.3*	*4.1*	Non-hazardous
Underlying Soil (2.5 to3.0 ft)	*5.4*	*0.4*	*Non-hazardous*
0 to 3.0 ft	45.3	3.5	Non-hazardous

Based on the data presented in the above table, soil excavated to a depth of 0.5 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5

foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 0.5 foot) would be classified as non-hazardous.

If excavations extend to 2.5 feet or deeper and soil is managed as a whole, excavated soil would be classified as non-hazardous based on lead content.

>9 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from >9 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 12d.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	19.4	1.5	21.1	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*30.9*	*2.4*	*33.7*	*Non-hazardous*
0 to 1.5 ft	43.5	3.3	47.6	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*14.4*	*1.1*	*15.6*	*Non-hazardous*
0 to 2.5 ft	32.0	2.5	35.0	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*13.6*	*1.0*	*14.7*	*Non-hazardous*
0 to 3.0 ft	*29.0*	*2.2*	*31.6*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

6.1.6 I-505 to WB I-80 – Left Shoulder ("W-505-L") [Dataset 72]

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 13.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	78.2	3.1	83.9	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*43.7*	*1.7*	*48.4*	*Non-hazardous*
0 to 1.5 ft	68.5	2.7	74.6	*Non-hazardous*
Underlying soil (1.5 to 3.0 ft)	*30.4*	*1.2*	*34.0*	*Non-hazardous*
0 to 2.5 ft	50.9	2.0	55.8	*Non-hazardous*
Underlying soil (2.5 to 3.0 ft)	*42.3*	*1.7*	*46.8*	*Non-hazardous*
0 to 3.0 ft	*49.5*	*1.9*	*54.3*	*Non-hazardous*

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

6.1.7 I-505 to WB I-80 – Right Shoulder ("W-505") [Dataset 73]

The following sub-sections present the predicted waste classification for excavated soil based on the calculated total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site by distance from EOP. Waste classifications for soil profiles are included in Appendix C.

0 to 3 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from the EOP to a distance of 3 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 14a.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	167.2	**6.6**	186.0	**Hazardous**
Underlying soil (0.5 to 3.0 ft)	*46.9*	*1.8*	*52.9*	*Non-hazardous*
0 to 1.5 ft	92.0	3.6	102.3	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*41.8*	*1.6*	*47.9*	*Non-hazardous*
0 to 2.5 ft	71.9	2.8	80.7	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*42.0*	*1.7*	*47.0*	*Non-hazardous*

0 to 3.0 ft	*66.9*	*2.6*	*75.1*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 0.5 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Based on the reported DI-WET and pH results, soil excavated from 0 to 0.5 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Underlying soil (i.e., deeper than 0.5 foot) would be classified as non-hazardous.

If excavations extend to 1.5 feet or deeper and soil is managed as a whole, excavated soil would be classified as non-hazardous based on lead content.

3 to 6 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from 3 feet to 6 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 14b.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	106.1	4.2	115.0	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*58.8*	*2.3*	*64.8*	*Non-hazardous*
0 to 1.5 ft	82.5	3.2	90.7	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*50.8*	*2.0*	*55.7*	*Non-hazardous*
0 to 2.5 ft	64.3	2.5	70.4	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*78.5*	*3.1*	*87.3*	*Non-hazardous*
0 to 3.0 ft	*66.6*	*2.6*	*73.2*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

6.1.8 Nut Tree Parkway/Orange Drive to EB I-80 ("E-NUT") [Dataset 76]

The following sub-sections present the predicted waste classification for excavated soil based on the calculated total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site by distance from EOP. Waste classifications for soil profiles are included in Appendix C.

0 to 3 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from the EOP to a distance of 3 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 15a.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	9.4	0.3	9.9	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*50.7*	*1.8*	*55.0*	*Non-hazardous*
0 to 1.5 ft	10.0	0.4	10.6	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*77.6*	*2.8*	*84.3*	*Non-hazardous*
0 to 2.5 ft	42.8	1.5	46.3	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*48.9*	*1.8*	*53.4*	*Non-hazardous*
0 to 3.0 ft	*43.8*	*1.6*	*47.5*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

3 to 6 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from 3 feet to 6 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 15b.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	11.2	0.4	11.6	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*23.6*	*0.9*	*25.4*	*Non-hazardous*
0 to 1.5 ft	13.1	0.5	13.8	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*29.9*	*1.1*	*32.5*	*Non-hazardous*
0 to 2.5 ft	23.3	0.8	25.1	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*12.7*	*0.5*	*13.5*	*Non-hazardous*
0 to 3.0 ft	*21.5*	*0.8*	*23.1*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

6 to 9 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from 6 feet to 9 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 15c.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	17.6	0.6	18.4	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*37.0*	*1.3*	*41.4*	*Non-hazardous*
0 to 1.5 ft	31.4	1.1	34.7	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*36.1*	*1.3*	*40.4*	*Non-hazardous*
0 to 2.5 ft	38.8	1.4	43.3	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*8.6*	*0.3*	*8.8*	*Non-hazardous*
0 to 3.0 ft	*33.7*	*1.2*	*37.6*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

>9 feet from EOP

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and predicted WET lead concentrations for data collected from this portion of the Site from >9 feet from the EOP. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized below and in Table 15d.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 0.5 ft	29.4	1.1	31.0	Non-hazardous
Underlying soil (0.5 to 3.0 ft)	*36.0*	*1.3*	*39.0*	*Non-hazardous*
0 to 1.5 ft	39.1	1.4	41.6	Non-hazardous
Underlying soil (1.5 to 3.0 ft)	*30.6*	*1.1*	*33.8*	*Non-hazardous*
0 to 2.5 ft	37.0	1.3	40.0	Non-hazardous
Underlying soil (2.5 to 3.0 ft)	*24.2*	*0.9*	*26.2*	*Non-hazardous*
0 to 3.0 ft	*34.9*	*1.3*	*37.7*	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous based on lead content.

6.2 CAM 17 Metals and Hexavalent Chromium in Soil

Based on the reported WET barium, chromium, mercury, and nickel results, soil would not be classified as hazardous waste.

The CAM 17 metals and hexavalent chromium concentrations in Site soil were compared to ESLs (Table A, SFRWQCB, May 2008). Antimony, arsenic, barium, cadmium, lead, mercury, nickel, thallium, and vanadium were reported at concentrations greater than their respective ESL values in the soil samples collected at the site.

Upper one-sided 95% UCLs were calculated for the full set of antimony, arsenic, barium, cadmium, lead, mercury, nickel, thallium, and vanadium data collected at the Site. The UCLs were compared with the residential and commercial/industrial land use ESLs and with published background levels typically present in California soils as presented in *Background Concentrations of Trace and Major Elements in California Soils* (Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California, March 1996). The bootstrap results are included in Appendix C. The calculated standard bootstrap UCLs, ESLs and published background concentrations are summarized in the table below:

Metal	95% UCL	RESIDENTIAL ESL	COMMERCIAL/ INDUSTRIAL ESL	CONSTRUCTION EXPOSURE ESL	PUBLISHED BACKGROUND MEAN[1]	PUBLISHED BACKGROUND RANGE [1]
Antimony	8.3 [2]	6.3	40	310	0.60	0.15-1.95
Arsenic	4.552	0.39	1.6	15	3.5	0.6 to 11.0
Barium	117.6	750	1,500	2,600	509	133 to 1,400
Cadmium	0.652	1.7	7.4	39	0.36	0.05-1.7
Lead	79.43	200	750	750	23.9	12.4-97.1
Mercury	0.826	1.3	10	58	0.26	0.05-0.90
Nickel	35.65	150	150	260	57	9 to 509
Thallium	1.6 [2]	1.3	16	62	0.56	0.17-1.1
Vanadium	55.2	16	200	770	112	39 to 288

Concentrations reported in milligrams per kilogram (mg/kg)

[1] Kearney Foundation of Soil Science, March 1996

[2] Maximum Concentration – UCL not calculated due to insufficient distinct observations

Antimony was detected in only one of 535 samples; therefore, UCL data could not be calculated. The maximum antimony concentration is greater than the residential ESL and published background range, however, it is less than the commercial/industrial and construction exposure ESLs.

The 95% UCL arsenic value for soil samples collected at the Site is greater than the residential and commercial land use ESLs; however, it is less than the construction exposure ESL and within the published background range. The SFRWQCB *November 2007 Update to Environmental Screening Levels (ESLs) Technical Document* states that ambient background concentrations of arsenic typically exceed risk-based screening levels. In such instances, it may be more appropriate to compare site data to regionally specific established background levels.

The 95% UCL barium concentration for soil samples collected at the Site is less than the residential land use ESL and the published background range.

The 95% UCL cadmium concentration for soil samples collected at the Site is less than the residential land use ESL and within the published background range.

The 95% UCL lead concentration for soil samples collected at the Site is less than the residential land use ESL and within the published background range.

The 95% UCL mercury concentration for soil samples collected at the Site is less than the residential land use ESL and within the published background range.

The 95% UCL nickel concentration for soil samples collected at the Site is less than the residential land use ESL and within the published background range.

Thallium was detected in only 2 of 635 samples; therefore, UCL data could not be calculated. The maximum thallium concentration is greater than the residential ESL and published background range, however, it is less than the commercial/industrial and construction exposure ESLs.

The 95% UCL vanadium concentration for soil samples collected at the Site is greater than the residential land use ESL; however, it is less than the commercial/industrial land use ESL and within the published background range.

Offsite reuse or disposal of excavated soil may be restricted based on metals content.

6.3 Petroleum Hydrocarbons in Soil

One soil sample was collected from the groundwater interface of boring E-CM3 and analyzed for petroleum hydrocarbons. TPHd, TPHmo, TPHg, BTEX, and MTBE were not detected at or above the laboratory reporting limits. A summary of petroleum hydrocarbons results for boring E-CM3 is included in Table 7.

6.4 Lead in Groundwater

One grab-groundwater sample was collected from boring E-CM3 and analyzed for total lead. Lead was reported at a concentration of 0.82 mg/l, exceeding the ESLs for groundwater as a current/potential source of drinking water, groundwater not as a current or potential source of drinking water, and surface water for freshwater, marine and estuarine environments. Total lead results for the grab-groundwater sample and corresponding ESL values are summarized in Table 7.

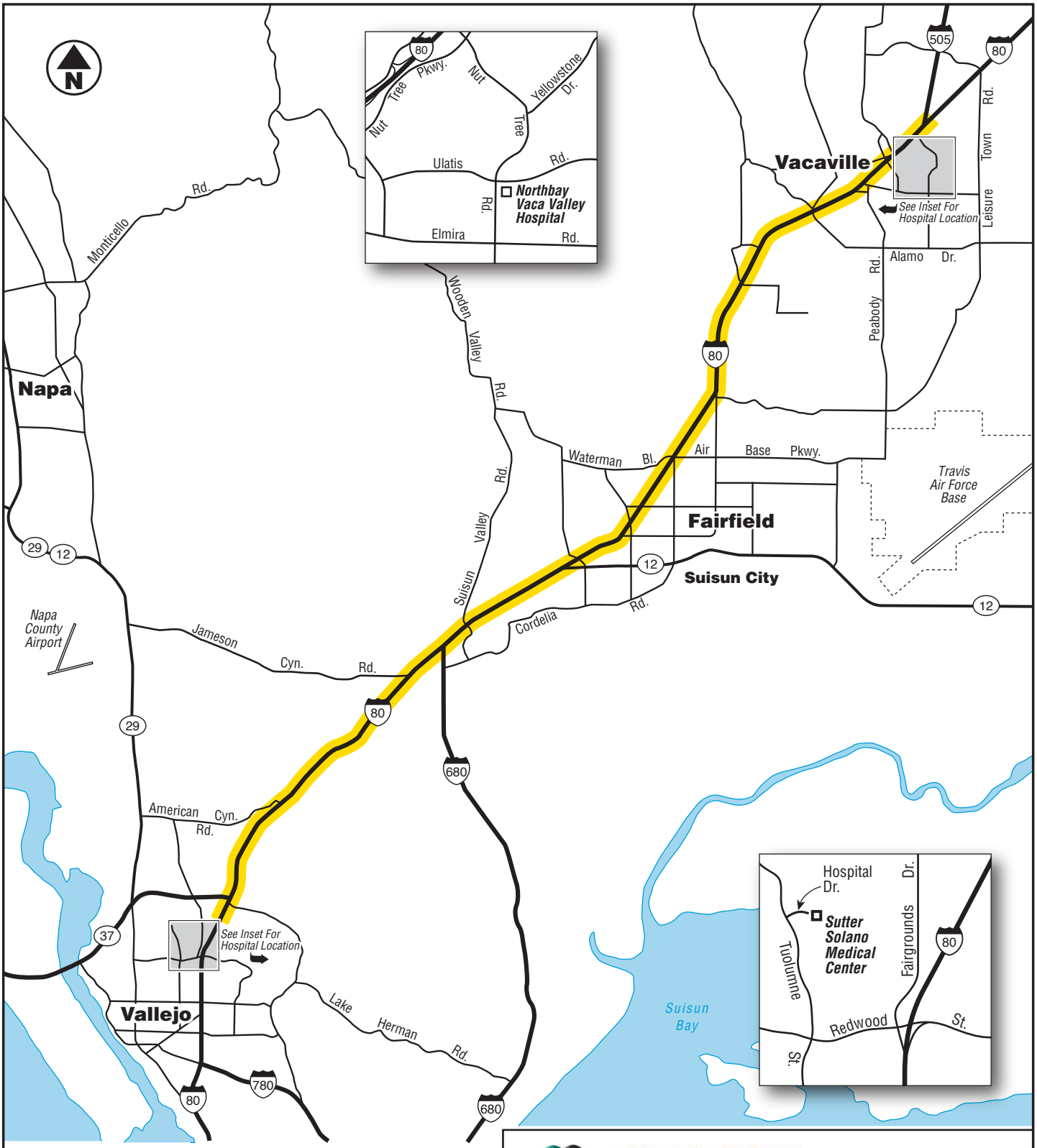
Based on the reported lead concentration, groundwater generated during construction may require treatment to reduce metal content prior to discharge or disposal.

6.5 Petroleum Hydrocarbons in Groundwater

One grab-groundwater sample was collected from boring E-CM3 and analyzed for petroleum hydrocarbons. TPHd, TPHmo, BTEX or MTBE were not detected at or above the laboratory reporting limits. TPHg was reported at a concentration of 0.06 mg/l, below the ESLs for this compound. Petroleum hydrocarbon compounds results for the grab-groundwater sample and corresponding ESL values are summarized in Table 7.

6.6 Worker Protection

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



PROJECT LIMITS

0 3
Scale in Miles

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I-80 Solano FPI

Solano County, California

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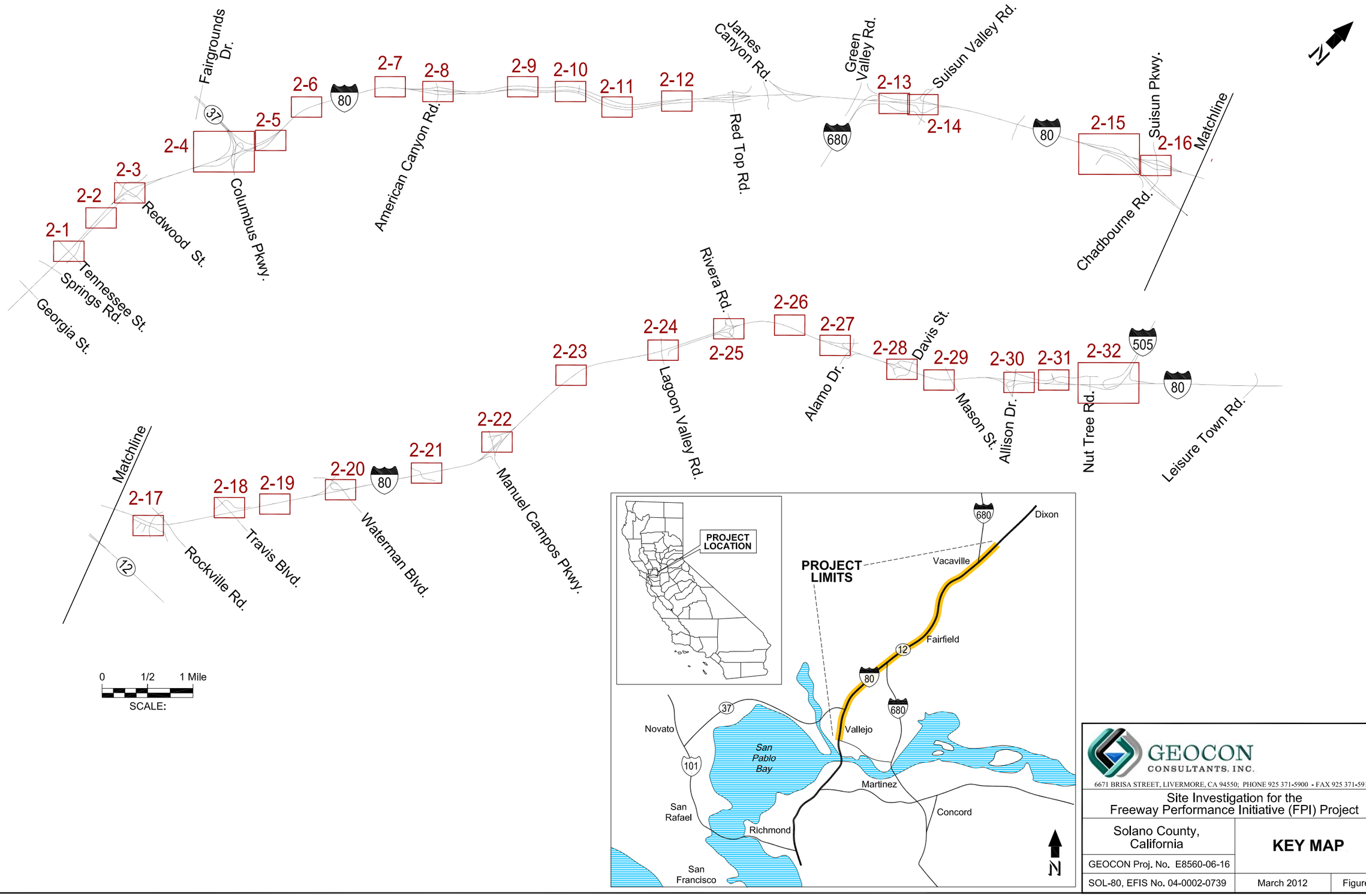
VICINITY MAP

Task Order No. 16 | March 2012 | Figure 1



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Site Investigation for the Freeway Performance Initiative (FPI) Project

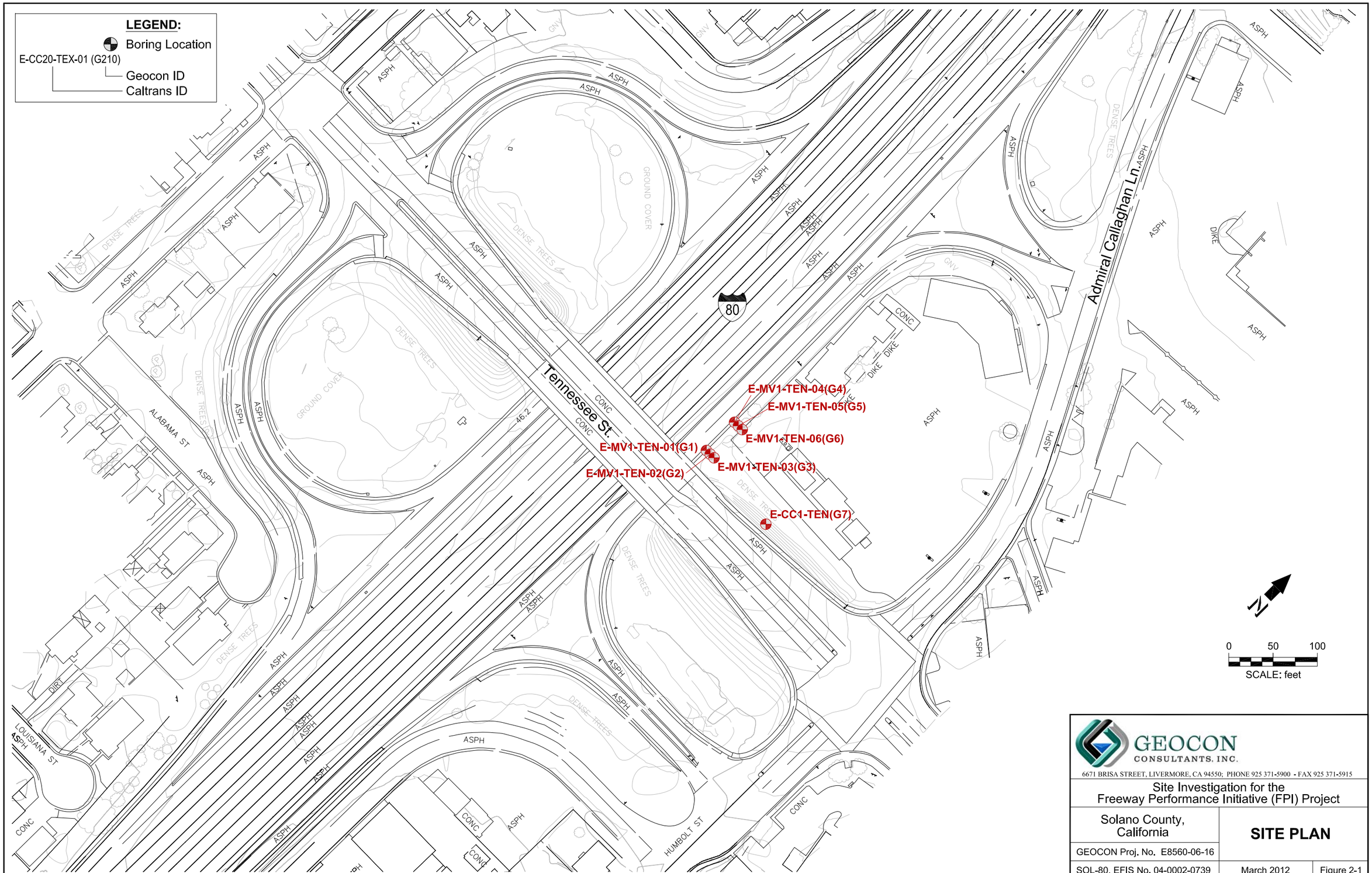
Solano County, California

KEY MAP

GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2

SITE0312



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Site Investigation for the Freeway Performance Initiative (FPI) Project

Solano County, California

SITE PLAN

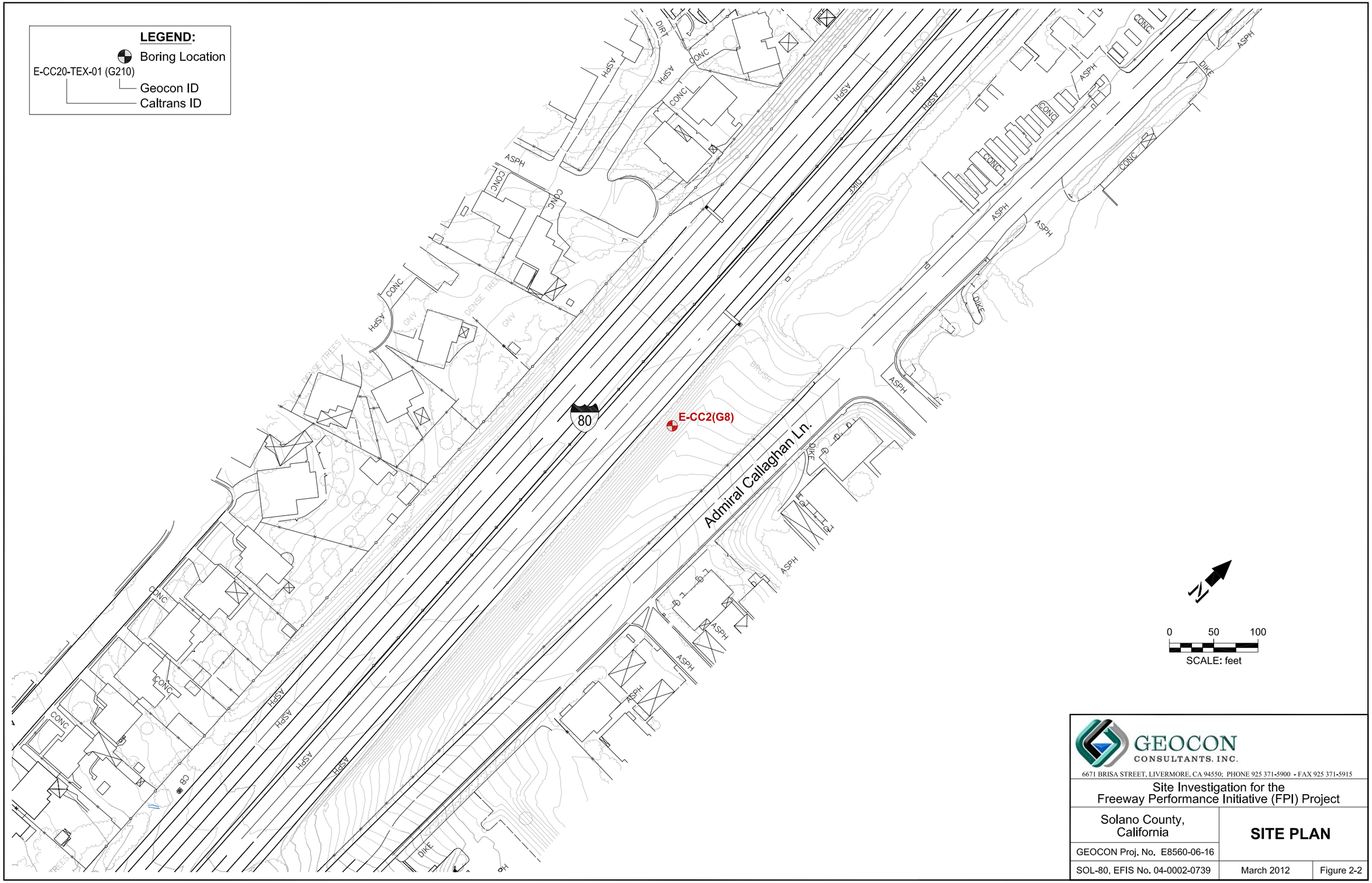
GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739

March 2012

Figure 2-1

SITE0312



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SITE PLAN

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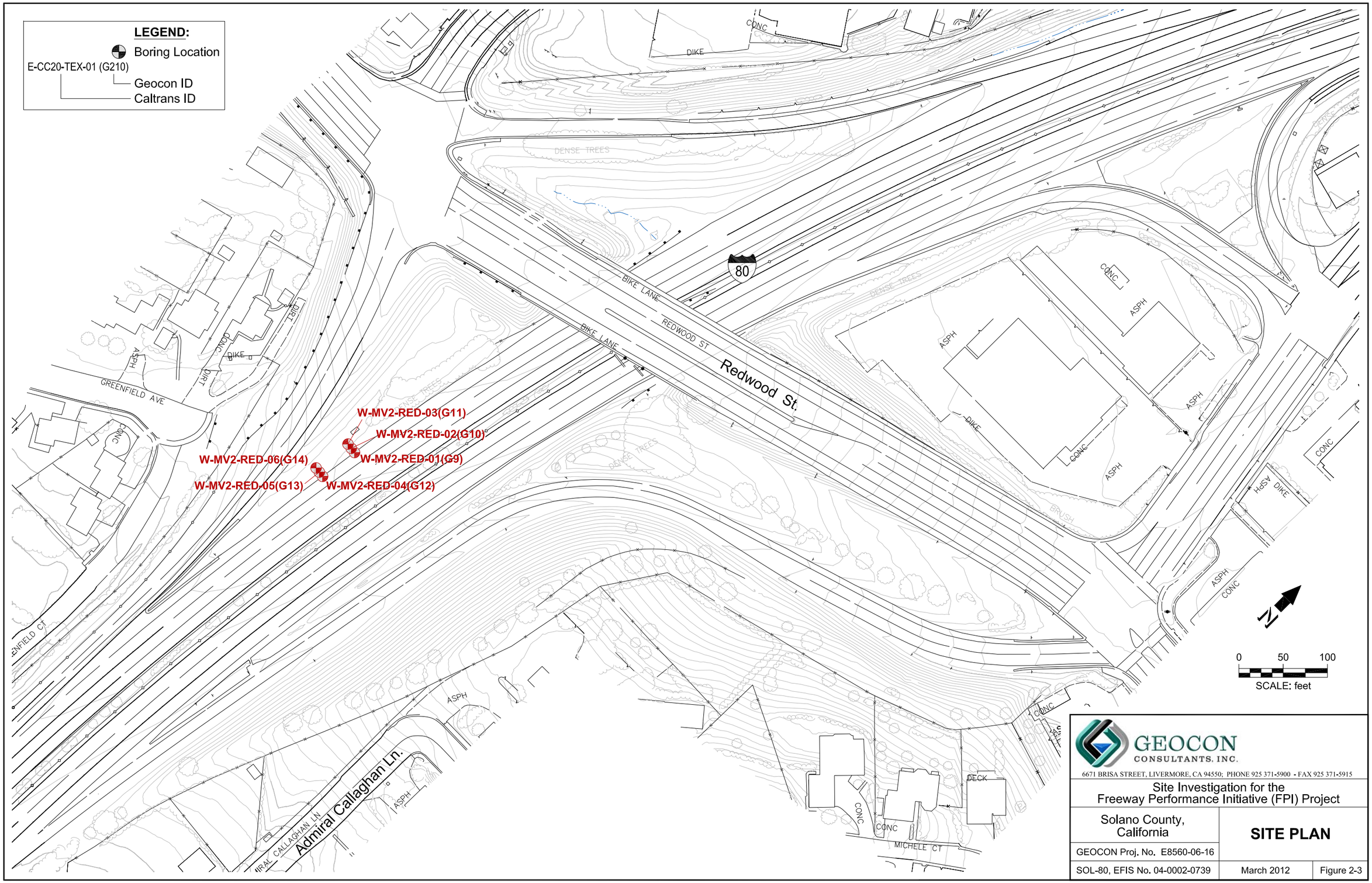
SOL-80, EFIS No. 04-0002-0739

March 2012

Figure 2-2

SITE0312



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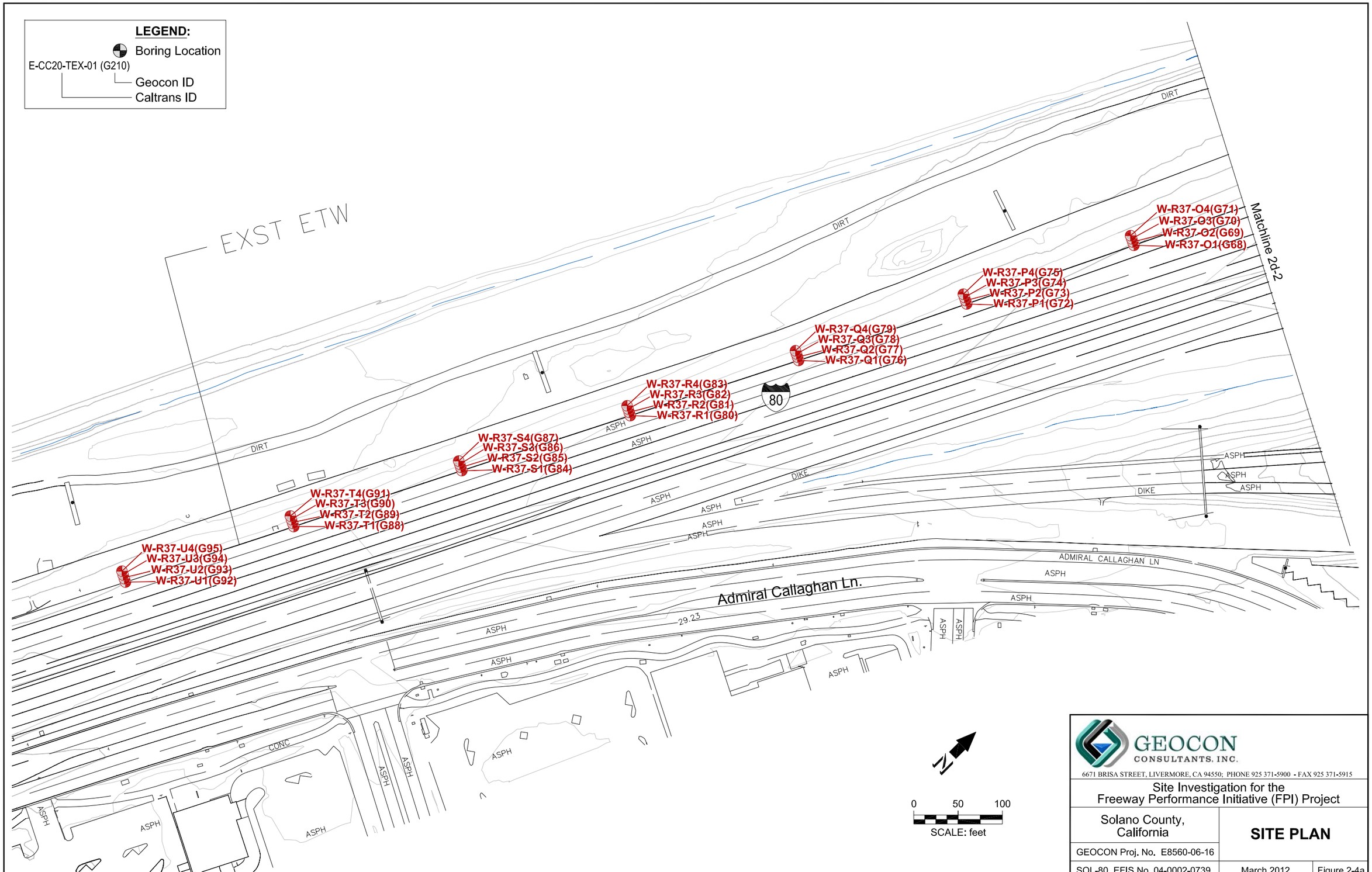
SITE PLAN

GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-3

SITE0312



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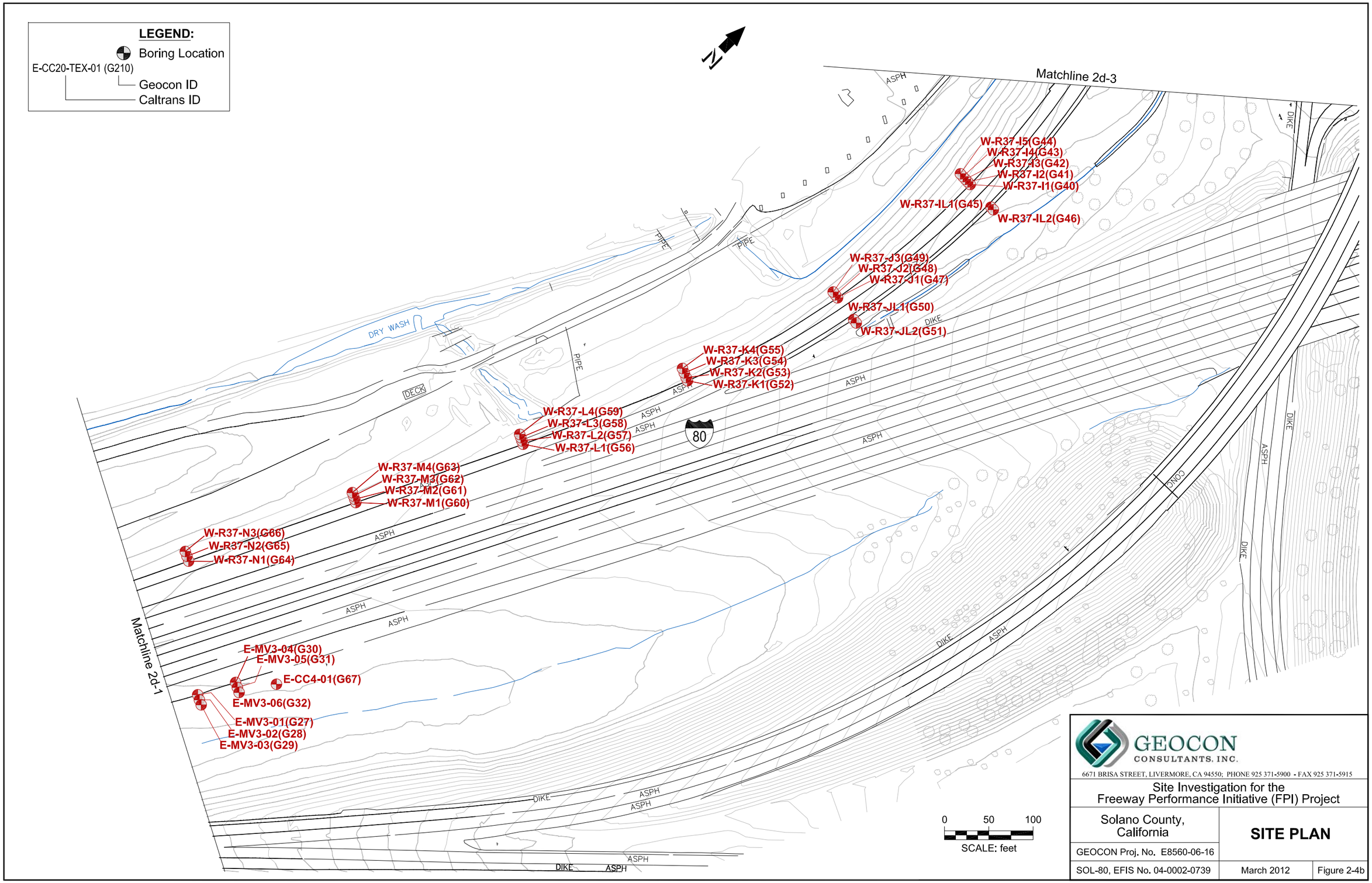
GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739

March 2012

Figure 2-4a

SITE0312



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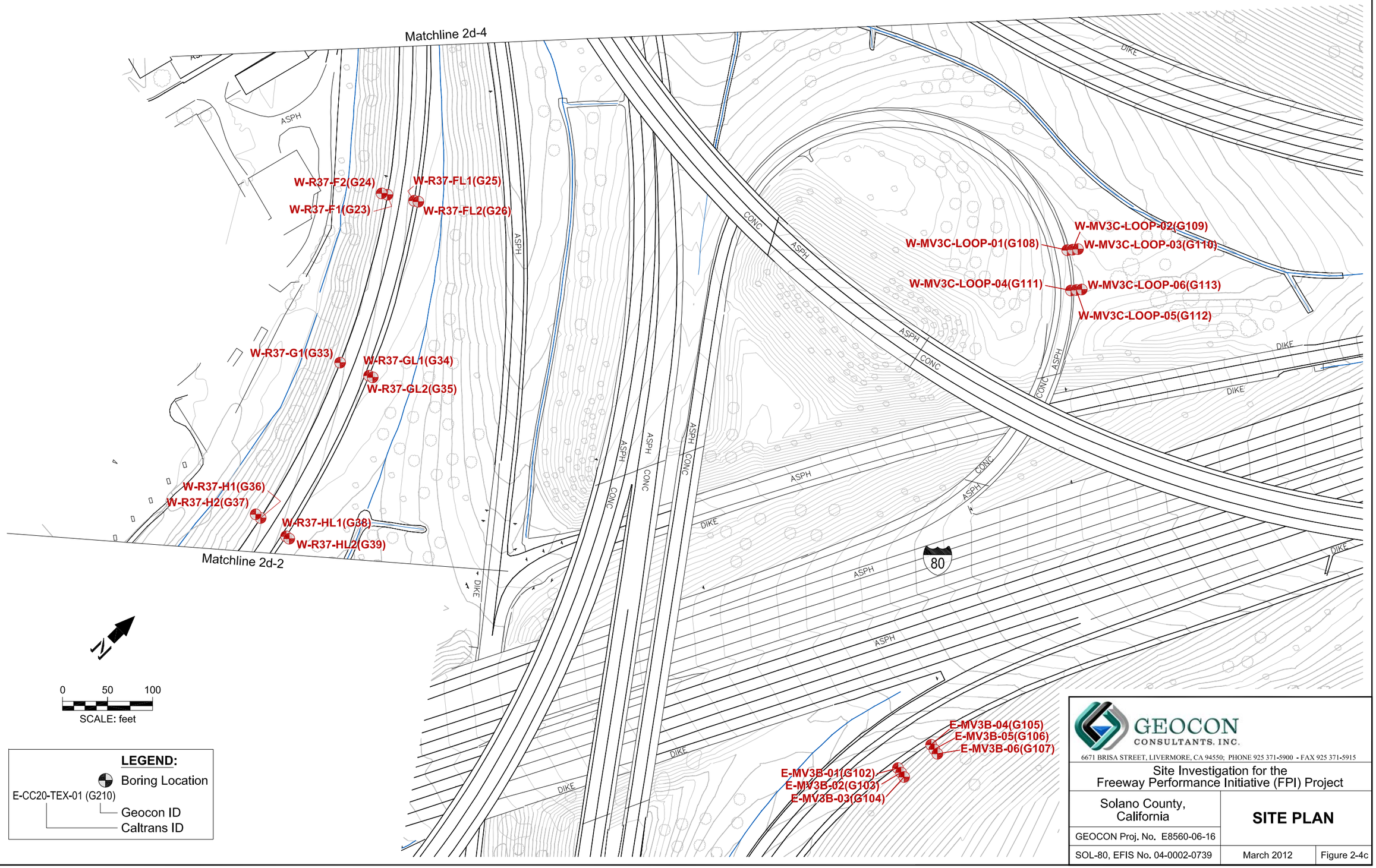
SITE0312



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SITE0312

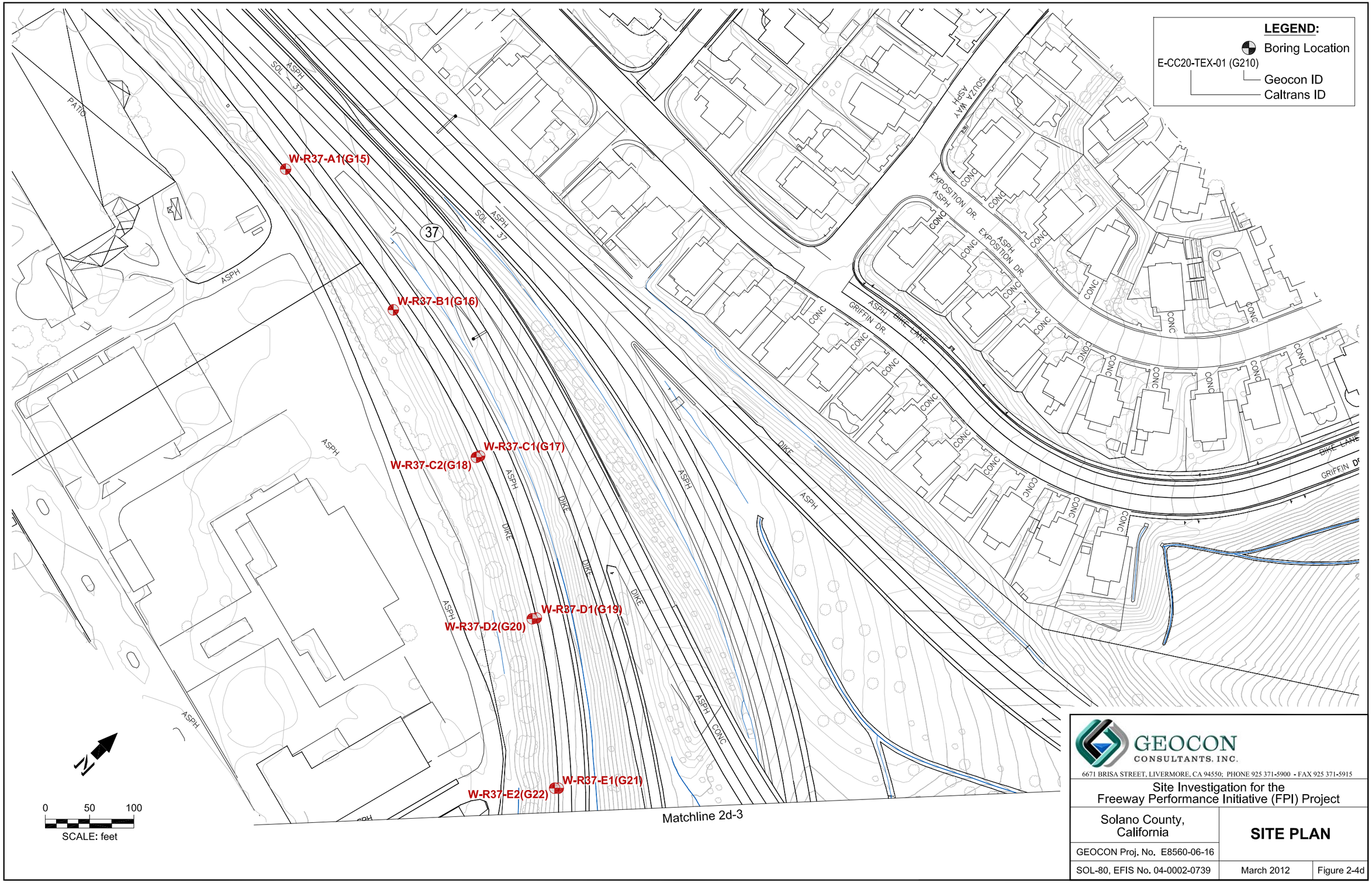

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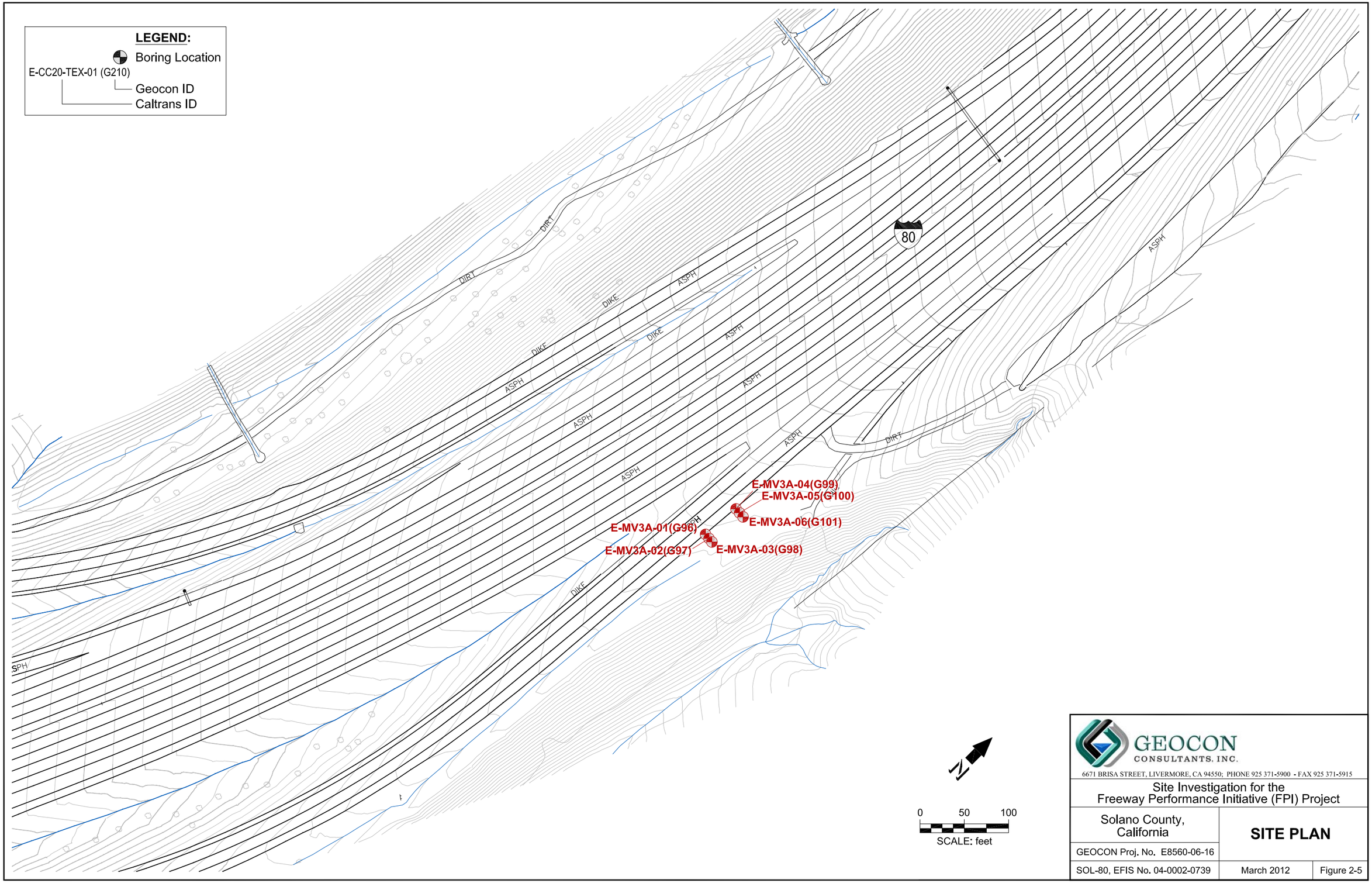
Figure 2-4d

SITE0312



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SITE0312

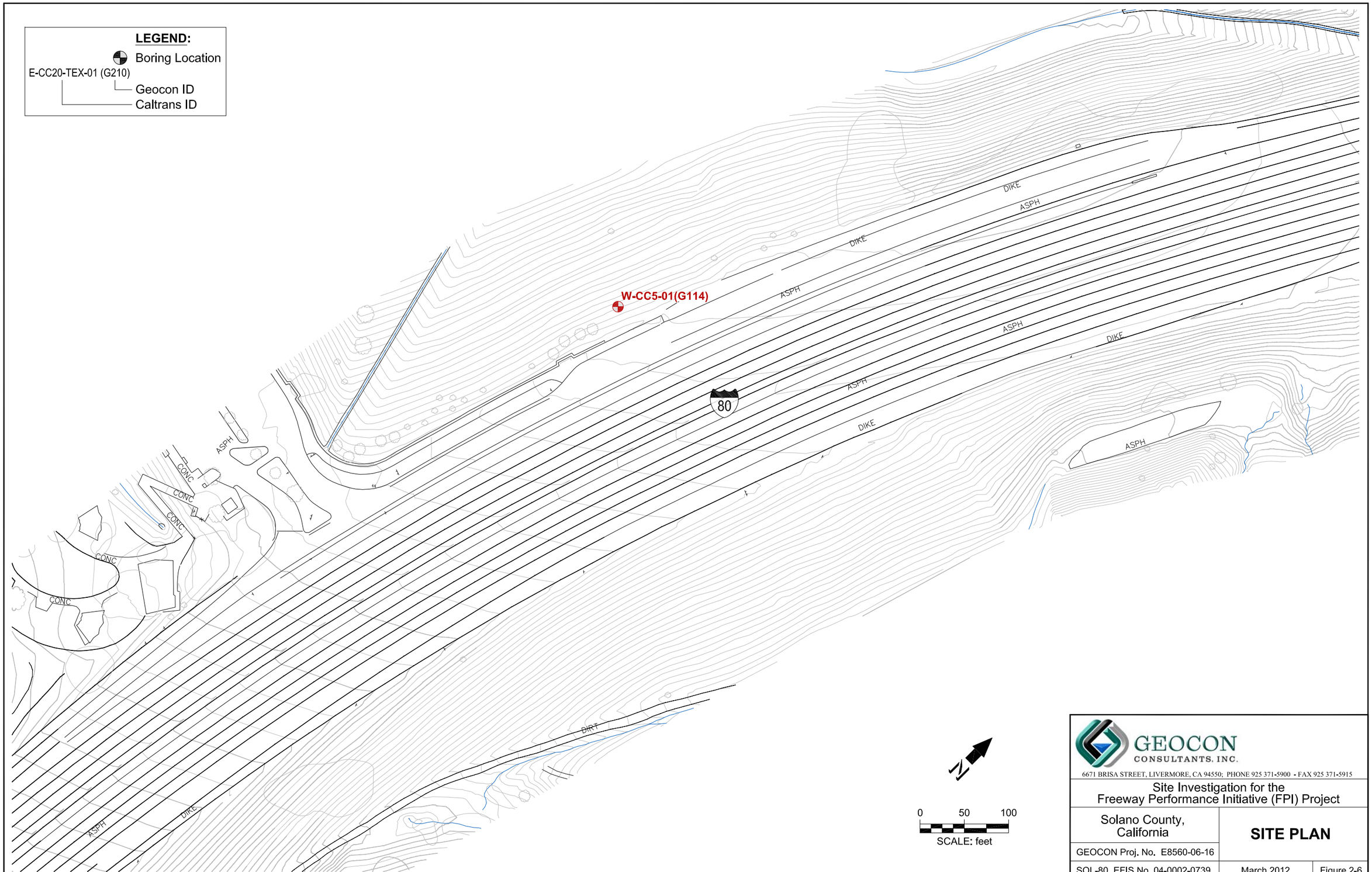

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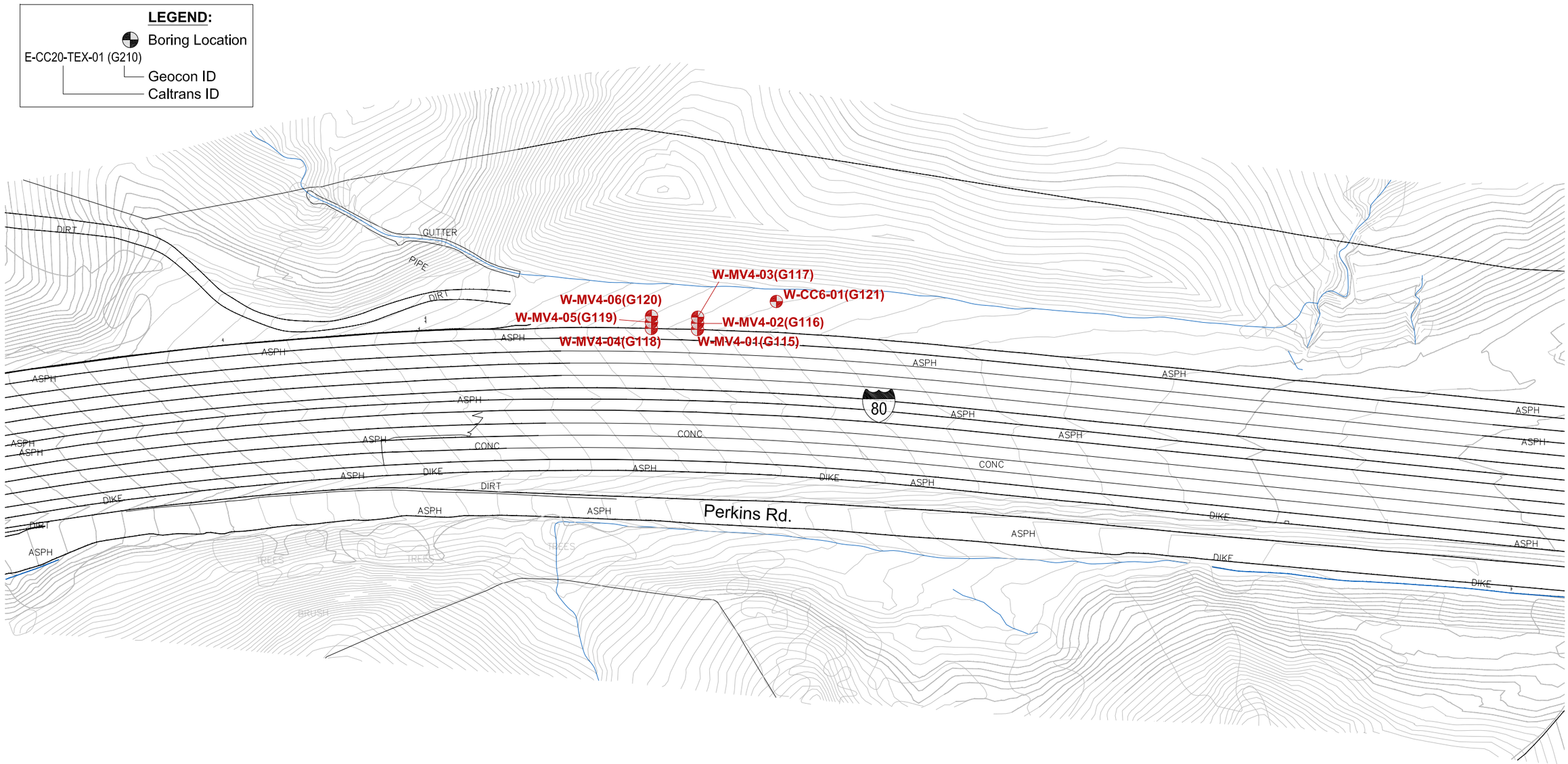
Figure 2-6

SITE0312



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SCALE: feet

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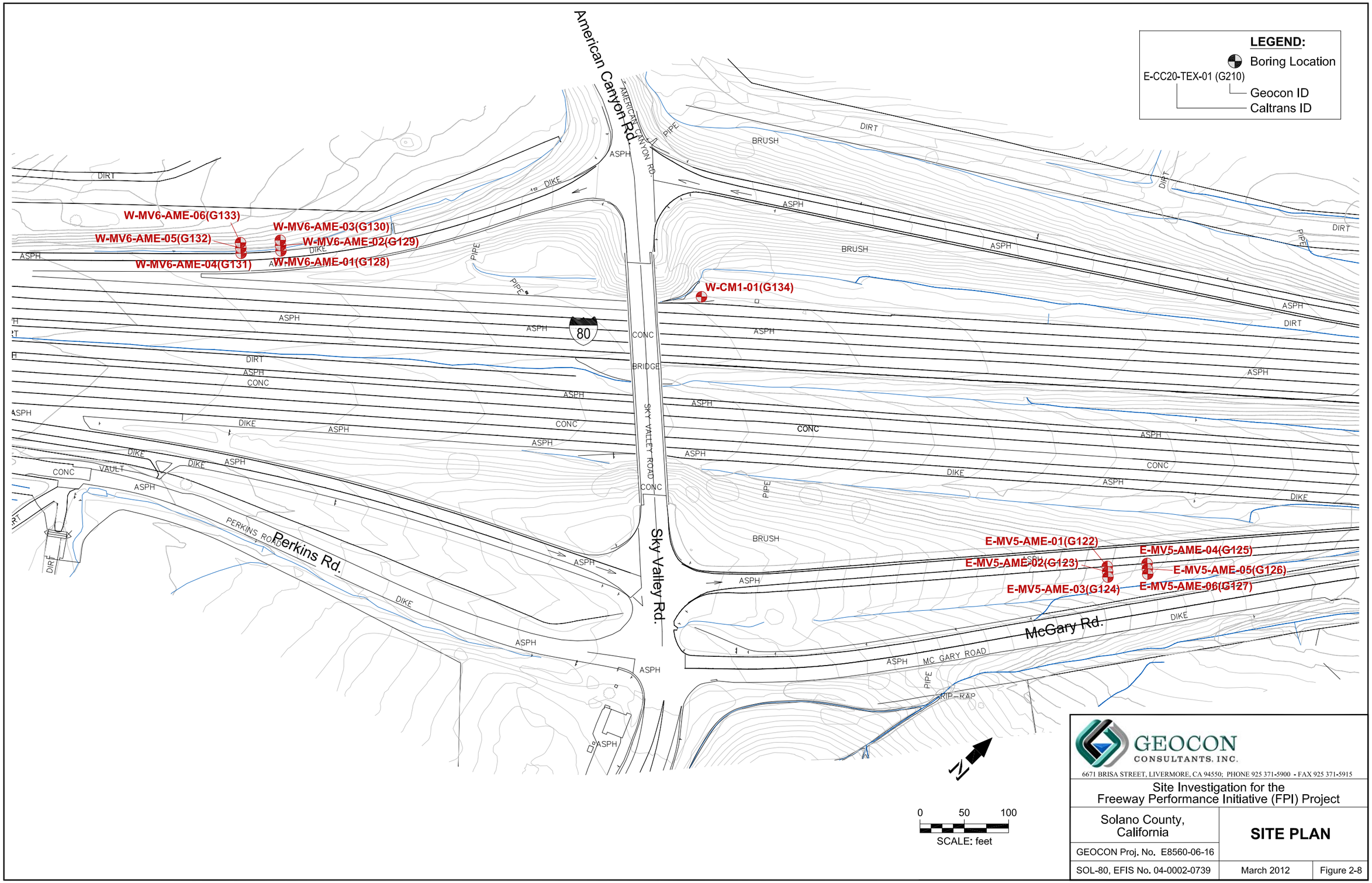
SITE0312



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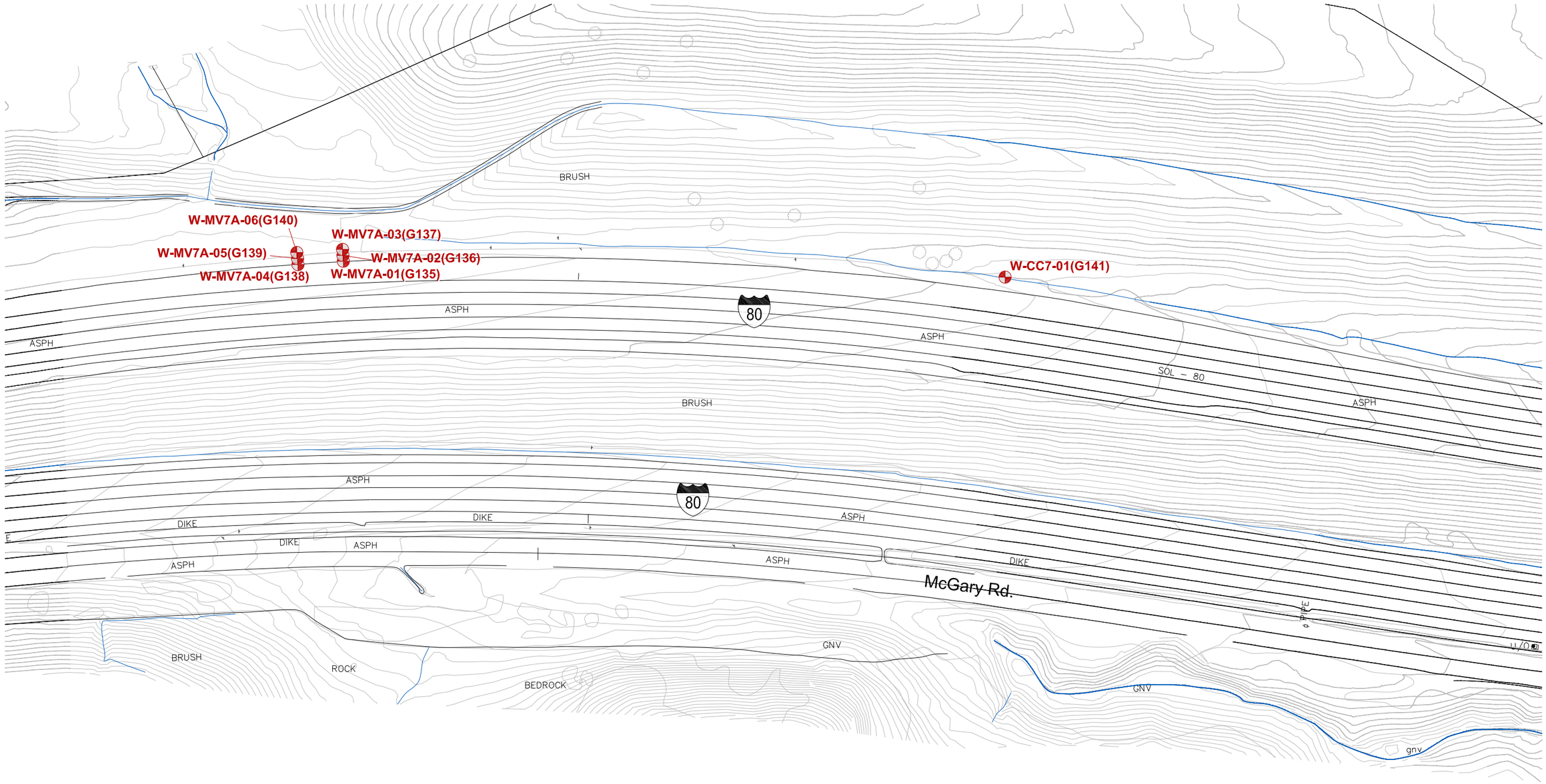
SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-8

SITE0312



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E-CC20-TEX-01 (G210)

Geocon ID

Caltrans ID

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SCALE: feet

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GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739

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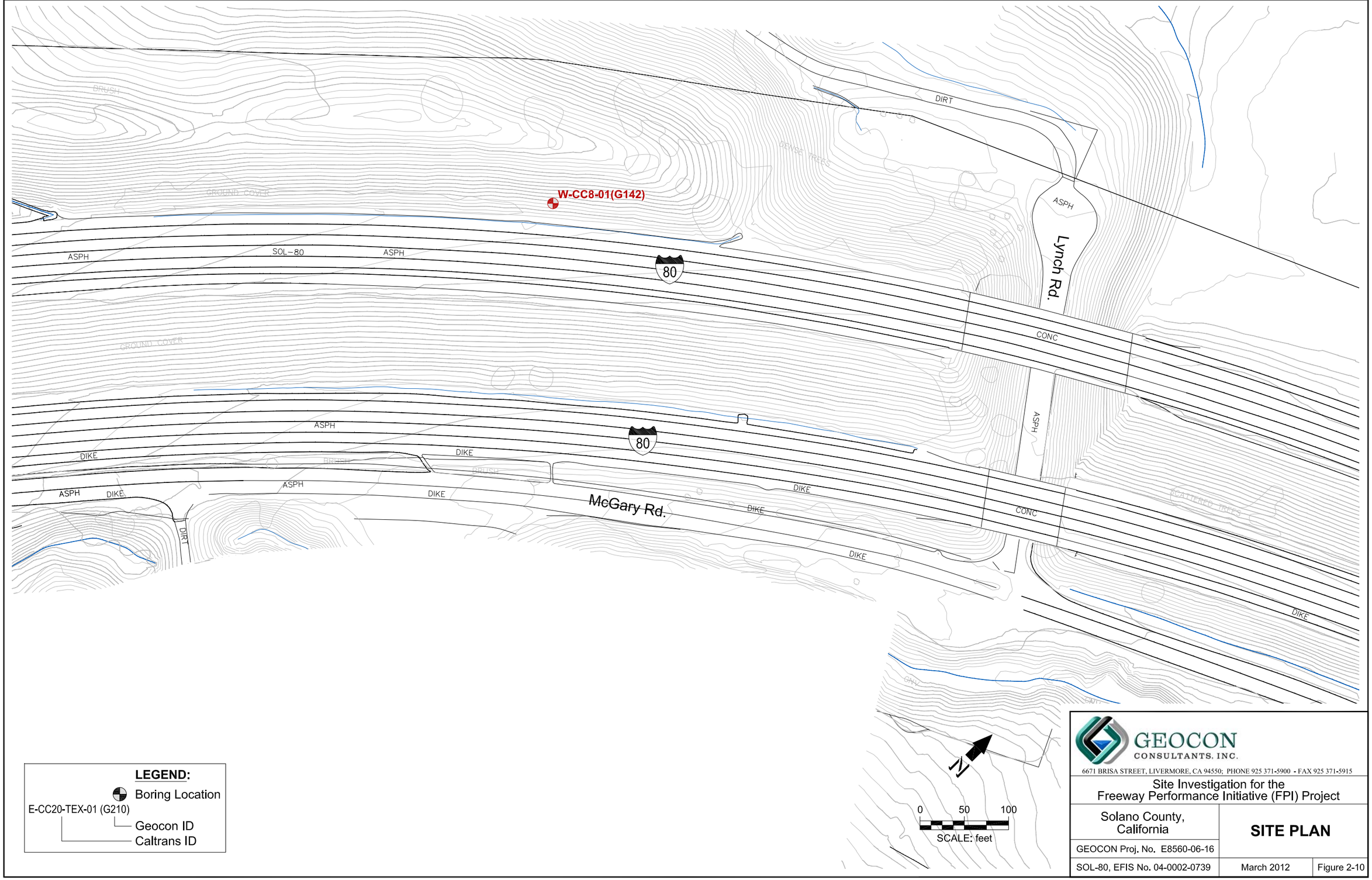
Figure 2-9

SITE0312



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SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-10

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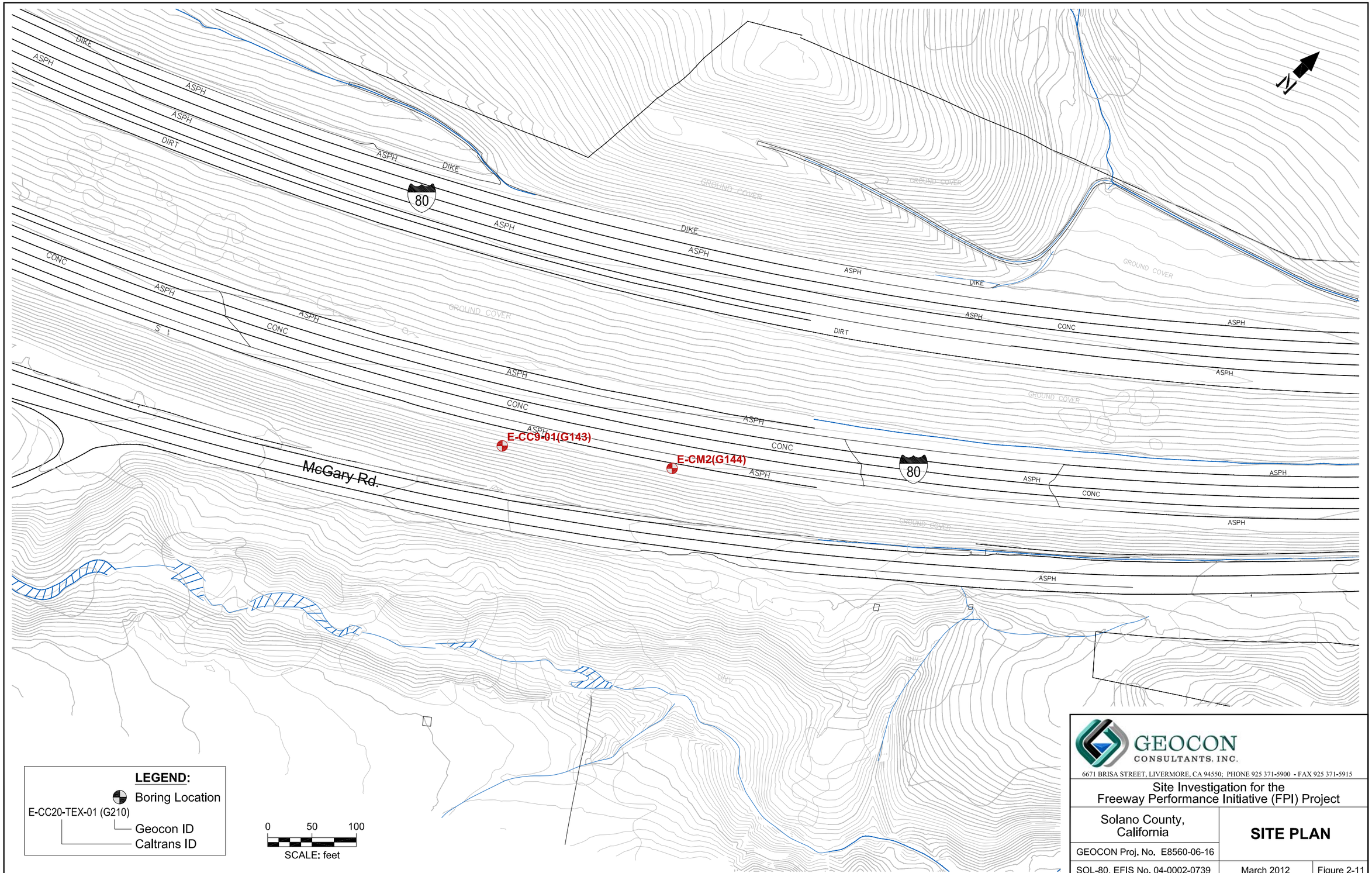

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Figure 2-11

SITE0312

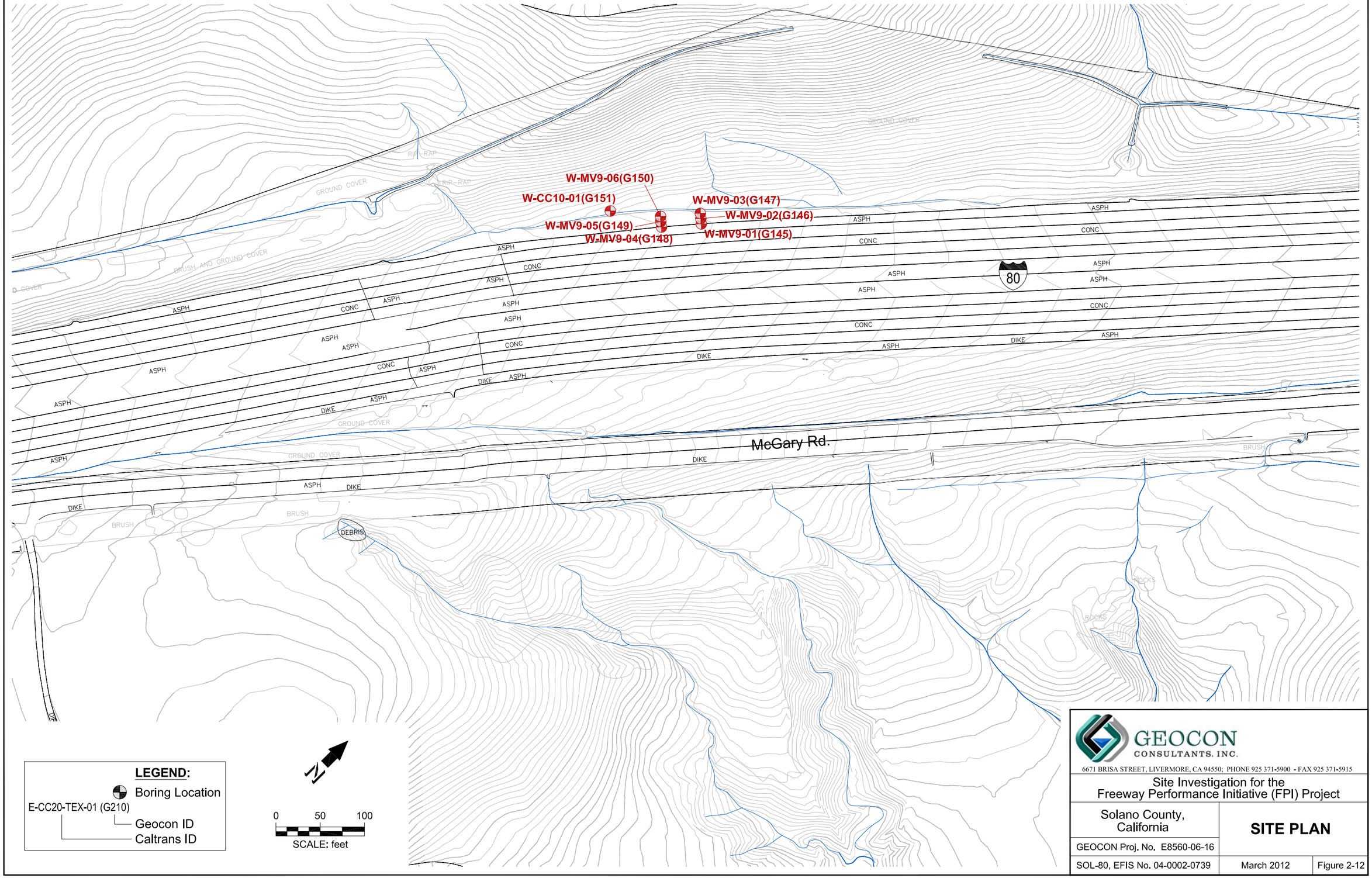

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Figure 2-12

SITE0312

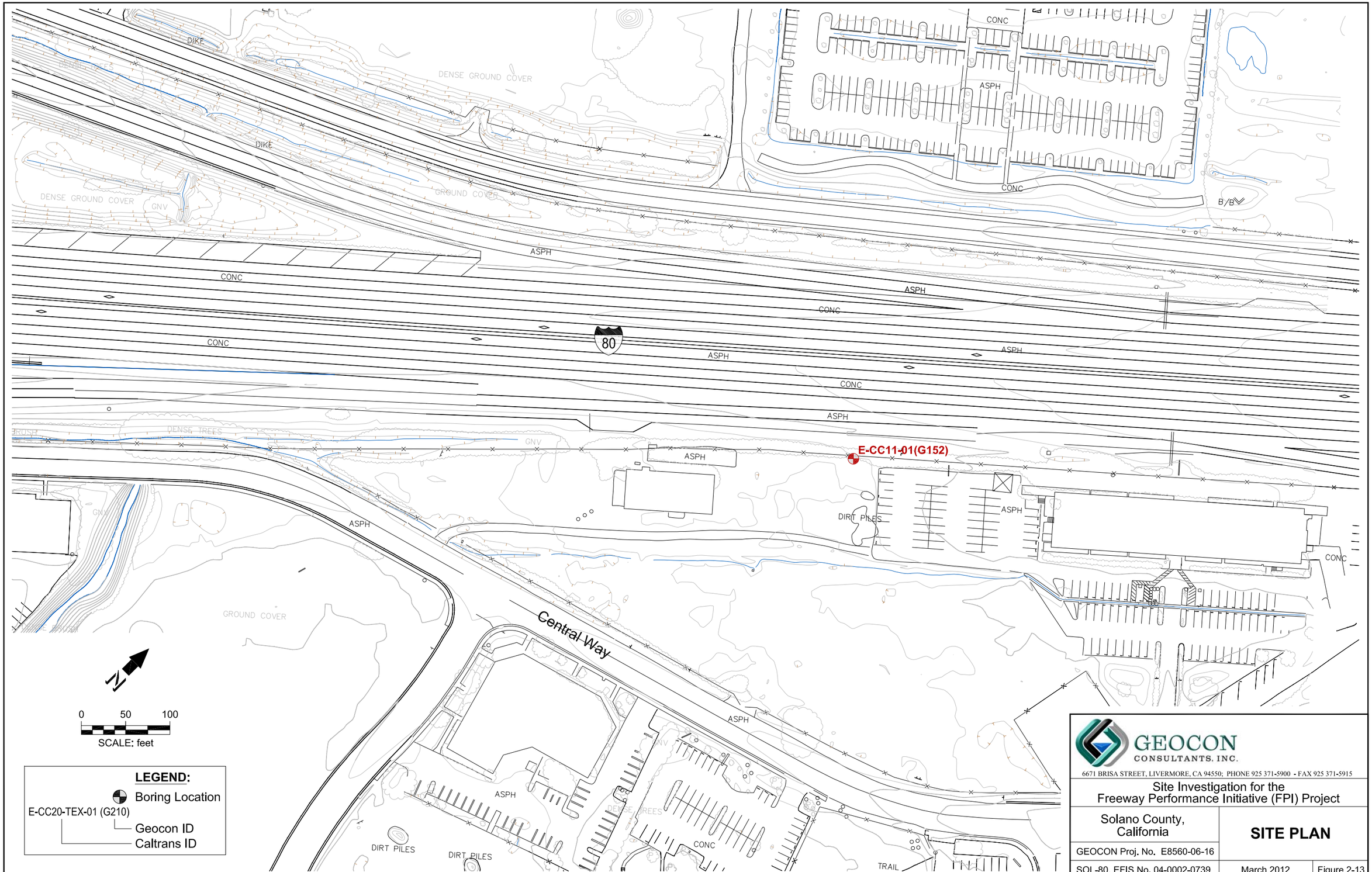

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Figure 2-13

SITE0312

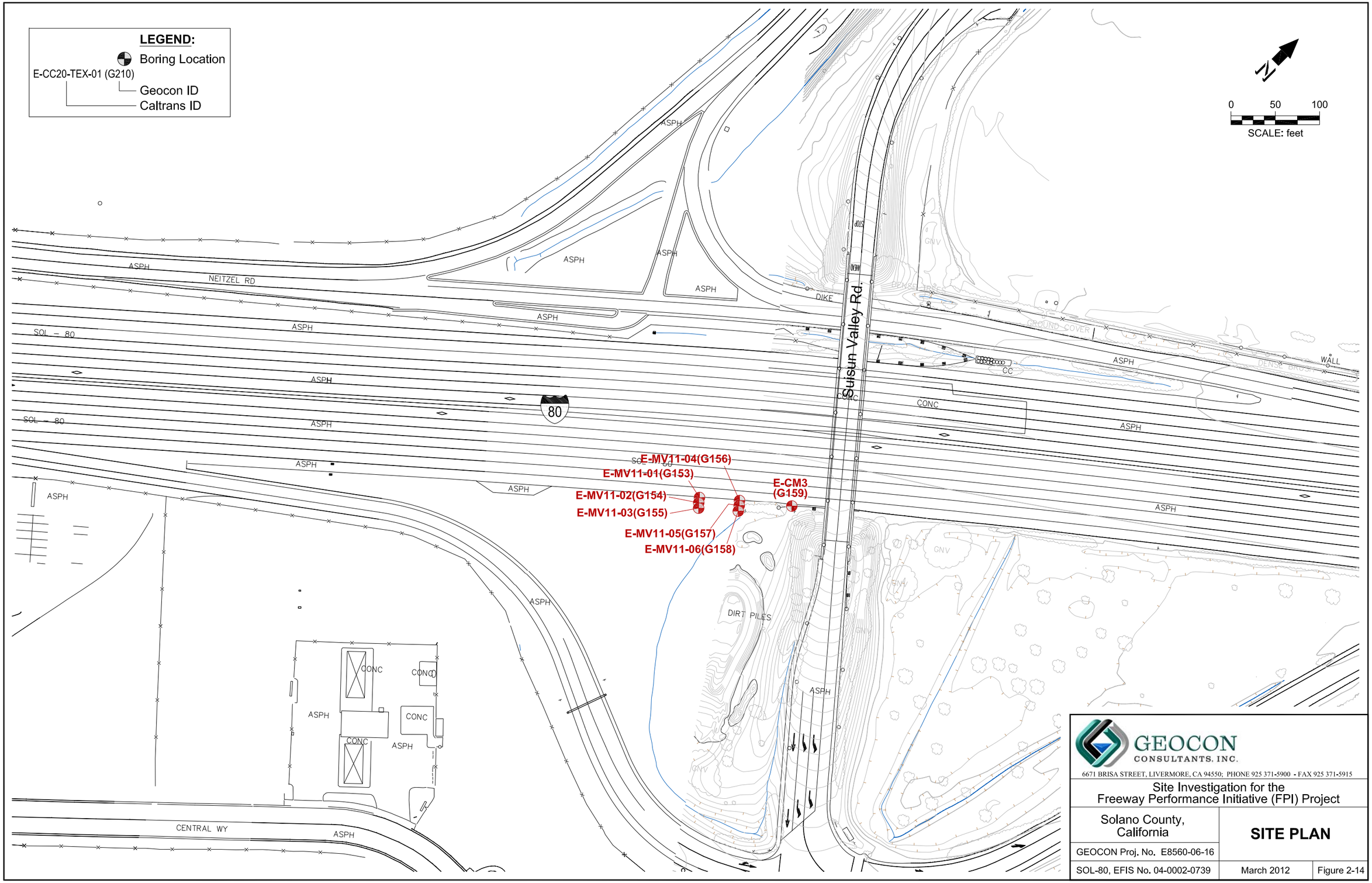

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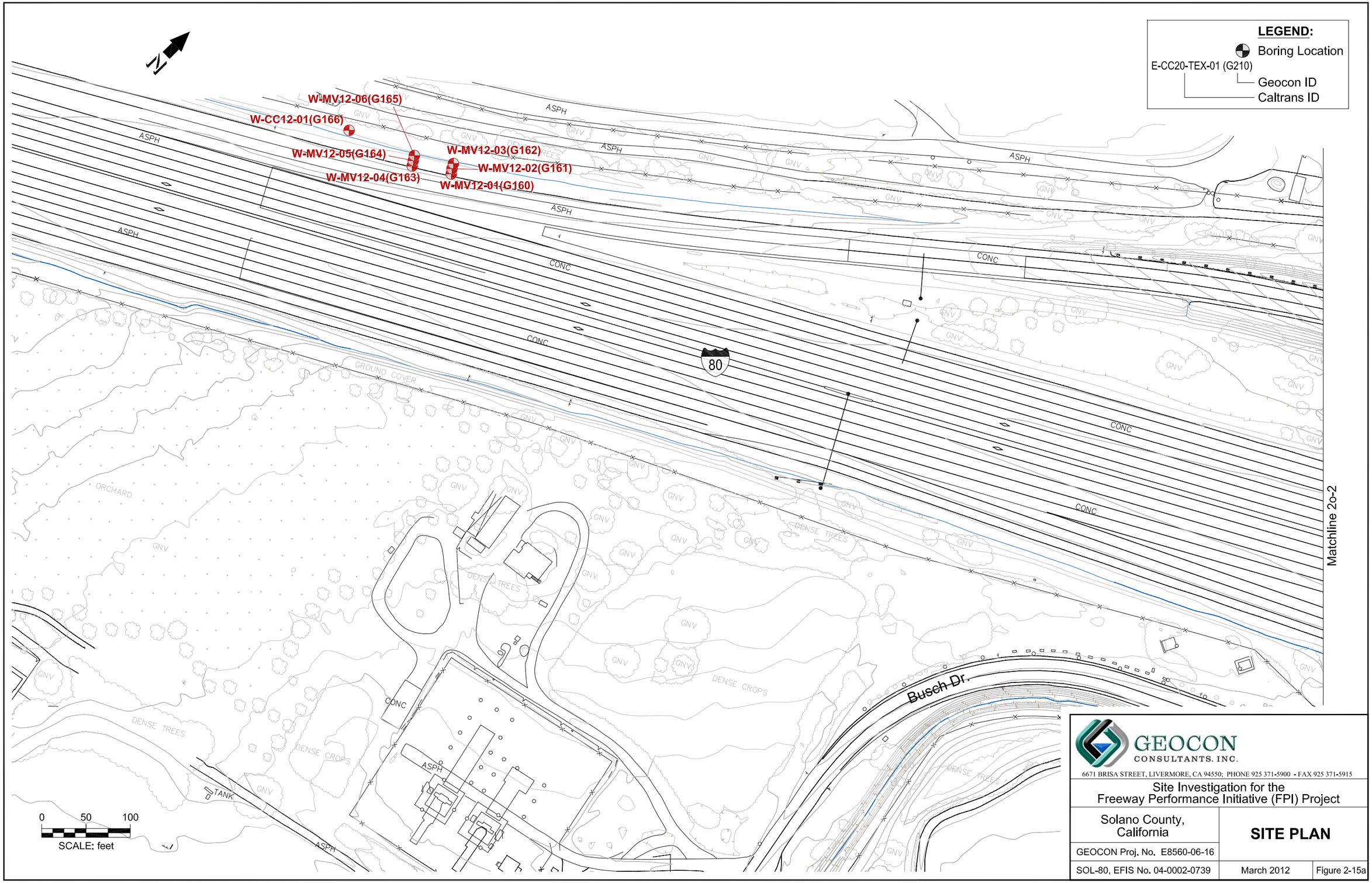
Figure 2-14

SITE0312



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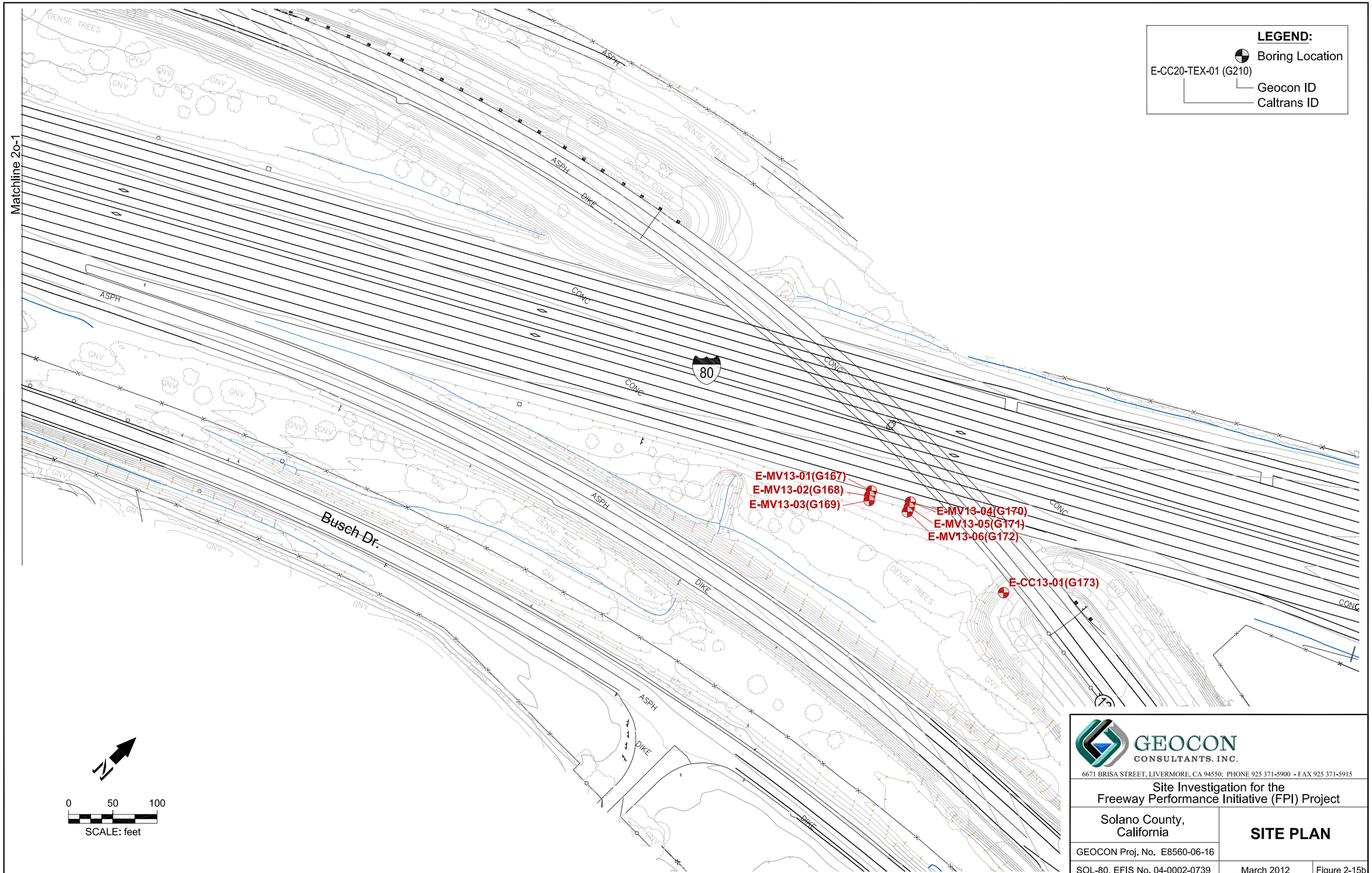
SITE0312



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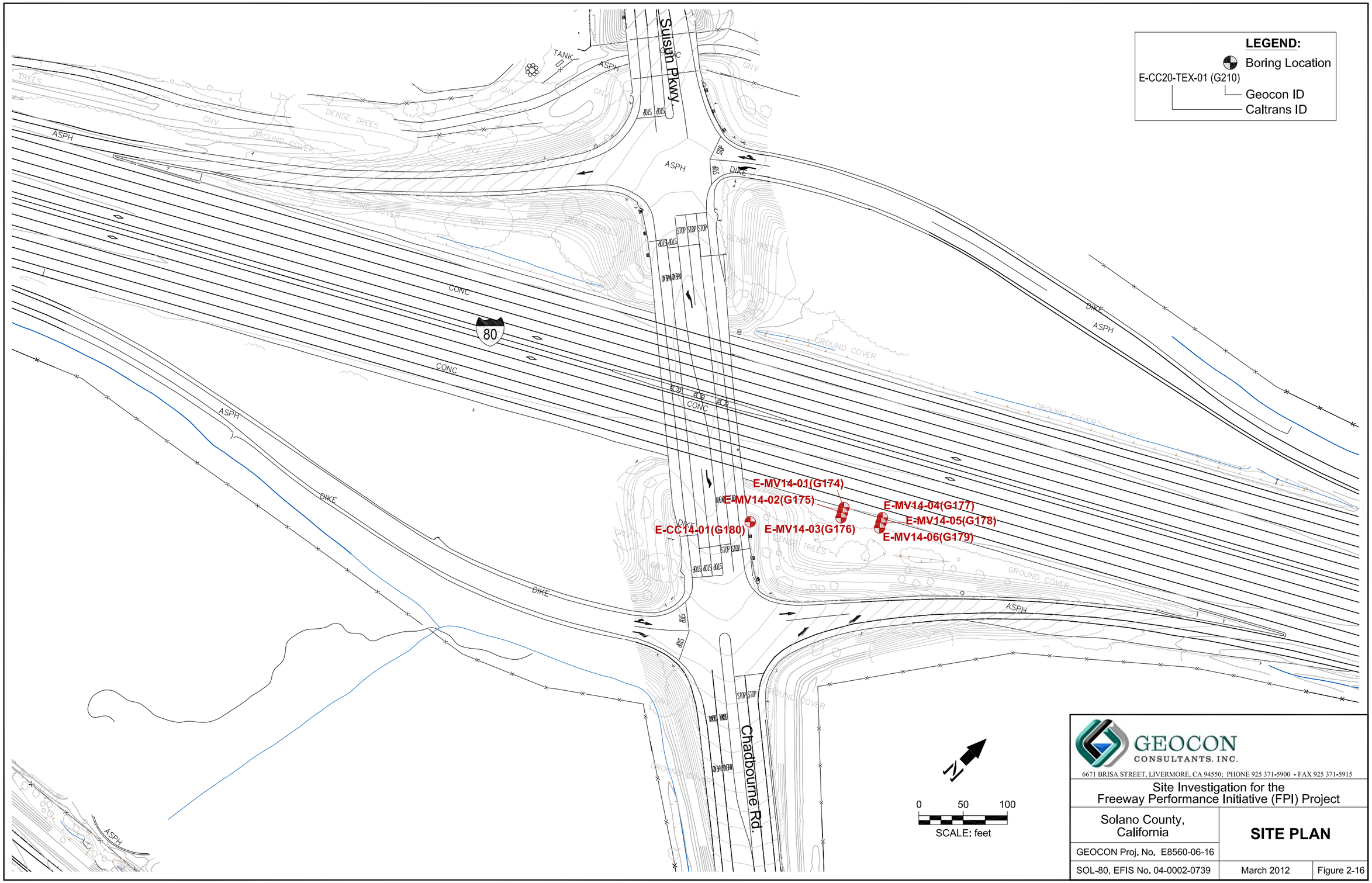
SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-15b

SITE0312



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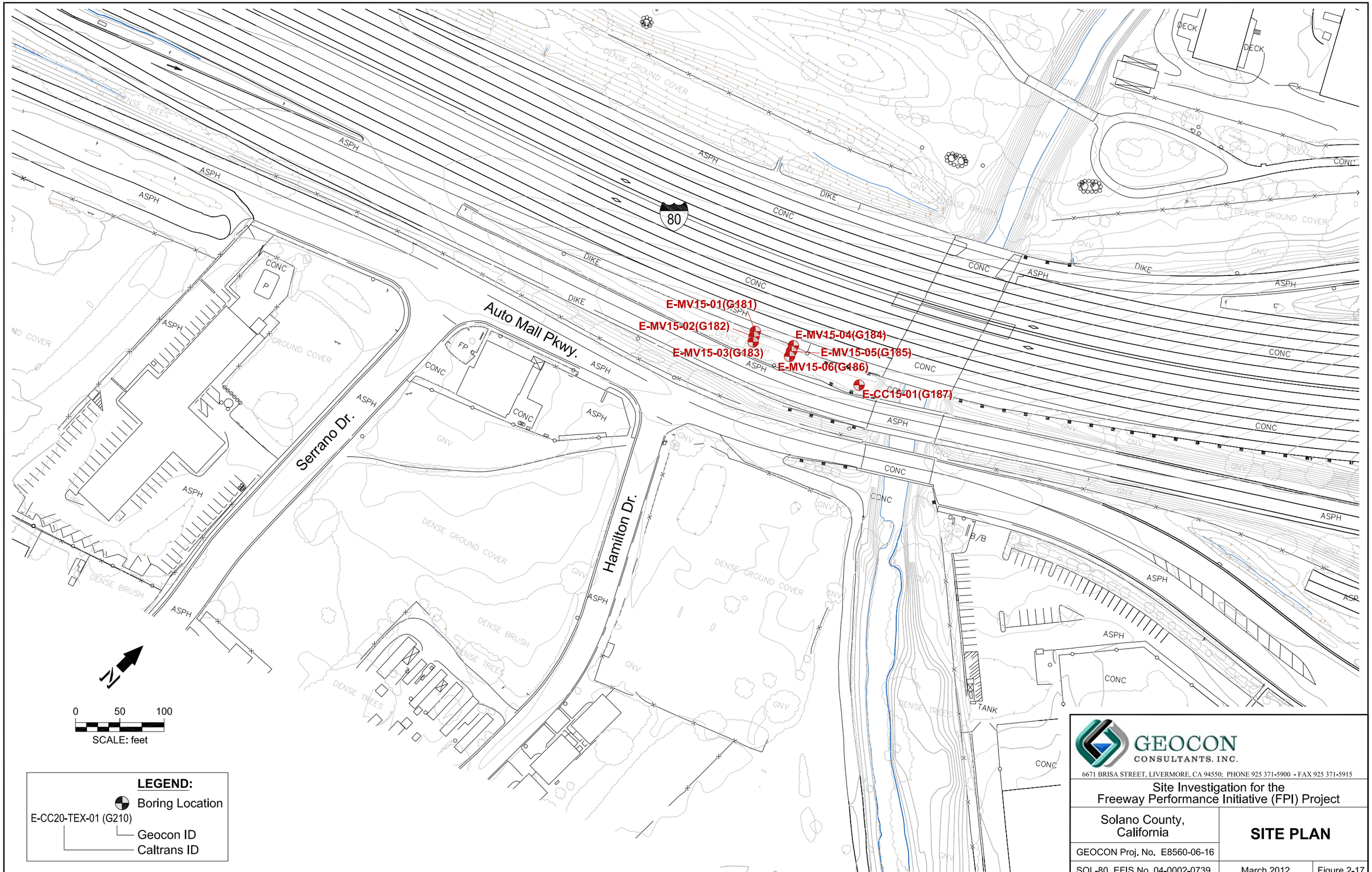
SITE0312



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SITE0312

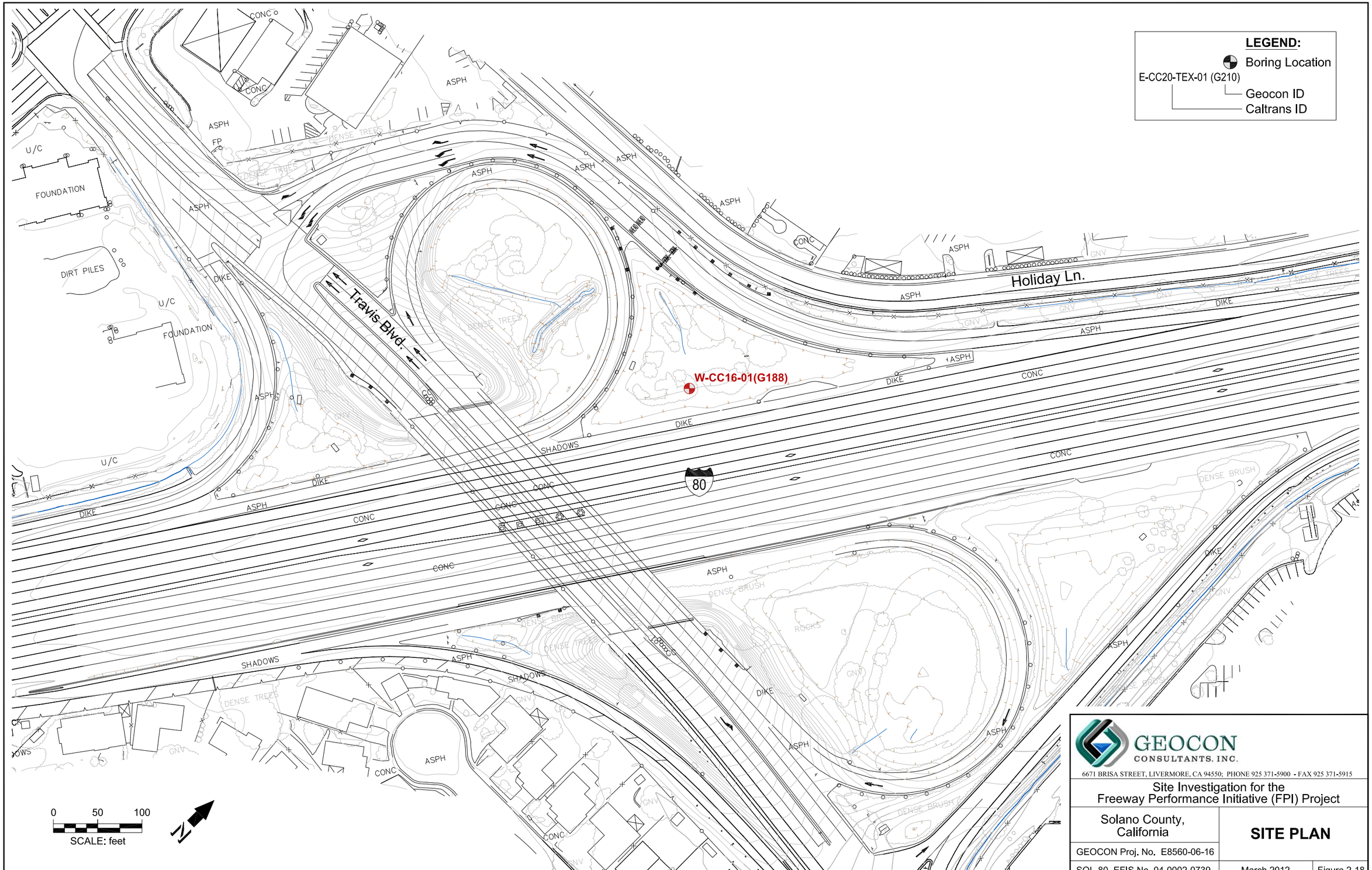

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Figure 2-18

SITE0312

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E-CC20-TEX-01 (G210)

Geocon ID

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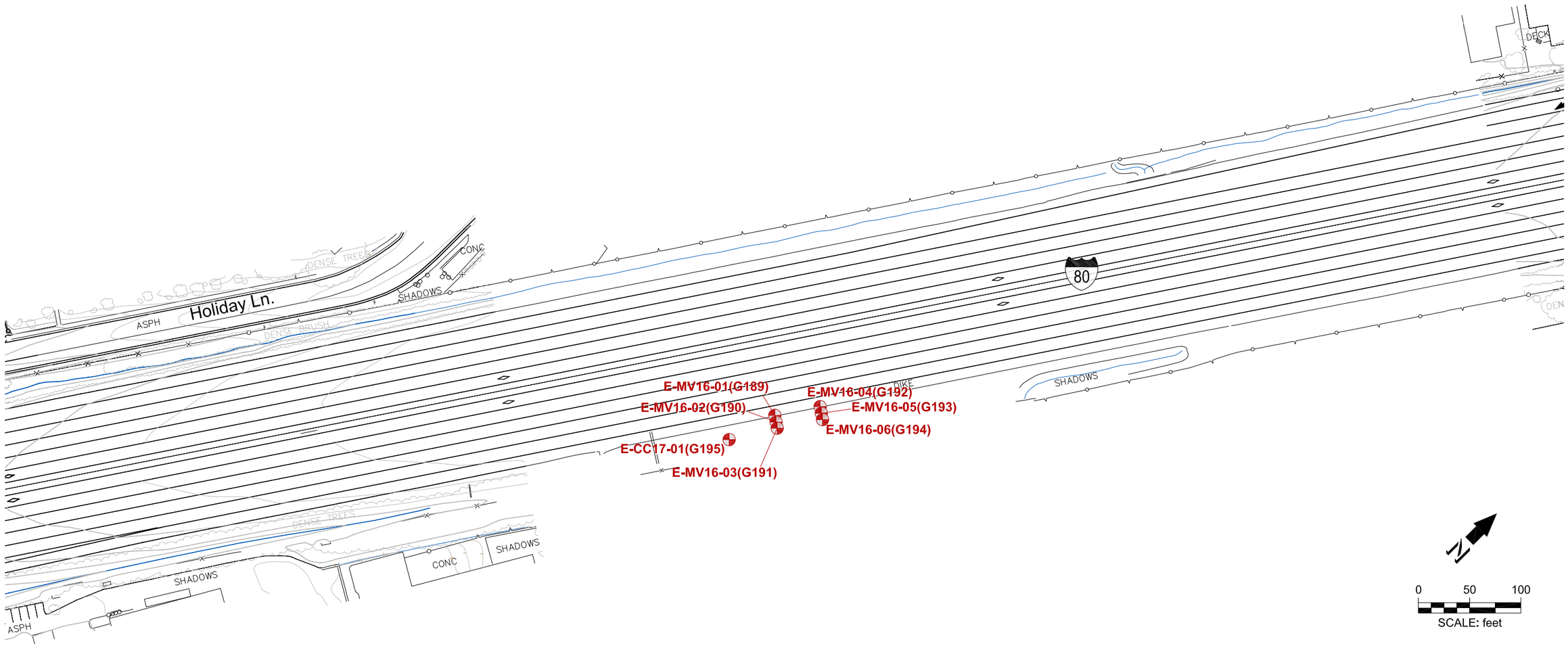

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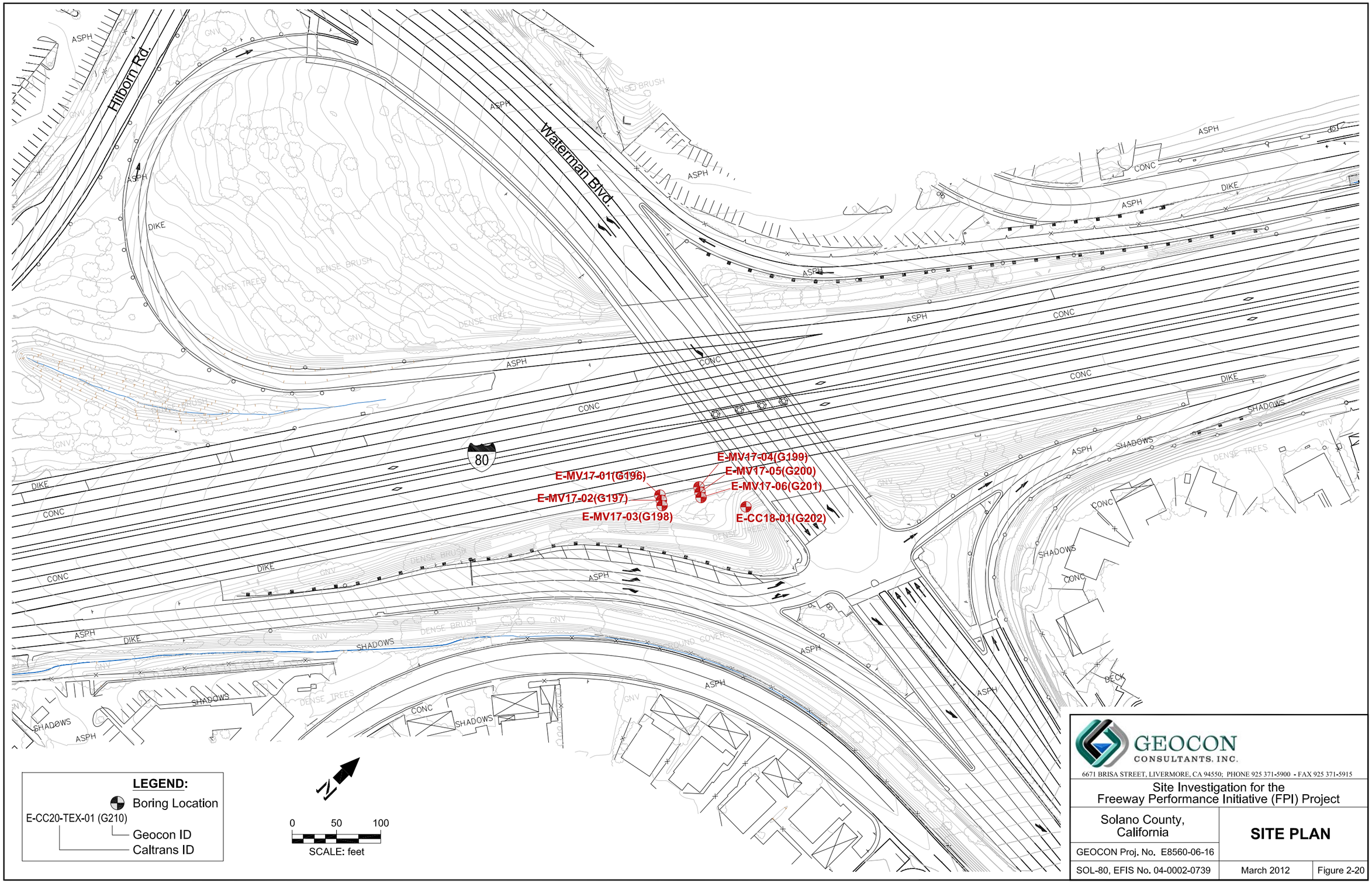
SITE0312



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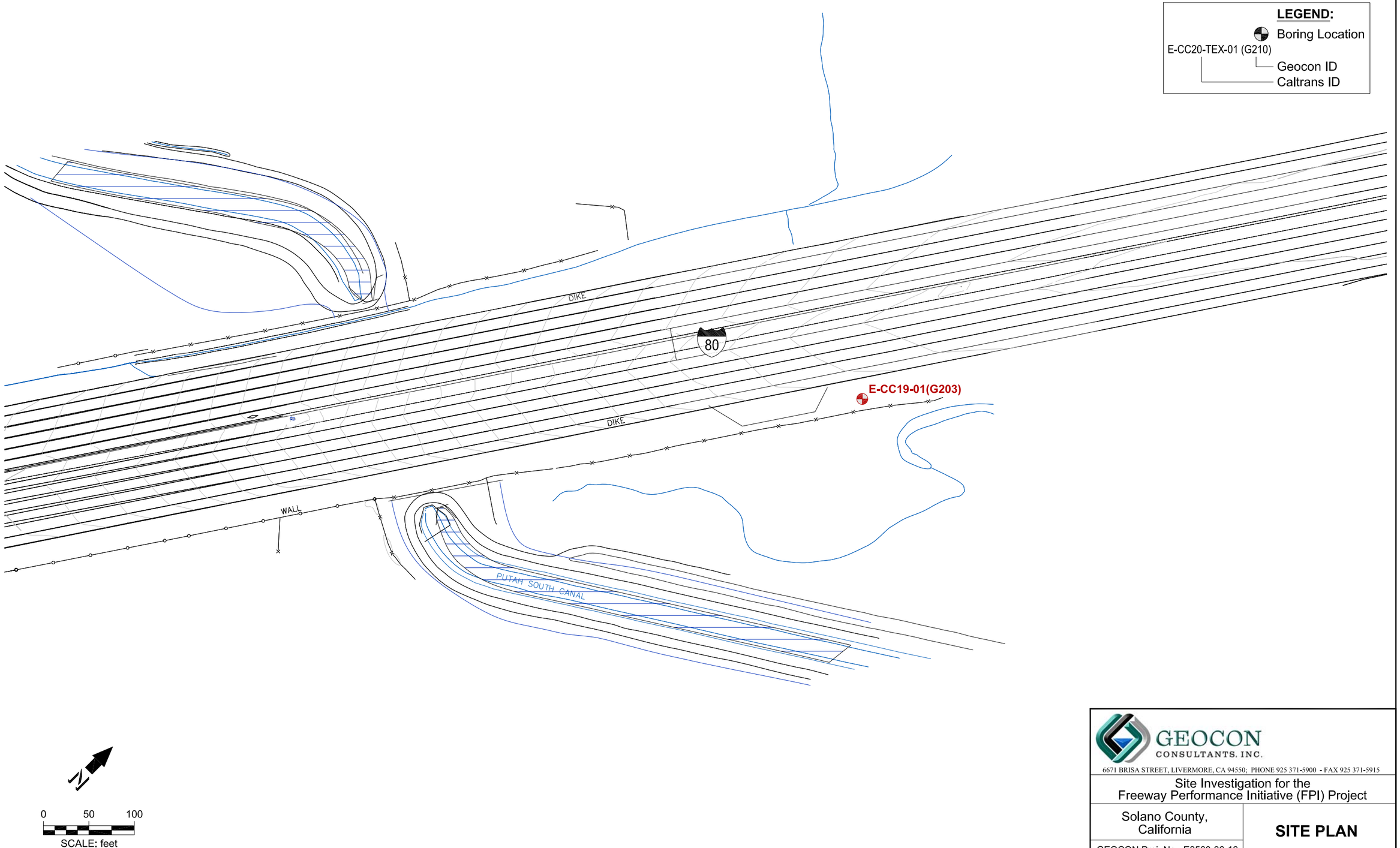
SITE0312



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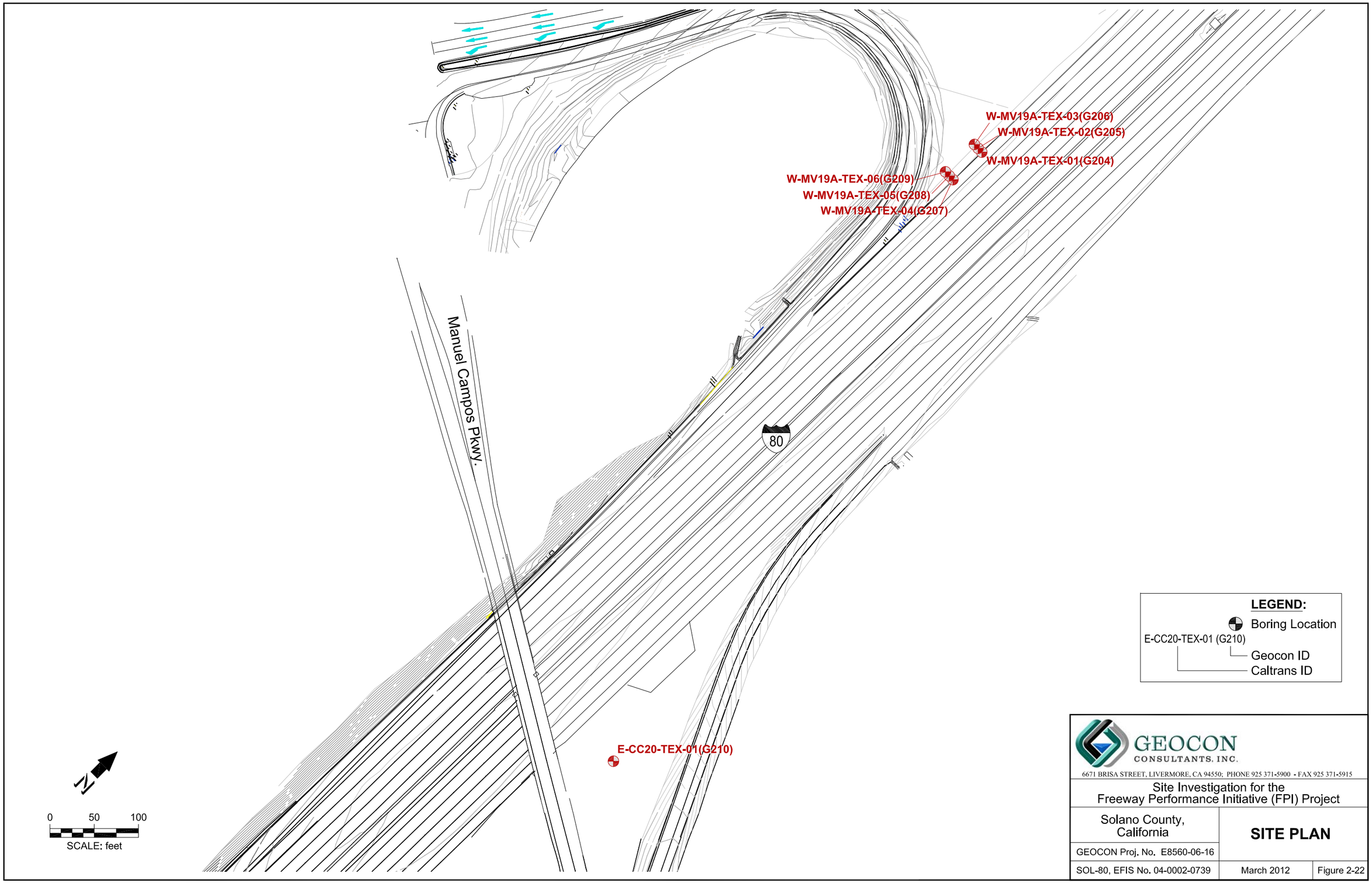
SITE0312



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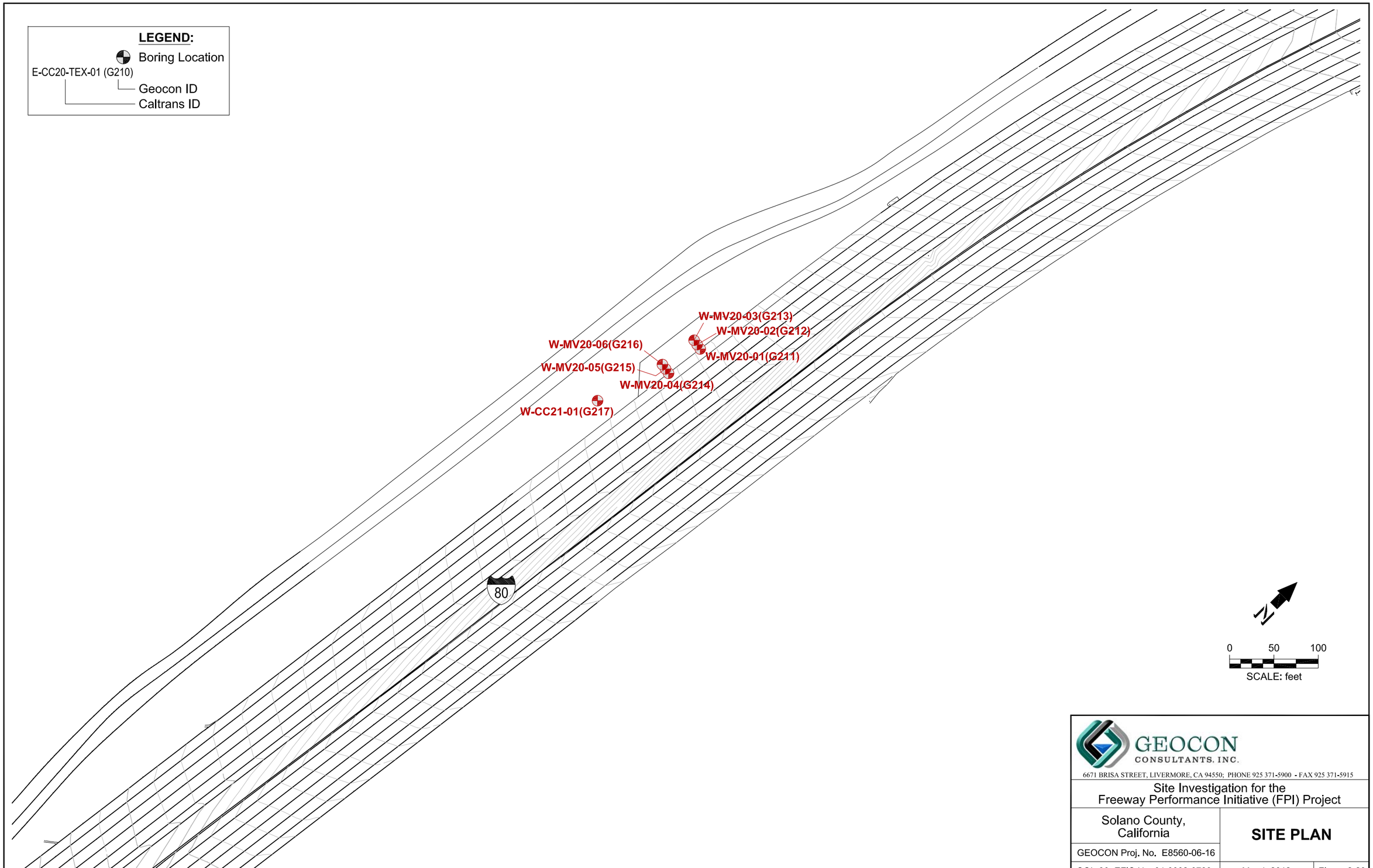
SITE0312



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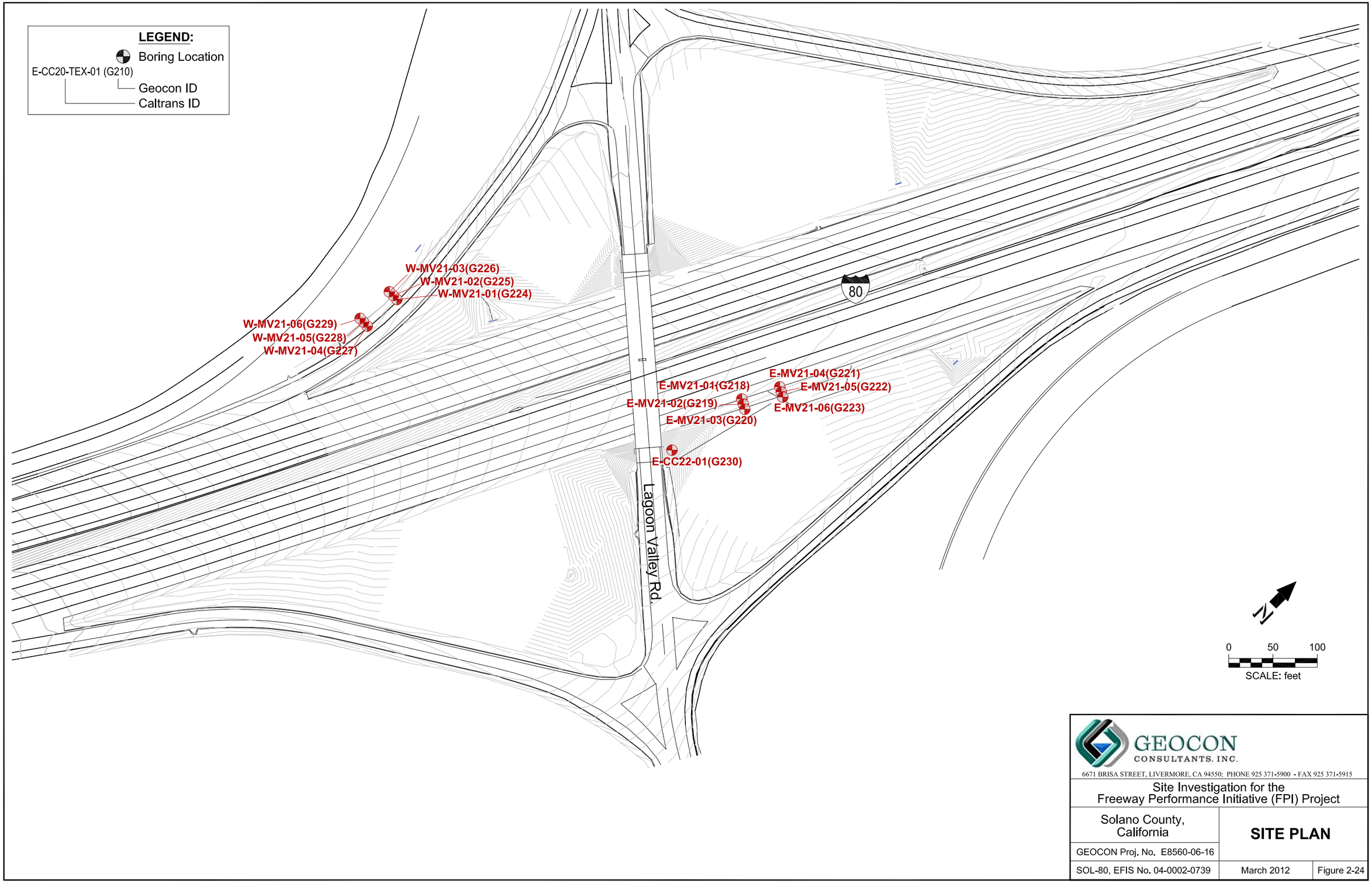
SITE0312



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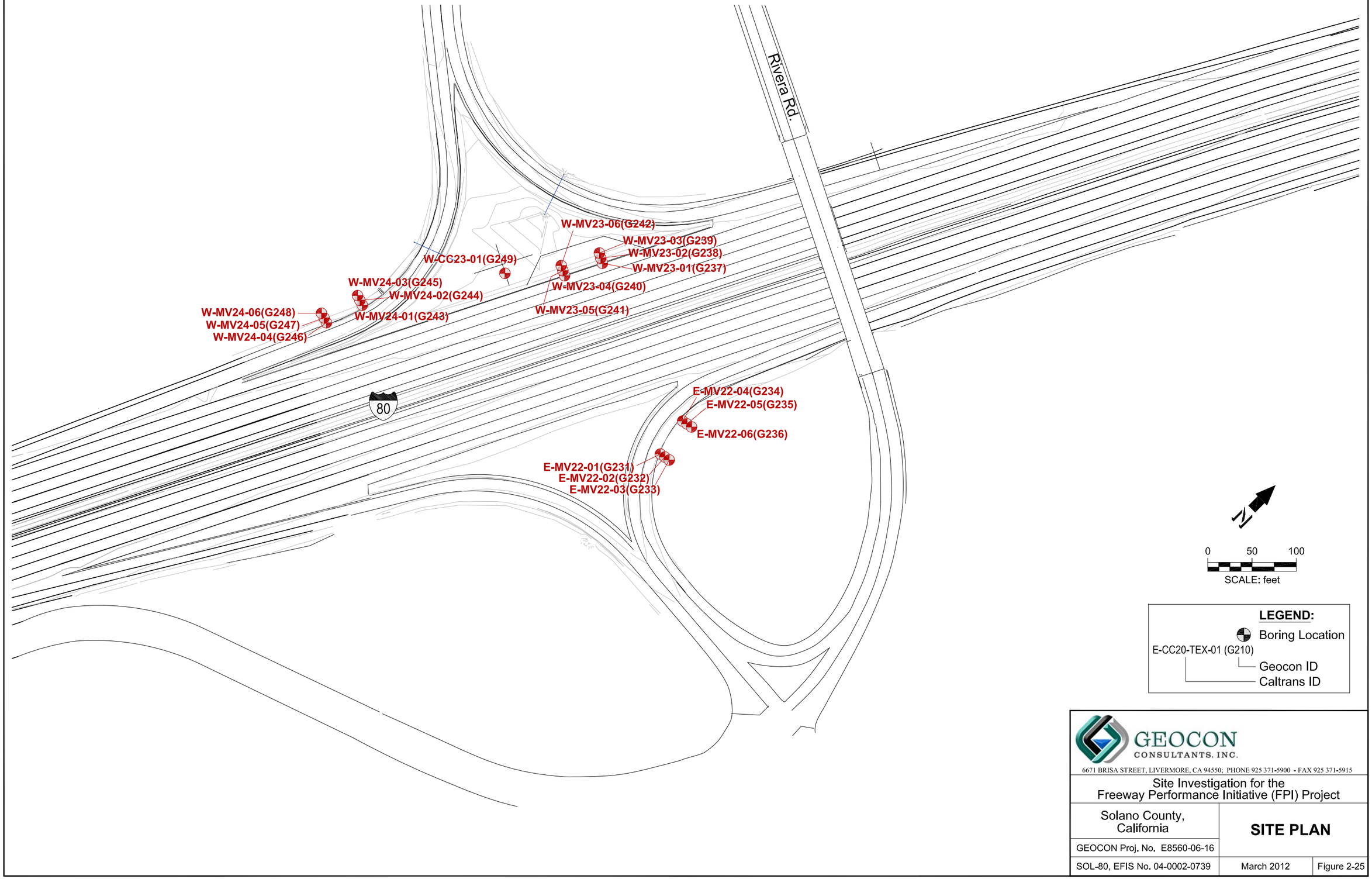
March 2012

Figure 2-24

SITE0312



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Solano County, California	**SITE PLAN**
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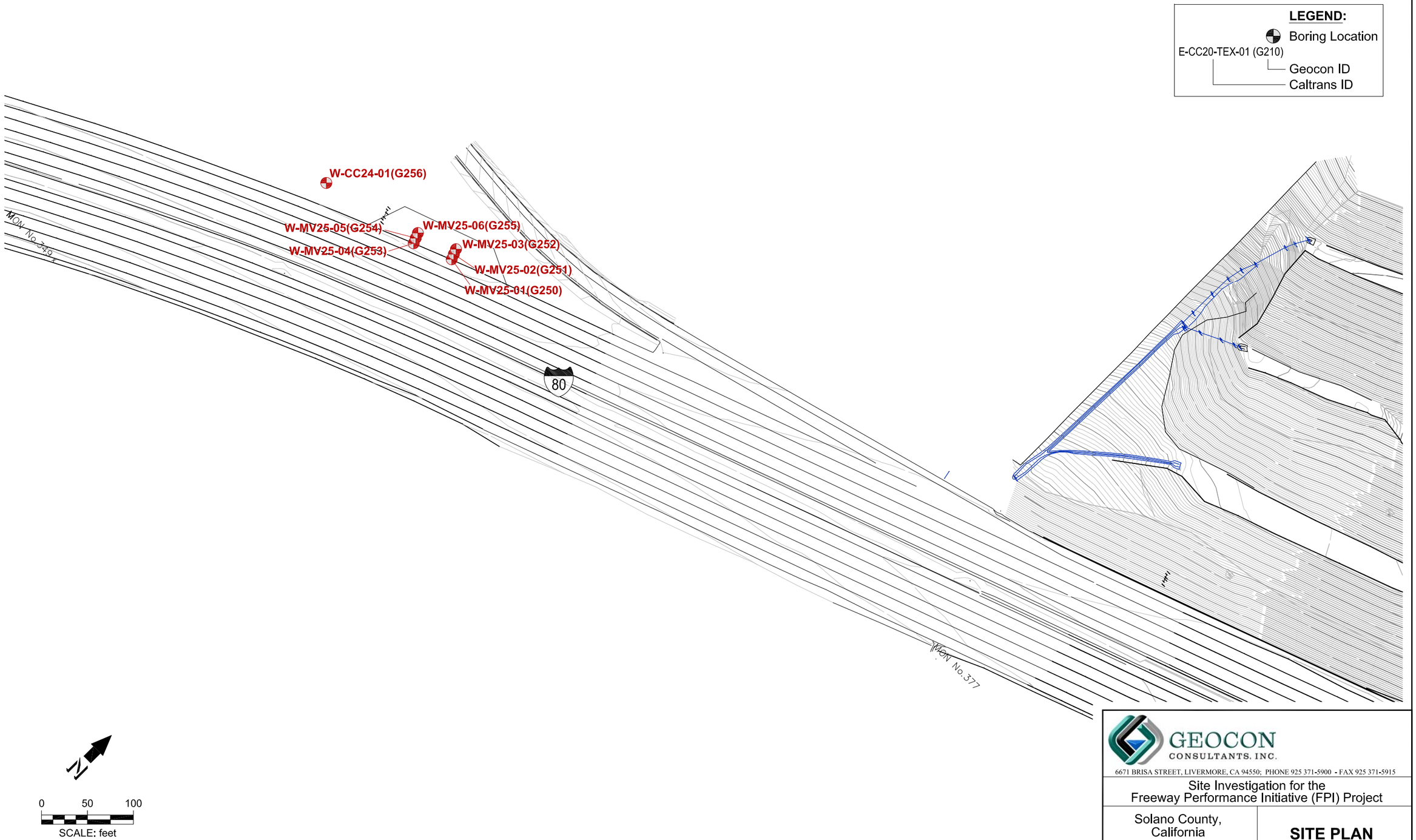
SOL-80, EFIS No. 04-0002-0739	March 2012 — Figure 2-25

SITE0312



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SITE PLAN

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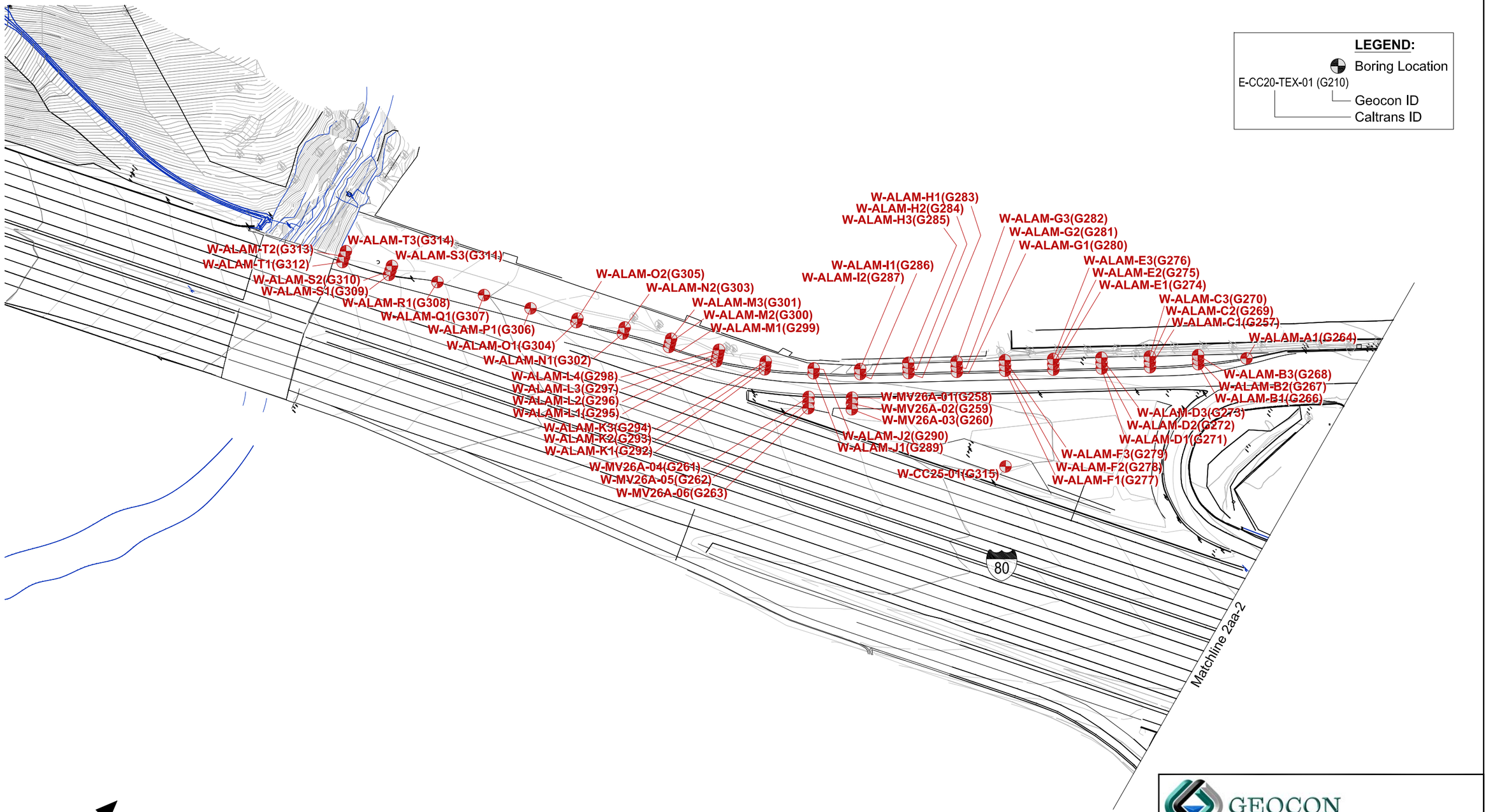
SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-26

SITE0312



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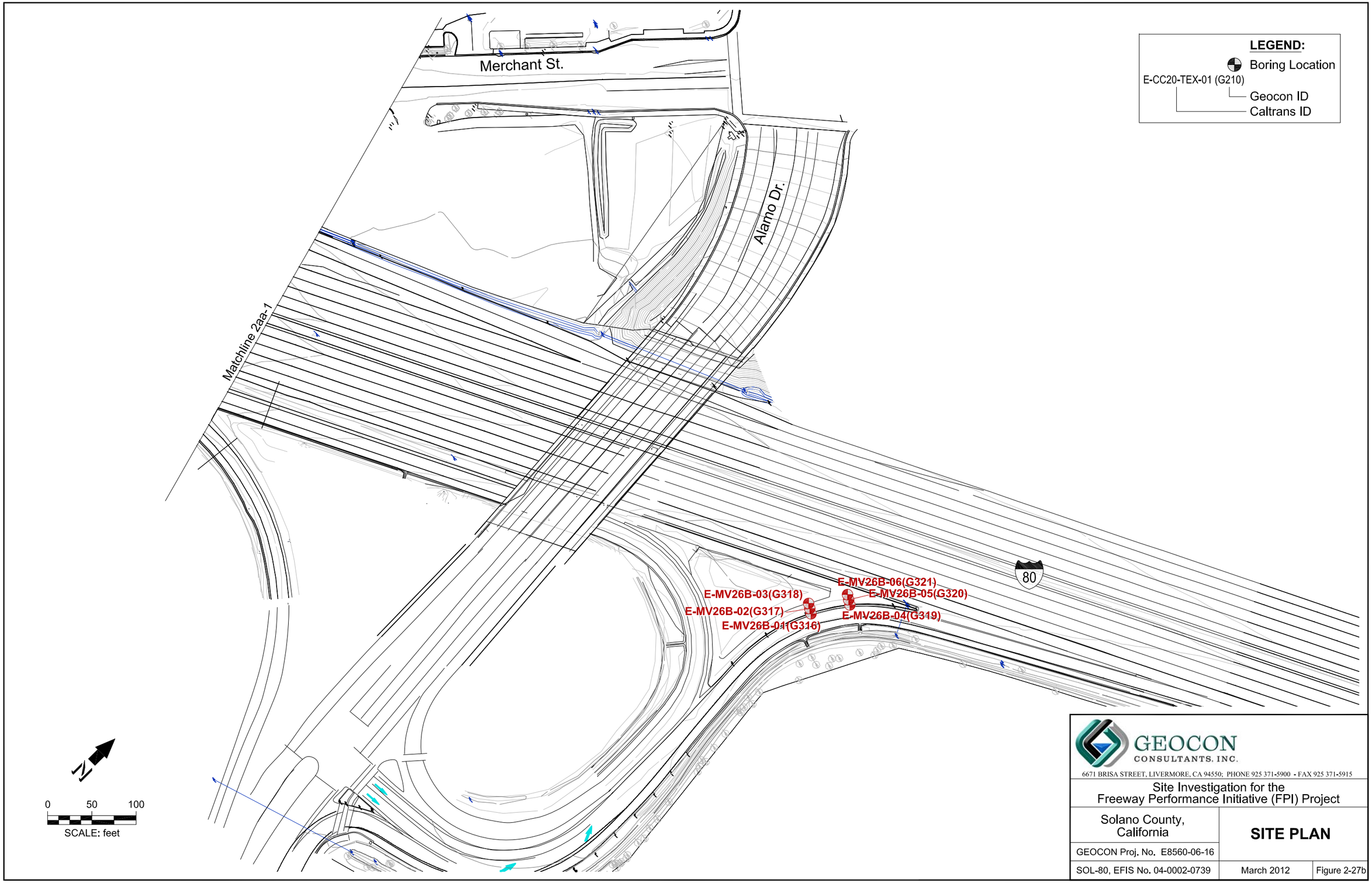
March 2012

Figure 2-27a

SITE0312



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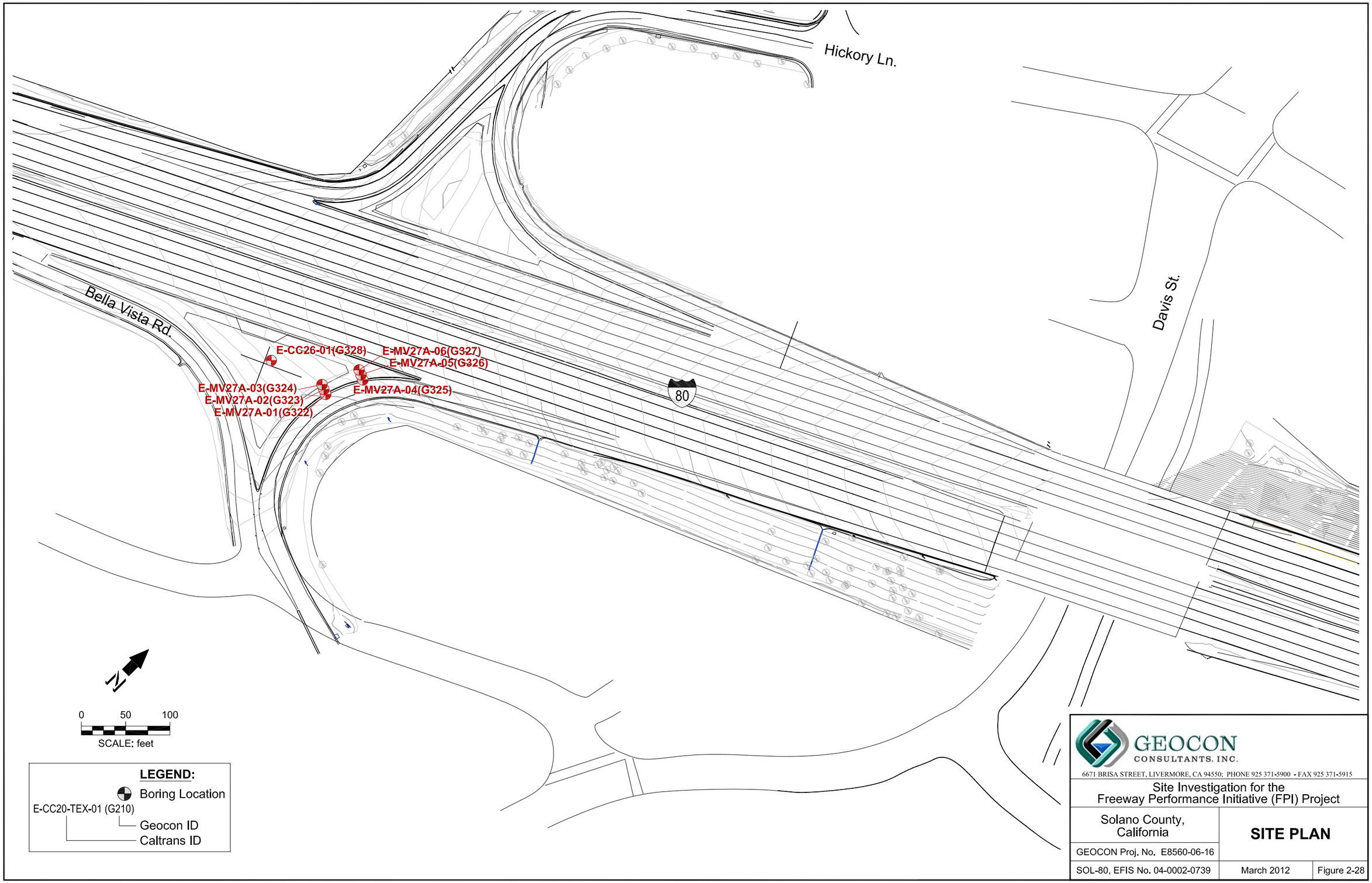
SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-27b

SITE0312



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Site Investigation for the Freeway Performance Initiative (FPI) Project

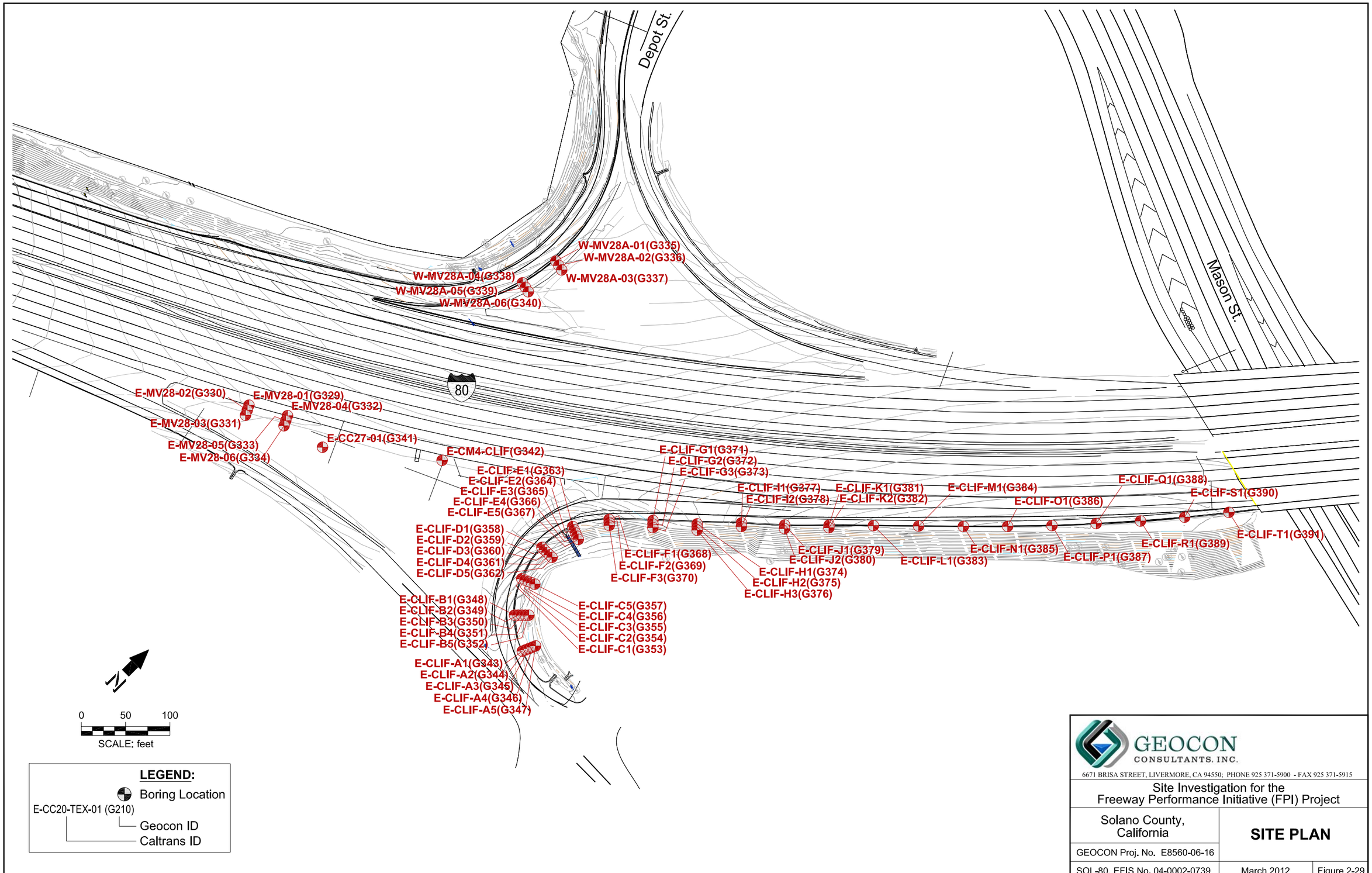
Solano County, California

SITE PLAN

GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-28

SITE0312



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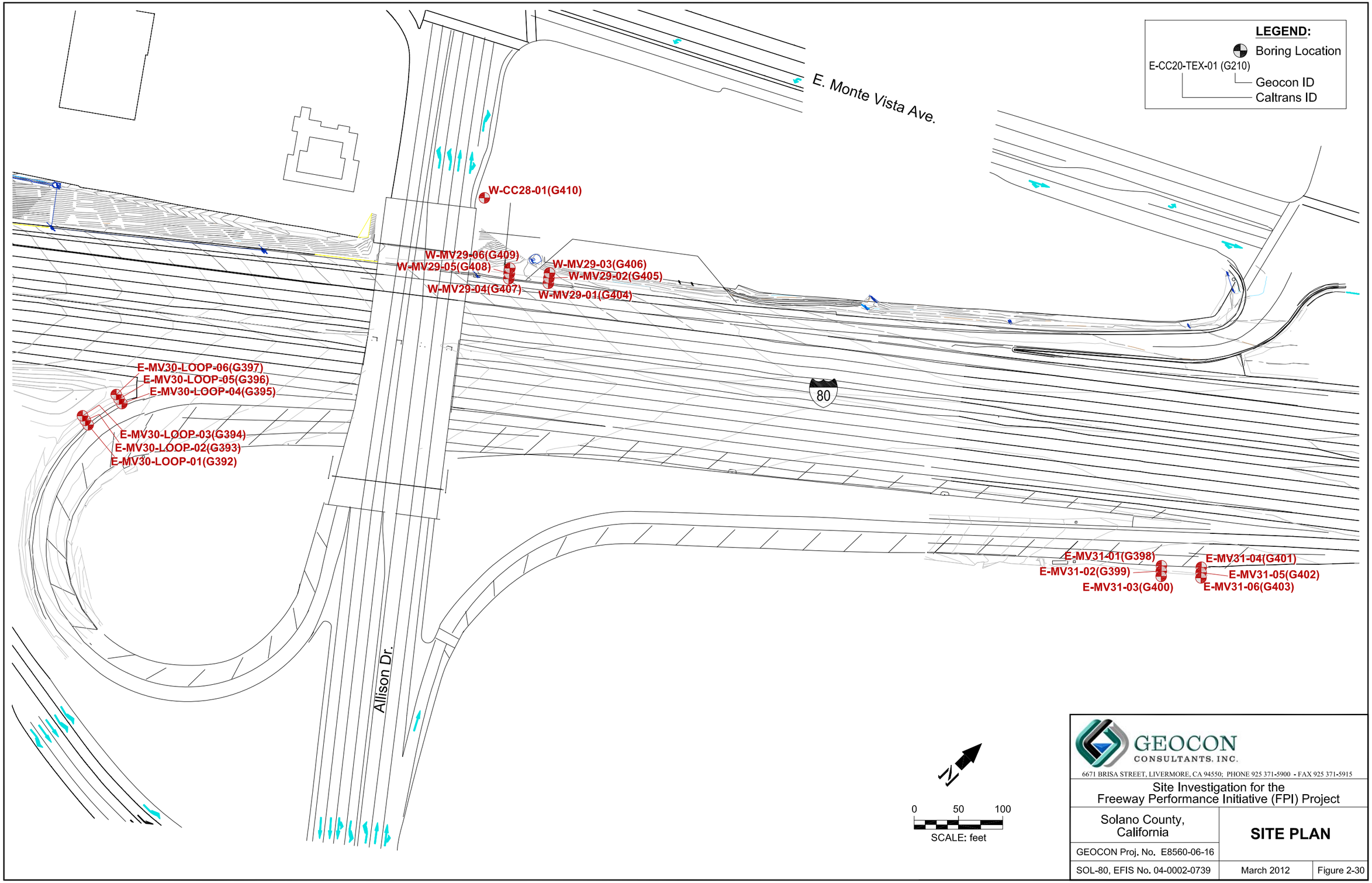
GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-29

SITE0312



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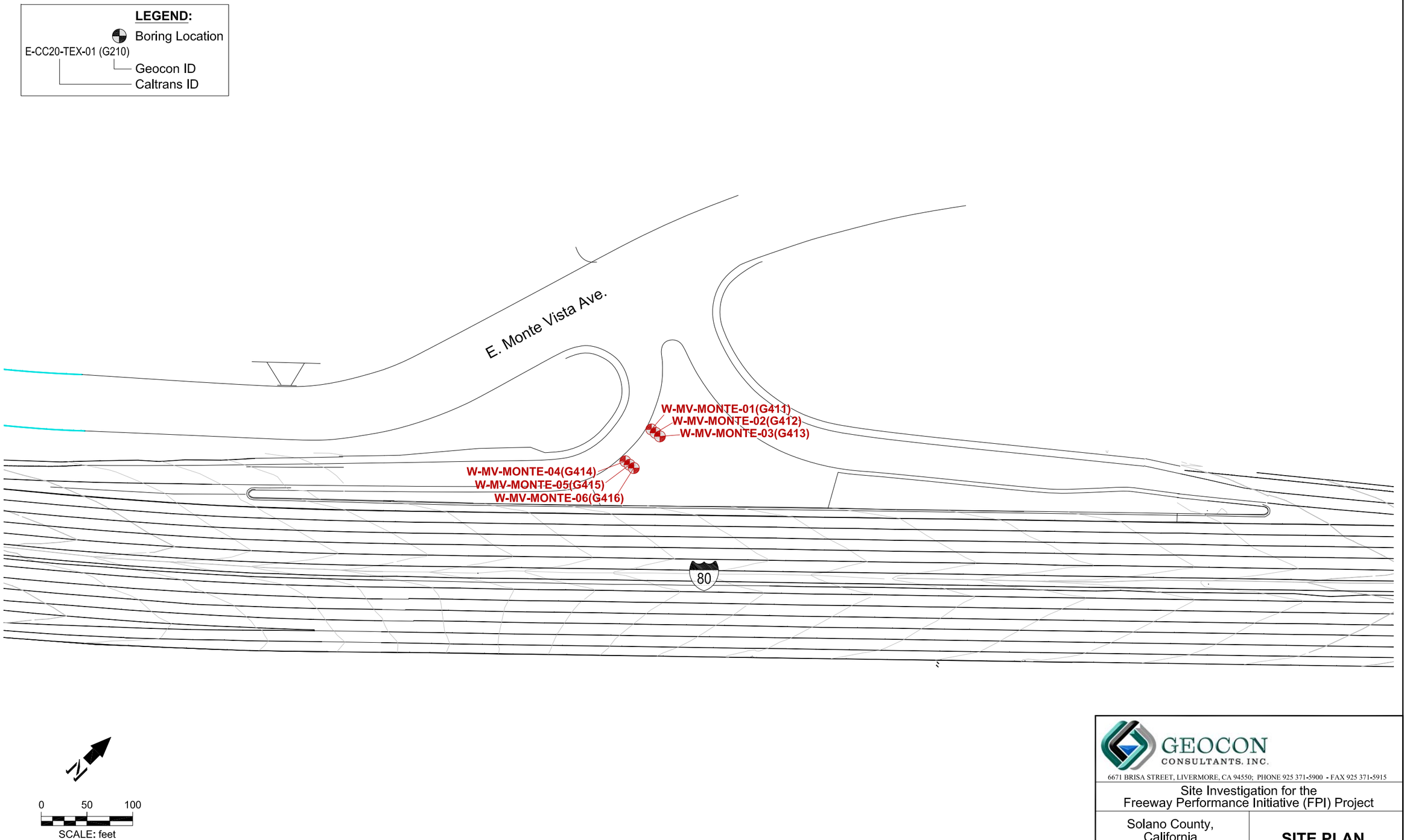
GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-30

SITE0312



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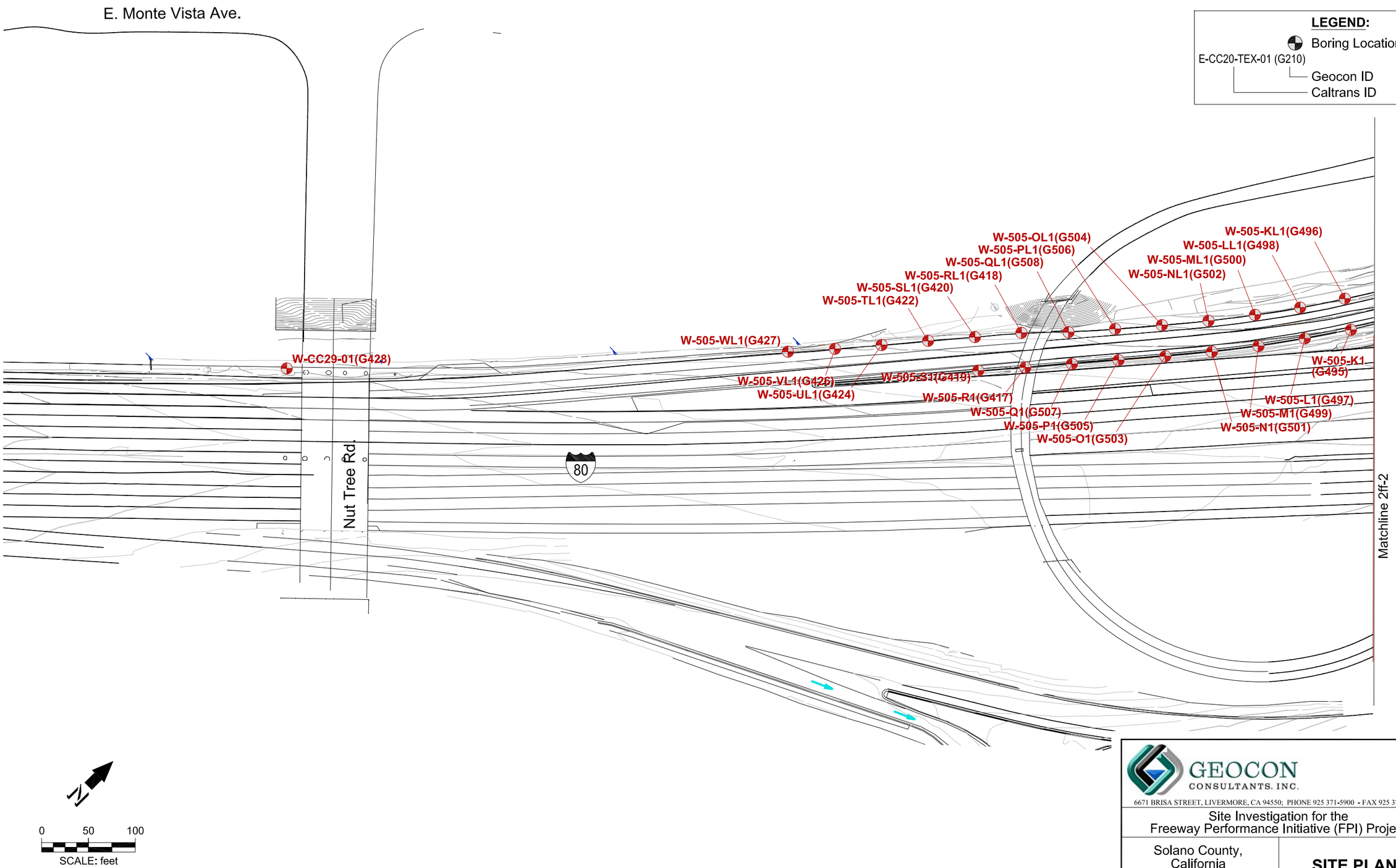
Solano County, California

SITE PLAN

GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-31

SITE0312



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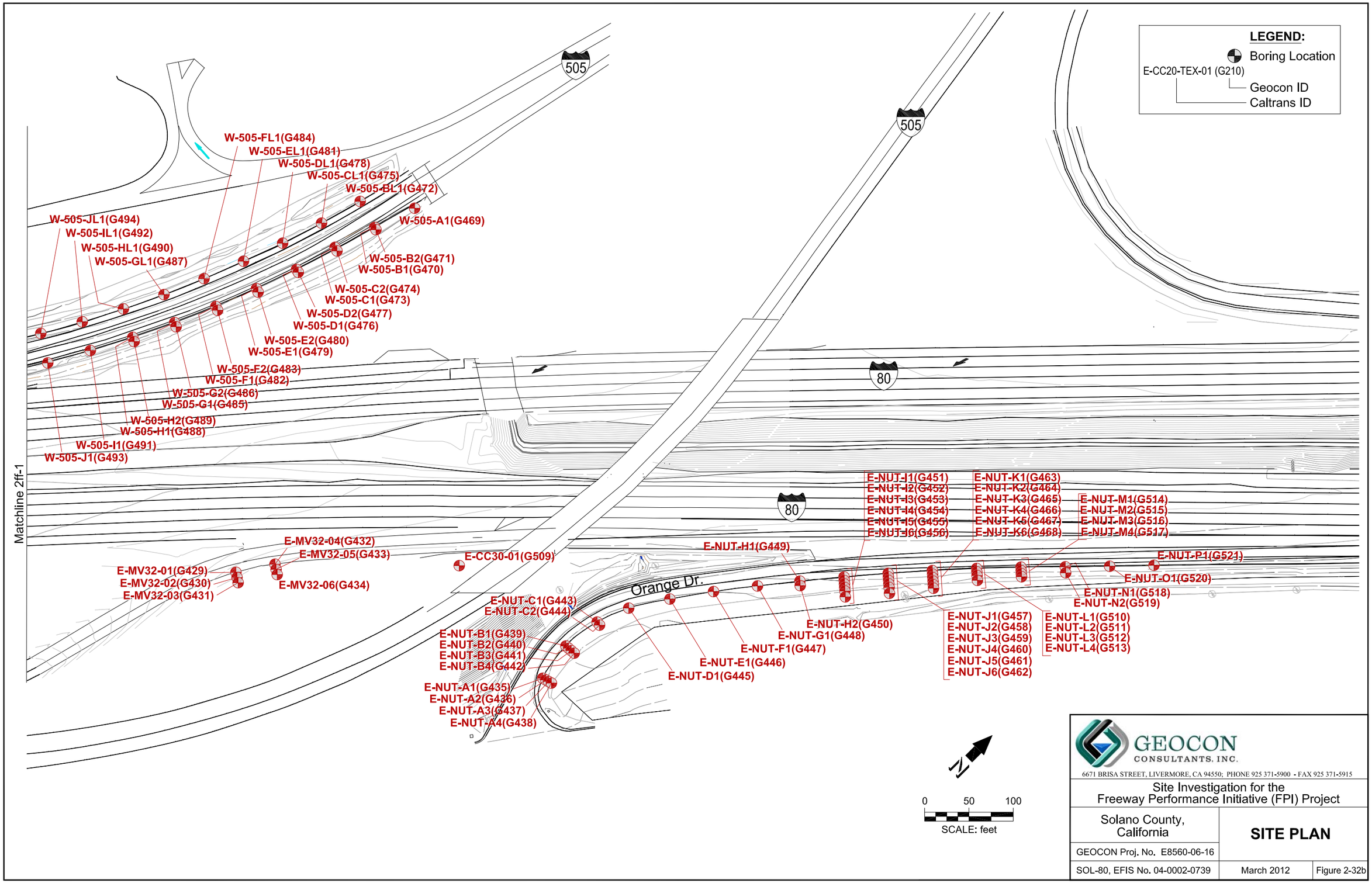
Solano County, California

SITE PLAN

GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-32a

SITE0312



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Site Investigation for the Freeway Performance Initiative (FPI) Project

Solano County, California

SITE PLAN

GEOCON Proj. No. E8560-06-16

SOL-80, EFIS No. 04-0002-0739 | March 2012 | Figure 2-32b

SITE0312

TABLE 1
Boring Coordinates
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Northing	Easting	Figure	Dataset
E-MV1-TEN-01	G1	1,801,883.830	6,495,686.850	2-1	1
E-MV1-TEN-02	G2	1,801,883.940	6,495,692.850	2-1	1
E-MV1-TEN-03	G3	1,801,884.080	6,495,698.840	2-1	1
E-MV1-TEN-04	G4	1,801,928.840	6,495,686.800	2-1	1
E-MV1-TEN-05	G5	1,801,928.970	6,495,692.790	2-1	1
E-MV1-TEN-06	G6	1,801,929.090	6,495,698.800	2-1	1
E-CC1-TEN	G7	1,801,872.450	6,495,793.190	2-1	2
E-CC2	G8	1,804,395.910	6,495,538.390	2-2	3
W-MV2-RED-01	G9	1,806,404.930	6,495,388.280	2-3	4
W-MV2-RED-02	G10	1,806,405.680	6,495,382.310	2-3	4
W-MV2-RED-03	G11	1,806,406.430	6,495,376.360	2-3	4
W-MV2-RED-04	G12	1,806,360.380	6,495,381.830	2-3	4
W-MV2-RED-05	G13	1,806,361.130	6,495,375.880	2-3	4
W-MV2-RED-06	G14	1,806,361.890	6,495,369.930	2-3	4
W-R37-A1	G15	1,813,282.100	6,496,997.070	2-4d	5
W-R37-B1	G16	1,813,255.810	6,497,195.340	2-4d	5
W-R37-C1	G17	1,813,208.120	6,497,380.870	2-4d	5
W-R37-C2	G18	1,813,204.380	6,497,379.280	2-4d	5
W-R37-D1	G19	1,813,124.110	6,497,555.420	2-4d	5
W-R37-D2	G20	1,813,120.200	6,497,552.710	2-4d	5
W-R37-E1	G21	1,813,005.800	6,497,708.740	2-4d	5
W-R37-E2	G22	1,813,002.920	6,497,705.730	2-4d	5
W-R37-F1	G23	1,812,859.830	6,497,836.190	2-4c	5
W-R37-F2	G24	1,812,856.280	6,497,830.570	2-4c	5
W-R37-G1	G33	1,812,690.810	6,497,930.860	2-4c	5
W-R37-H1	G36	1,812,506.410	6,497,990.440	2-4c	5
W-R37-H2	G37	1,812,505.390	6,497,983.710	2-4c	5
W-R37-I1	G40	1,812,313.810	6,498,011.940	2-4b	5
W-R37-I2	G41	1,812,313.980	6,498,007.940	2-4b	5
W-R37-I3	G42	1,812,314.160	6,498,003.940	2-4b	5
W-R37-I4	G43	1,812,314.320	6,497,999.940	2-4b	5
W-R37-I5	G44	1,812,314.520	6,497,995.550	2-4b	5
W-R37-J1	G47	1,812,117.450	6,497,996.540	2-4b	5
W-R37-J2	G48	1,812,118.060	6,497,992.410	2-4b	5
W-R37-J3	G49	1,812,118.650	6,497,988.350	2-4b	5
W-R37-K1	G52	1,811,931.430	6,497,942.980	2-4b	5
W-R37-K2	G53	1,811,932.980	6,497,939.310	2-4b	5
W-R37-K3	G54	1,811,935.130	6,497,934.190	2-4b	5
W-R37-K4	G55	1,811,937.290	6,497,929.100	2-4b	5
W-R37-L1	G56	1,811,749.590	6,497,862.460	2-4b	5
W-R37-L2	G57	1,811,751.340	6,497,858.860	2-4b	5
W-R37-L3	G58	1,811,753.060	6,497,855.300	2-4b	5
W-R37-L4	G59	1,811,754.750	6,497,851.760	2-4b	5
W-R37-M1	G60	1,811,569.490	6,497,775.470	2-4b	5
W-R37-M2	G61	1,811,571.240	6,497,771.870	2-4b	5
W-R37-M3	G62	1,811,572.960	6,497,768.310	2-4b	5
W-R37-M4	G63	1,811,574.650	6,497,764.770	2-4b	5
W-R37-N1	G64	1,811,389.270	6,497,688.760	2-4b	5
W-R37-N2	G65	1,811,391.790	6,497,683.570	2-4b	5

TABLE 1
Boring Coordinates
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Northing	Easting	Figure	Dataset
W-R37-N3	G66	1,811,394.300	6,497,678.370	2-4b	5
W-R37-O1	G68	1,811,209.120	6,497,601.900	2-4a	5
W-R37-O2	G69	1,811,210.850	6,497,598.310	2-4a	5
W-R37-O3	G70	1,811,212.510	6,497,594.870	2-4a	5
W-R37-O4	G71	1,811,214.120	6,497,591.470	2-4a	5
W-R37-P1	G72	1,811,028.830	6,497,515.190	2-4a	5
W-R37-P2	G73	1,811,030.650	6,497,511.600	2-4a	5
W-R37-P3	G74	1,811,032.310	6,497,508.090	2-4a	5
W-R37-P4	G75	1,811,033.950	6,497,504.650	2-4a	5
W-R37-Q1	G76	1,810,849.550	6,497,426.180	2-4a	5
W-R37-Q2	G77	1,810,851.370	6,497,422.590	2-4a	5
W-R37-Q3	G78	1,810,853.080	6,497,419.210	2-4a	5
W-R37-Q4	G79	1,810,854.780	6,497,415.850	2-4a	5
W-R37-R1	G80	1,810,671.110	6,497,335.860	2-4a	5
W-R37-R2	G81	1,810,672.920	6,497,332.270	2-4a	5
W-R37-R3	G82	1,810,674.680	6,497,328.800	2-4a	5
W-R37-R4	G83	1,810,676.410	6,497,325.380	2-4a	5
W-R37-S1	G84	1,810,492.780	6,497,245.300	2-4a	5
W-R37-S2	G85	1,810,494.600	6,497,241.720	2-4a	5
W-R37-S3	G86	1,810,496.280	6,497,238.380	2-4a	5
W-R37-S4	G87	1,810,497.950	6,497,235.100	2-4a	5
W-R37-T1	G88	1,810,313.920	6,497,155.800	2-4a	5
W-R37-T2	G89	1,810,315.740	6,497,152.220	2-4a	5
W-R37-T3	G90	1,810,317.640	6,497,148.430	2-4a	5
W-R37-T4	G91	1,810,319.610	6,497,144.570	2-4a	5
W-R37-U1	G92	1,810,135.320	6,497,065.780	2-4a	5
W-R37-U2	G93	1,810,137.140	6,497,062.190	2-4a	5
W-R37-U3	G94	1,810,139.150	6,497,058.200	2-4a	5
W-R37-U4	G95	1,810,141.210	6,497,054.170	2-4a	5
E-MV3-01	G27	1,811,289.770	6,497,802.710	2-4b	6
E-MV3-02	G28	1,811,287.100	6,497,808.080	2-4b	6
E-MV3-03	G29	1,811,284.560	6,497,813.520	2-4b	6
E-MV3-04	G30	1,811,329.910	6,497,823.080	2-4b	6
E-MV3-05	G31	1,811,327.300	6,497,828.490	2-4b	6
E-MV3-06	G32	1,811,324.690	6,497,833.900	2-4b	6
E-CC4-01	G67	1,811,361.110	6,497,857.150	2-4b	7
W-R37-FL1	G25	1,812,876.010	6,497,861.850	2-4c	8
W-R37-FL2	G26	1,812,878.590	6,497,865.940	2-4c	8
W-R37-GL1	G34	1,812,703.230	6,497,963.860	2-4c	8
W-R37-GL2	G35	1,812,704.820	6,497,967.990	2-4c	8
W-R37-HL1	G38	1,812,511.970	6,498,024.860	2-4c	8
W-R37-HL2	G39	1,812,512.640	6,498,029.200	2-4c	8
W-R37-IL1	G45	1,812,312.300	6,498,046.580	2-4b	8
W-R37-IL2	G46	1,812,312.130	6,498,050.580	2-4b	8
W-R37-JL1	G50	1,812,113.020	6,498,026.720	2-4b	8
W-R37-JL2	G51	1,812,112.310	6,498,031.550	2-4b	8
W-MV3C-LOOP-01	G108	1,813,349.960	6,498,413.360	2-4c	9
W-MV3C-LOOP-02	G109	1,813,354.570	6,498,417.190	2-4c	9
W-MV3C-LOOP-03	G110	1,813,359.190	6,498,421.020	2-4c	9

TABLE 1
Boring Coordinates
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Northing	Easting	Figure	Dataset
W-MV3C-LOOP-04	G111	1,813,321.210	6,498,447.980	2-4c	9
W-MV3C-LOOP-05	G112	1,813,325.830	6,498,451.810	2-4c	9
W-MV3C-LOOP-06	G113	1,813,330.450	6,498,455.650	2-4c	9
E-MV3B-01	G102	1,812,810.310	6,498,687.220	2-4c	10
E-MV3B-02	G103	1,812,809.260	6,498,693.130	2-4c	10
E-MV3B-03	G104	1,812,808.200	6,498,699.030	2-4c	10
E-MV3B-04	G105	1,812,854.640	6,498,694.970	2-4c	10
E-MV3B-05	G106	1,812,853.590	6,498,701.030	2-4c	10
E-MV3B-06	G107	1,812,852.500	6,498,706.930	2-4c	10
E-MV3A-01	G96	1,814,526.060	6,499,393.060	2-5	11
E-MV3A-02	G97	1,814,525.520	6,499,399.040	2-5	11
E-MV3A-03	G98	1,814,525.070	6,499,404.180	2-5	11
E-MV3A-04	G99	1,814,570.690	6,499,397.040	2-5	11
E-MV3A-05	G100	1,814,570.350	6,499,403.030	2-5	11
E-MV3A-06	G101	1,814,569.910	6,499,409.010	2-5	11
W-CC5-01	G114	1,817,577.560	6,499,372.240	2-6	12
W-MV4-01	G115	1,821,796.590	6,501,962.060	2-7	13
W-MV4-02	G116	1,821,800.900	6,501,957.880	2-7	13
W-MV4-03	G117	1,821,805.200	6,501,953.690	2-7	13
W-MV4-04	G118	1,821,765.480	6,501,929.550	2-7	13
W-MV4-05	G119	1,821,769.780	6,501,925.370	2-7	13
W-MV4-06	G120	1,821,774.080	6,501,921.190	2-7	13
W-CC6-01	G121	1,821,870.290	6,501,997.110	2-7	14
W-MV6-AME-01	G128	1,823,387.280	6,503,753.670	2-8	15
W-MV6-AME-02	G129	1,823,391.250	6,503,749.170	2-8	15
W-MV6-AME-03	G130	1,823,395.230	6,503,744.670	2-8	15
W-MV6-AME-04	G131	1,823,353.570	6,503,723.860	2-8	15
W-MV6-AME-05	G132	1,823,357.530	6,503,719.380	2-8	15
W-MV6-AME-06	G133	1,823,361.510	6,503,714.870	2-8	15
W-CM1-01	G134	1,823,686.310	6,504,126.060	2-8	16
E-MV5-AME-01	G122	1,823,794.890	6,504,665.280	2-8	17
E-MV5-AME-02	G123	1,823,790.930	6,504,669.790	2-8	17
E-MV5-AME-03	G124	1,823,786.960	6,504,674.290	2-8	17
E-MV5-AME-04	G125	1,823,829.030	6,504,694.600	2-8	17
E-MV5-AME-05	G126	1,823,825.070	6,504,699.110	2-8	17
E-MV5-AME-06	G127	1,823,821.110	6,504,703.610	2-8	17
W-MV7A-01	G135	1,827,008.660	6,507,079.720	2-9	18
W-MV7A-02	G136	1,827,012.420	6,507,075.400	2-9	18
W-MV7A-03	G137	1,827,016.370	6,507,070.880	2-9	18
W-MV7A-04	G138	1,826,974.560	6,507,050.350	2-9	18
W-MV7A-05	G139	1,826,978.500	6,507,045.830	2-9	18
W-MV7A-06	G140	1,826,982.190	6,507,041.080	2-9	18
W-CC7-01	G141	1,827,460.470	6,507,553.810	2-9	19
W-CC8-01	G142	1,829,204.280	6,509,357.050	2-10	20
E-CC9-01	G143	1,830,169.450	6,512,056.800	2-11	21
E-CM2	G144	1,830,287.090	6,512,210.330	2-11	22
W-CC10-01	G151	1,833,069.840	6,514,243.920	2-12	23
W-MV9-01	G145	1,833,132.130	6,514,326.840	2-12	24
W-MV9-02	G146	1,833,135.970	6,514,322.250	2-12	24

TABLE 1
Boring Coordinates
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Northing	Easting	Figure	Dataset
W-MV9-03	G147	1,833,139.820	6,514,317.640	2-12	24
W-MV9-04	G148	1,833,097.920	6,514,297.600	2-12	24
W-MV9-05	G149	1,833,101.650	6,514,292.680	2-12	24
W-MV9-06	G150	1,833,105.660	6,514,288.340	2-12	24
E-CC11-01	G152	1,841,933.540	6,523,577.690	2-13	25
E-MV11-01	G153	1,842,836.470	6,524,560.710	2-14	26
E-MV11-02	G154	1,842,831.670	6,524,564.330	2-14	26
E-MV11-03	G155	1,842,827.360	6,524,568.520	2-14	26
E-MV11-04	G156	1,842,866.000	6,524,595.130	2-14	26
E-MV11-05	G157	1,842,861.850	6,524,598.820	2-14	26
E-MV11-06	G158	1,842,856.550	6,524,602.540	2-14	26
E-CM3	G159	1,842,903.400	6,524,641.210	2-14	27
W-CC12-01	G166	1,848,303.620	6,533,234.490	2-15a	28
W-MV12-01	G160	1,848,350.370	6,533,350.850	2-15a	29
W-MV12-02	G161	1,848,355.160	6,533,347.230	2-15a	29
W-MV12-03	G162	1,848,360.380	6,533,344.250	2-15a	29
W-MV12-04	G163	1,848,325.590	6,533,313.290	2-15a	29
W-MV12-05	G164	1,848,330.740	6,533,309.890	2-15a	29
W-MV12-06	G165	1,848,335.600	6,533,306.680	2-15a	29
E-MV13-01	G167	1,849,187.060	6,535,260.750	2-15b	30
E-MV13-02	G168	1,849,181.660	6,535,263.380	2-15b	30
E-MV13-03	G169	1,849,177.580	6,535,266.620	2-15b	30
E-MV13-04	G170	1,849,209.340	6,535,300.710	2-15b	30
E-MV13-05	G171	1,849,204.310	6,535,304.020	2-15b	30
E-MV13-06	G172	1,849,199.100	6,535,306.150	2-15b	30
E-CC13-01	G173	1,849,211.330	6,535,447.470	2-15b	31
E-CC14-01	G180	1,850,038.990	6,536,896.290	2-16	32
E-MV14-01	G174	1,850,125.180	6,536,959.640	2-16	33
E-MV14-02	G175	1,850,119.940	6,536,962.550	2-16	33
E-MV14-03	G176	1,850,114.690	6,536,965.460	2-16	33
E-MV14-04	G177	1,850,147.790	6,536,998.560	2-16	33
E-MV14-05	G178	1,850,142.550	6,537,001.470	2-16	33
E-MV14-06	G179	1,850,137.300	6,537,004.380	2-16	33
E-MV15-01	G181	1,851,989.680	6,540,751.190	2-17	34
E-MV15-02	G182	1,851,984.490	6,540,754.280	2-17	34
E-MV15-03	G183	1,851,979.540	6,540,757.890	2-17	34
E-MV15-04	G184	1,852,008.560	6,540,793.060	2-17	34
E-MV15-05	G185	1,852,002.550	6,540,795.980	2-17	34
E-MV15-06	G186	1,851,997.090	6,540,798.450	2-17	34
E-CC15-01	G187	1,852,029.630	6,540,876.880	2-17	35
W-CC16-01	G188	1,856,111.410	6,543,747.800	2-18	36
E-CC17-01	G195	1,857,888.350	6,545,174.350	2-19	37
E-MV16-01	G189	1,857,936.550	6,545,189.090	2-19	38
E-MV16-02	G190	1,857,932.770	6,545,194.620	2-19	38
E-MV16-03	G191	1,857,929.400	6,545,199.550	2-19	38
E-MV16-04	G192	1,857,973.820	6,545,214.300	2-19	38
E-MV16-05	G193	1,857,970.140	6,545,219.690	2-19	38
E-MV16-06	G194	1,857,966.570	6,545,224.900	2-19	38
E-MV17-01	G196	1,861,239.330	6,547,399.350	2-20	39

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Boring ID	Sample ID	Northing	Easting	Figure	Dataset
E-MV17-02	G197	1,861,236.390	6,547,404.600	2-20	39
E-MV17-03	G198	1,861,232.680	6,547,409.340	2-20	39
E-MV17-04	G199	1,861,277.040	6,547,423.910	2-20	39
E-MV17-05	G200	1,861,273.640	6,547,429.020	2-20	39
E-MV17-06	G201	1,861,270.320	6,547,434.010	2-20	39
E-CC18-01	G202	1,861,298.650	6,547,477.310	2-20	40
E-CC19-01	G203	1,865,626.830	6,550,360.550	2-21	41
E-CC20-TEX-01	G210	1,869,317.460	6,552,029.700	2-22	42
W-MV19A-TEX-01	G204	1,870,097.800	6,551,837.340	2-22	43
W-MV19A-TEX-02	G205	1,870,097.940	6,551,831.340	2-22	43
W-MV19A-TEX-03	G206	1,870,098.070	6,551,825.350	2-22	43
W-MV19A-TEX-04	G207	1,870,052.810	6,551,836.320	2-22	43
W-MV19A-TEX-05	G208	1,870,052.950	6,551,830.320	2-22	43
W-MV19A-TEX-06	G209	1,870,053.090	6,551,824.110	2-22	43
W-CC21-01	G217	1,875,445.250	6,552,084.750	2-23	44
W-MV20-01	G211	1,875,568.410	6,552,125.360	2-23	45
W-MV20-02	G212	1,875,569.440	6,552,119.450	2-23	45
W-MV20-03	G213	1,875,570.460	6,552,113.530	2-23	45
W-MV20-04	G214	1,875,523.760	6,552,119.480	2-23	45
W-MV20-05	G215	1,875,524.790	6,552,113.570	2-23	45
W-MV20-06	G216	1,875,525.820	6,552,107.650	2-23	45
W-MV21-01	G224	1,880,091.640	6,554,543.300	2-24	46
W-MV21-02	G225	1,880,091.900	6,554,537.310	2-24	46
W-MV21-03	G226	1,880,091.810	6,554,531.150	2-24	46
W-MV21-04	G227	1,880,046.700	6,554,540.850	2-24	46
W-MV21-05	G228	1,880,046.980	6,554,534.700	2-24	46
W-MV21-06	G229	1,880,047.230	6,554,529.030	2-24	46
E-CC22-01	G230	1,880,191.030	6,554,883.060	2-24	47
E-MV21-01	G218	1,880,287.590	6,554,898.000	2-24	48
E-MV21-02	G219	1,880,284.720	6,554,903.270	2-24	48
E-MV21-03	G220	1,880,281.810	6,554,908.520	2-24	48
E-MV21-04	G221	1,880,327.610	6,554,918.620	2-24	48
E-MV21-05	G222	1,880,324.720	6,554,923.870	2-24	48
E-MV21-06	G223	1,880,321.830	6,554,929.140	2-24	48
W-MV24-01	G243	1,883,705.410	6,556,398.040	2-25	49
W-MV24-02	G244	1,883,707.350	6,556,392.360	2-25	49
W-MV24-03	G245	1,883,709.300	6,556,386.680	2-25	49
W-MV24-04	G246	1,883,662.840	6,556,383.450	2-25	49
W-MV24-05	G247	1,883,664.780	6,556,377.770	2-25	49
W-MV24-06	G248	1,883,666.400	6,556,371.980	2-25	49
W-CC23-01	G249	1,883,844.730	6,556,486.550	2-25	50
W-MV23-01	G237	1,883,930.570	6,556,556.320	2-25	51
W-MV23-02	G238	1,883,933.280	6,556,550.960	2-25	51
W-MV23-03	G239	1,883,936.290	6,556,545.760	2-25	51
W-MV23-04	G240	1,883,890.410	6,556,536.020	2-25	51
W-MV23-05	G241	1,883,893.110	6,556,530.670	2-25	51
W-MV23-06	G242	1,883,895.820	6,556,525.310	2-25	51
E-MV22-01	G231	1,883,824.550	6,556,754.800	2-25	52
E-MV22-02	G232	1,883,825.710	6,556,760.680	2-25	52

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Boring ID	Sample ID	Northing	Easting	Figure	Dataset
E-MV22-03	G233	1,883,826.870	6,556,766.570	2-25	52
E-MV22-04	G234	1,883,868.730	6,556,746.250	2-25	52
E-MV22-05	G235	1,883,869.860	6,556,751.970	2-25	52
E-MV22-06	G236	1,883,871.060	6,556,758.070	2-25	52
W-CC24-01	G256	1,886,486.600	6,558,892.100	2-26	53
W-MV25-01	G250	1,886,524.360	6,559,047.280	2-26	54
W-MV25-02	G251	1,886,529.920	6,559,045.020	2-26	54
W-MV25-03	G252	1,886,535.330	6,559,042.810	2-26	54
W-MV25-04	G253	1,886,507.410	6,559,005.690	2-26	54
W-MV25-05	G254	1,886,512.930	6,559,003.340	2-26	54
W-MV25-06	G255	1,886,518.480	6,559,001.080	2-26	54
W-ALAM-A1	G264	1,888,012.750	6,561,952.220	2-27a	55
W-ALAM-B1	G266	1,887,973.240	6,561,921.210	2-27a	55
W-ALAM-B2	G267	1,887,976.440	6,561,917.840	2-27a	55
W-ALAM-B3	G268	1,887,979.630	6,561,914.470	2-27a	55
W-ALAM-C1	G257	1,887,935.700	6,561,888.090	2-27a	55
W-ALAM-C2	G269	1,887,939.550	6,561,884.080	2-27a	55
W-ALAM-C3	G270	1,887,943.380	6,561,880.040	2-27a	55
W-ALAM-D1	G271	1,887,899.450	6,561,853.690	2-27a	55
W-ALAM-D2	G272	1,887,903.350	6,561,849.580	2-27a	55
W-ALAM-D3	G273	1,887,907.110	6,561,845.630	2-27a	55
W-ALAM-E1	G274	1,887,863.280	6,561,819.170	2-27a	55
W-ALAM-E2	G275	1,887,867.090	6,561,815.160	2-27a	55
W-ALAM-E3	G276	1,887,870.840	6,561,811.200	2-27a	55
W-ALAM-F1	G277	1,887,827.120	6,561,784.660	2-27a	55
W-ALAM-F2	G278	1,887,830.830	6,561,780.730	2-27a	55
W-ALAM-F3	G279	1,887,834.580	6,561,776.780	2-27a	55
W-ALAM-G1	G280	1,887,790.950	6,561,750.120	2-27a	55
W-ALAM-G2	G281	1,887,794.600	6,561,746.270	2-27a	55
W-ALAM-G3	G282	1,887,798.320	6,561,742.360	2-27a	55
W-ALAM-H1	G283	1,887,754.750	6,561,715.610	2-27a	55
W-ALAM-H2	G284	1,887,758.400	6,561,711.780	2-27a	55
W-ALAM-H3	G285	1,887,762.060	6,561,707.930	2-27a	55
W-ALAM-I1	G286	1,887,718.610	6,561,681.040	2-27a	55
W-ALAM-I2	G287	1,887,722.210	6,561,677.280	2-27a	55
W-ALAM-J1	G289	1,887,685.000	6,561,646.190	2-27a	55
W-ALAM-J2	G290	1,887,688.670	6,561,642.850	2-27a	55
W-ALAM-K1	G292	1,887,652.150	6,561,607.650	2-27a	55
W-ALAM-K2	G293	1,887,655.360	6,561,605.200	2-27a	55
W-ALAM-K3	G294	1,887,658.560	6,561,602.730	2-27a	55
W-ALAM-L1	G295	1,887,622.820	6,561,566.380	2-27a	55
W-ALAM-L2	G296	1,887,626.190	6,561,564.220	2-27a	55
W-ALAM-L3	G297	1,887,629.540	6,561,562.040	2-27a	55
W-ALAM-L4	G298	1,887,632.920	6,561,559.840	2-27a	55
W-ALAM-M1	G299	1,887,598.440	6,561,521.210	2-27a	55
W-ALAM-M2	G300	1,887,602.240	6,561,518.990	2-27a	55
W-ALAM-M3	G301	1,887,606.040	6,561,516.780	2-27a	55
W-ALAM-N1	G302	1,887,574.540	6,561,477.720	2-27a	55
W-ALAM-N2	G303	1,887,580.220	6,561,474.530	2-27a	55

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Boring ID	Sample ID	Northing	Easting	Figure	Dataset
W-ALAM-O1	G304	1,887,548.910	6,561,435.260	2-27a	55
W-ALAM-O2	G305	1,887,552.170	6,561,433.490	2-27a	55
W-ALAM-P1	G306	1,887,525.400	6,561,391.650	2-27a	55
W-ALAM-Q1	G307	1,887,501.050	6,561,347.820	2-27a	55
W-ALAM-R1	G308	1,887,476.530	6,561,304.240	2-27a	55
W-ALAM-S1	G309	1,887,446.430	6,561,263.540	2-27a	55
W-ALAM-S2	G310	1,887,450.730	6,561,261.310	2-27a	55
W-ALAM-S3	G311	1,887,455.020	6,561,259.070	2-27a	55
W-ALAM-T1	G312	1,887,421.650	6,561,220.060	2-27a	55
W-ALAM-T2	G313	1,887,426.880	6,561,217.350	2-27a	55
W-ALAM-T3	G314	1,887,432.090	6,561,214.640	2-27a	55
W-MV26A-01	G258	1,887,695.310	6,561,692.300	2-27a	56
W-MV26A-02	G259	1,887,690.990	6,561,696.470	2-27a	56
W-MV26A-03	G260	1,887,686.670	6,561,700.630	2-27a	56
W-MV26A-04	G261	1,887,664.080	6,561,659.910	2-27a	56
W-MV26A-05	G262	1,887,659.760	6,561,664.070	2-27a	56
W-MV26A-06	G263	1,887,655.590	6,561,668.090	2-27a	56
W-CC25-01	G315	1,887,757.330	6,561,855.020	2-27a	57
E-MV26B-01	G316	1,887,982.290	6,562,797.870	2-27b	58
E-MV26B-02	G317	1,887,985.490	6,562,792.790	2-27b	58
E-MV26B-03	G318	1,887,988.680	6,562,787.710	2-27b	58
E-MV26B-04	G319	1,888,020.380	6,562,821.840	2-27b	58
E-MV26B-05	G320	1,888,023.570	6,562,816.760	2-27b	58
E-MV26B-06	G321	1,888,026.770	6,562,811.680	2-27b	58
E-CC26-01	G328	1,889,086.580	6,565,009.620	2-28	59
E-MV27A-01	G322	1,889,103.020	6,565,080.130	2-28	60
E-MV27A-02	G323	1,889,105.520	6,565,074.670	2-28	60
E-MV27A-03	G324	1,889,107.940	6,565,069.350	2-28	60
E-MV27A-04	G325	1,889,144.250	6,565,098.190	2-28	60
E-MV27A-05	G326	1,889,146.740	6,565,092.730	2-28	60
E-MV27A-06	G327	1,889,149.230	6,565,087.270	2-28	60
E-MV28-01	G329	1,890,108.890	6,566,997.550	2-29	61
E-MV28-02	G330	1,890,103.520	6,567,000.230	2-29	61
E-MV28-03	G331	1,890,098.130	6,567,002.830	2-29	61
E-MV28-04	G332	1,890,131.290	6,567,036.680	2-29	61
E-MV28-05	G333	1,890,125.900	6,567,039.310	2-29	61
E-MV28-06	G334	1,890,120.500	6,567,041.970	2-29	61
E-CC27-01	G341	1,890,134.060	6,567,089.840	2-29	62
E-CM4-CLIF	G342	1,890,219.100	6,567,195.720	2-29	63
W-MV28A-01	G335	1,890,468.910	6,567,127.530	2-29	64
W-MV28A-02	G336	1,890,467.680	6,567,133.400	2-29	64
W-MV28A-03	G337	1,890,466.450	6,567,139.280	2-29	64
W-MV28A-04	G338	1,890,424.870	6,567,118.290	2-29	64
W-MV28A-05	G339	1,890,423.640	6,567,124.160	2-29	64
W-MV28A-06	G340	1,890,422.410	6,567,130.030	2-29	64
E-CLIF-A1	G343	1,890,130.880	6,567,412.050	2-29	65
E-CLIF-A2	G344	1,890,134.540	6,567,413.680	2-29	65
E-CLIF-A3	G345	1,890,138.220	6,567,415.270	2-29	65
E-CLIF-A4	G346	1,890,141.900	6,567,416.860	2-29	65

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Boring ID	Sample ID	Northing	Easting	Figure	Dataset
E-CLIF-A5	G347	1,890,145.570	6,567,418.450	2-29	65
E-CLIF-B1	G348	1,890,153.380	6,567,377.080	2-29	65
E-CLIF-B2	G349	1,890,156.200	6,567,379.940	2-29	65
E-CLIF-B3	G350	1,890,159.000	6,567,382.790	2-29	65
E-CLIF-B4	G351	1,890,161.810	6,567,385.640	2-29	65
E-CLIF-B5	G352	1,890,164.620	6,567,388.490	2-29	65
E-CLIF-C1	G353	1,890,188.170	6,567,353.790	2-29	65
E-CLIF-C2	G354	1,890,189.710	6,567,357.490	2-29	65
E-CLIF-C3	G355	1,890,191.240	6,567,361.180	2-29	65
E-CLIF-C4	G356	1,890,192.760	6,567,364.840	2-29	65
E-CLIF-C5	G357	1,890,194.310	6,567,368.570	2-29	65
E-CLIF-D1	G358	1,890,229.240	6,567,344.900	2-29	65
E-CLIF-D2	G359	1,890,229.260	6,567,348.900	2-29	65
E-CLIF-D3	G360	1,890,229.300	6,567,352.900	2-29	65
E-CLIF-D4	G361	1,890,229.330	6,567,356.900	2-29	65
E-CLIF-D5	G362	1,890,229.370	6,567,360.900	2-29	65
E-CLIF-E1	G363	1,890,270.520	6,567,352.820	2-29	65
E-CLIF-E2	G364	1,890,269.060	6,567,356.540	2-29	65
E-CLIF-E3	G365	1,890,267.590	6,567,360.260	2-29	65
E-CLIF-E4	G366	1,890,266.120	6,567,363.980	2-29	65
E-CLIF-E5	G367	1,890,264.700	6,567,367.590	2-29	65
E-CLIF-F1	G368	1,890,305.220	6,567,376.160	2-29	65
E-CLIF-F2	G369	1,890,302.830	6,567,378.630	2-29	65
E-CLIF-F3	G370	1,890,300.500	6,567,381.120	2-29	65
E-CLIF-G1	G371	1,890,339.380	6,567,411.970	2-29	65
E-CLIF-G2	G372	1,890,336.520	6,567,414.800	2-29	65
E-CLIF-G3	G373	1,890,333.650	6,567,417.620	2-29	65
E-CLIF-H1	G374	1,890,371.970	6,567,450.060	2-29	65
E-CLIF-H2	G375	1,890,369.420	6,567,452.530	2-29	65
E-CLIF-H3	G376	1,890,366.940	6,567,455.010	2-29	65
E-CLIF-I1	G377	1,890,408.090	6,567,484.670	2-29	65
E-CLIF-I2	G378	1,890,405.200	6,567,487.500	2-29	65
E-CLIF-J1	G379	1,890,440.870	6,567,520.840	2-29	65
E-CLIF-J2	G380	1,890,437.870	6,567,523.490	2-29	65
E-CLIF-K1	G381	1,890,476.240	6,567,556.340	2-29	65
E-CLIF-K2	G382	1,890,474.090	6,567,558.260	2-29	65
E-CLIF-L1	G383	1,890,511.260	6,567,592.110	2-29	65
E-CLIF-M1	G384	1,890,546.980	6,567,628.550	2-29	65
E-CLIF-N1	G385	1,890,582.400	6,567,664.560	2-29	65
E-CLIF-O1	G386	1,890,617.780	6,567,699.870	2-29	65
E-CLIF-P1	G387	1,890,653.820	6,567,734.570	2-29	65
E-CLIF-Q1	G388	1,890,690.780	6,567,768.260	2-29	65
E-CLIF-R1	G389	1,890,728.080	6,567,801.620	2-29	65
E-CLIF-S1	G390	1,890,766.440	6,567,833.870	2-29	65
E-CLIF-T1	G391	1,890,805.610	6,567,865.270	2-29	65
E-MV30-LOOP-01	G392	1,893,156.460	6,570,270.850	2-30	66
E-MV30-LOOP-02	G393	1,893,157.790	6,570,265.000	2-30	66
E-MV30-LOOP-03	G394	1,893,159.110	6,570,259.140	2-30	66
E-MV30-LOOP-04	G395	1,893,200.350	6,570,280.780	2-30	66

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E-MV30-LOOP-05	G396	1,893,201.680	6,570,274.930	2-30	66
E-MV30-LOOP-06	G397	1,893,203.000	6,570,269.080	2-30	66
W-CC28-01	G410	1,893,653.860	6,570,406.030	2-30	67
W-MV29-01	G404	1,893,636.720	6,570,525.240	2-30	68
W-MV29-02	G405	1,893,641.410	6,570,521.500	2-30	68
W-MV29-03	G406	1,893,645.940	6,570,517.900	2-30	68
W-MV29-04	G407	1,893,608.700	6,570,490.030	2-30	68
W-MV29-05	G408	1,893,613.390	6,570,486.290	2-30	68
W-MV29-06	G409	1,893,618.150	6,570,482.390	2-30	68
E-MV31-01	G398	1,893,900.770	6,571,239.940	2-30	69
E-MV31-02	G399	1,893,896.410	6,571,244.060	2-30	69
E-MV31-03	G400	1,893,892.050	6,571,248.190	2-30	69
E-MV31-04	G401	1,893,931.350	6,571,272.980	2-30	69
E-MV31-05	G402	1,893,926.980	6,571,277.090	2-30	69
E-MV31-06	G403	1,893,922.620	6,571,281.210	2-30	69
W-MV-MONTE-01	G411	1,895,062.640	6,572,140.470	2-31	70
W-MV-MONTE-02	G412	1,895,063.240	6,572,146.440	2-31	70
W-MV-MONTE-03	G413	1,895,063.840	6,572,152.410	2-31	70
W-MV-MONTE-04	G414	1,895,017.860	6,572,144.970	2-31	70
W-MV-MONTE-05	G415	1,895,018.460	6,572,150.940	2-31	70
W-MV-MONTE-06	G416	1,895,019.140	6,572,156.750	2-31	70
W-CC29-01	G428	1,896,467.350	6,573,678.940	2-32a	71
W-505-BL1	G472	1,897,720.740	6,574,600.550	2-32b	72
W-505-CL1	G475	1,897,672.570	6,574,587.090	2-32b	72
W-505-DL1	G478	1,897,625.500	6,574,572.020	2-32b	72
W-505-EL1	G481	1,897,579.890	6,574,555.190	2-32b	72
W-505-FL1	G484	1,897,534.460	6,574,537.640	2-32b	72
W-505-GL1	G487	1,897,489.770	6,574,518.360	2-32b	72
W-505-HL1	G490	1,897,445.900	6,574,497.430	2-32b	72
W-505-IL1	G492	1,897,402.800	6,574,474.860	2-32b	72
W-505-JL1	G494	1,897,360.370	6,574,451.000	2-32b	72
W-505-KL1	G496	1,897,319.050	6,574,425.210	2-32a	72
W-505-LL1	G498	1,897,278.550	6,574,398.170	2-32a	72
W-505-ML1	G500	1,897,238.910	6,574,369.570	2-32a	72
W-505-NL1	G502	1,897,199.380	6,574,338.960	2-32a	72
W-505-OL1	G504	1,897,160.910	6,574,307.090	2-32a	72
W-505-PL1	G506	1,897,122.780	6,574,274.630	2-32a	72
W-505-QL1	G508	1,897,085.070	6,574,241.860	2-32a	72
W-505-RL1	G418	1,897,049.010	6,574,206.780	2-32a	72
W-505-SL1	G420	1,897,010.730	6,574,174.880	2-32a	72
W-505-TL1	G422	1,896,972.550	6,574,142.350	2-32a	72
W-505-UL1	G424	1,896,934.240	6,574,110.430	2-32a	72
W-505-VL1	G426	1,896,896.160	6,574,078.100	2-32a	72
W-505-WL1	G427	1,896,858.520	6,574,044.720	2-32a	72
W-505-A1	G469	1,897,758.810	6,574,649.490	2-32b	73
W-505-B1	G470	1,897,711.520	6,574,632.800	2-32b	73
W-505-B2	G471	1,897,710.750	6,574,635.750	2-32b	73
W-505-C1	G473	1,897,664.000	6,574,617.180	2-32b	73
W-505-C2	G474	1,897,662.700	6,574,621.650	2-32b	73

TABLE 1
Boring Coordinates
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Northing	Easting	Figure	Dataset
W-505-D1	G476	1,897,615.600	6,574,604.050	2-32b	73
W-505-D2	G477	1,897,614.700	6,574,607.860	2-32b	73
W-505-E1	G479	1,897,568.320	6,574,587.430	2-32b	73
W-505-E2	G480	1,897,566.860	6,574,591.530	2-32b	73
W-505-F1	G482	1,897,521.670	6,574,569.230	2-32b	73
W-505-F2	G483	1,897,520.020	6,574,573.720	2-32b	73
W-505-G1	G485	1,897,475.800	6,574,549.210	2-32b	73
W-505-G2	G486	1,897,473.730	6,574,553.760	2-32b	73
W-505-H1	G488	1,897,430.680	6,574,527.560	2-32b	73
W-505-H2	G489	1,897,428.390	6,574,532.070	2-32b	73
W-505-I1	G491	1,897,386.320	6,574,504.300	2-32b	73
W-505-J1	G493	1,897,342.450	6,574,480.160	2-32b	73
W-505-K1	G495	1,897,300.100	6,574,453.340	2-32a	73
W-505-L1	G497	1,897,258.690	6,574,425.070	2-32a	73
W-505-M1	G499	1,897,218.010	6,574,395.790	2-32a	73
W-505-N1	G501	1,897,178.490	6,574,364.980	2-32a	73
W-505-O1	G503	1,897,139.950	6,574,333.130	2-32a	73
W-505-P1	G505	1,897,101.790	6,574,300.790	2-32a	73
W-505-Q1	G507	1,897,063.670	6,574,268.410	2-32a	73
W-505-R1	G417	1,897,025.850	6,574,235.890	2-32a	73
W-505-S1	G419	1,896,987.840	6,574,202.740	2-32a	73
E-MV32-01	G429	1,897,325.450	6,574,797.520	2-32b	74
E-MV32-02	G430	1,897,322.200	6,574,802.560	2-32b	74
E-MV32-03	G431	1,897,318.940	6,574,807.610	2-32b	74
E-MV32-04	G432	1,897,363.090	6,574,822.250	2-32b	74
E-MV32-05	G433	1,897,359.810	6,574,827.270	2-32b	74
E-MV32-06	G434	1,897,356.540	6,574,832.330	2-32b	74
E-CC30-01	G509	1,897,508.980	6,574,970.500	2-32b	75
E-NUT-A1	G435	1,897,485.710	6,575,127.010	2-32b	76
E-NUT-A2	G436	1,897,486.840	6,575,130.850	2-32b	76
E-NUT-A3	G437	1,897,487.810	6,575,134.320	2-32b	76
E-NUT-A4	G438	1,897,488.780	6,575,137.830	2-32b	76
E-NUT-B1	G439	1,897,529.940	6,575,119.750	2-32b	76
E-NUT-B2	G440	1,897,530.290	6,575,123.750	2-32b	76
E-NUT-B3	G441	1,897,530.570	6,575,127.790	2-32b	76
E-NUT-B4	G442	1,897,530.900	6,575,132.120	2-32b	76
E-NUT-C1	G443	1,897,574.000	6,575,125.580	2-32b	76
E-NUT-C2	G444	1,897,573.540	6,575,129.980	2-32b	76
E-NUT-D1	G445	1,897,610.370	6,575,139.670	2-32b	76
E-NUT-E1	G446	1,897,650.450	6,575,165.270	2-32b	76
E-NUT-F1	G447	1,897,691.260	6,575,194.170	2-32b	76
E-NUT-G1	G448	1,897,730.820	6,575,224.790	2-32b	76
E-NUT-H1	G449	1,897,768.560	6,575,254.770	2-32b	76
E-NUT-H2	G450	1,897,765.210	6,575,258.590	2-32b	76
E-NUT-I1	G451	1,897,807.120	6,575,286.630	2-32b	76
E-NUT-I2	G452	1,897,804.490	6,575,289.630	2-32b	76
E-NUT-I3	G453	1,897,801.850	6,575,292.640	2-32b	76
E-NUT-I4	G454	1,897,799.210	6,575,295.650	2-32b	76
E-NUT-I5	G455	1,897,796.580	6,575,298.660	2-32b	76

TABLE 1
Boring Coordinates
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Northing	Easting	Figure	Dataset
E-NUT-I6	G456	1,897,792.220	6,575,303.620	2-32b	76
E-NUT-J1	G457	1,897,845.180	6,575,319.010	2-32b	76
E-NUT-J2	G458	1,897,842.560	6,575,322.040	2-32b	76
E-NUT-J3	G459	1,897,839.940	6,575,325.060	2-32b	76
E-NUT-J4	G460	1,897,837.300	6,575,328.040	2-32b	76
E-NUT-J5	G461	1,897,834.670	6,575,331.070	2-32b	76
E-NUT-J6	G462	1,897,830.340	6,575,336.000	2-32b	76
E-NUT-K1	G463	1,897,882.690	6,575,352.030	2-32b	76
E-NUT-K2	G464	1,897,880.080	6,575,355.060	2-32b	76
E-NUT-K3	G465	1,897,877.430	6,575,358.050	2-32b	76
E-NUT-K4	G466	1,897,874.830	6,575,361.090	2-32b	76
E-NUT-K5	G467	1,897,872.160	6,575,364.120	2-32b	76
E-NUT-K6	G468	1,897,869.540	6,575,367.110	2-32b	76
E-NUT-L1	G510	1,897,919.750	6,575,385.700	2-32b	76
E-NUT-L2	G511	1,897,917.120	6,575,388.700	2-32b	76
E-NUT-L3	G512	1,897,914.480	6,575,391.710	2-32b	76
E-NUT-L4	G513	1,897,910.860	6,575,395.850	2-32b	76
E-NUT-M1	G514	1,897,956.170	6,575,420.040	2-32b	76
E-NUT-M2	G515	1,897,953.520	6,575,423.030	2-32b	76
E-NUT-M3	G516	1,897,951.240	6,575,425.620	2-32b	76
E-NUT-M4	G517	1,897,948.970	6,575,428.220	2-32b	76
E-NUT-N1	G518	1,897,991.830	6,575,455.180	2-32b	76
E-NUT-N2	G519	1,897,987.330	6,575,460.310	2-32b	76
E-NUT-O1	G520	1,898,027.670	6,575,490.140	2-32b	76
E-NUT-P1	G521	1,898,063.850	6,575,524.710	2-32b	76

Coordinates shown in feet, NAD 83, Zone 2

TABLE 2
Approximate Stationing for MVP, CCTV, and CMS Locations
SOL-80 Freeway Performance Initiative Project
Solano County, California

Location	Station Location	Dataset
E-MV1-TEN	"C5" 183+23 to 184+08	1
E-CC1-TEN	"C5" 183+00	2
E-CC2	"C5" 208+50	3
W-MV2-RED	"C5" 228+00 to 228+85	4
E-MV3	"C6" 282+92 to 283+77	6
E-CC4-01	"C6" 284+30	7
W-MV3C-LOOP	"WCP" 17+35 to 18+20	9
E-MV3B	"ECP" 20+71 to 21+63	10
E-MV3A	"SV" 42+66 to 43+51	11
W-CC5-01	"C6" 348+95	12
W-MV4	"C6" 397+50 to 398+35	13
W-CC6-01	"C6" 399+10	14
W-MV6-AME	"WAC" 14+00 to 14+80	15
W-CM1-01	"L" 151+80	16
E-MV5-AME	"EAC" 14+84 to 15+69	17
W-MV7A	"L" 196+00 to 196+85	18
W-CC7-01	"L" 203+40	19
W-CC8-01	"L" 228+30	20
E-CC9-01	"R" 256+20	21
E-CM2	"R" 258+00	22
W-CC10-01	"C2" 187+80	23
W-MV9	"C2" 188+48 to 189+33	24
E-CC11-01	"C2" 317+00	25
E-MV11	"C2" 330+16 to 331+01	26
E-CM3	"C2" 331+65	27
W-CC12-01	"M" 119+60	28
W-MV12	"M" 120+20 to 121+05	29
E-MV13	"M" 141+38 to 142+23	30
E-CC13-01	"M" 143+55	31
E-CC14-01	"M" 159+80	32
E-MV14	"M" 160+76 to 161+61	33
E-MV15	"M" 203+21 to 204+06	34
E-CC15-01	"M" 205+00	35
W-CC16-01	"M" 254+60	36
E-CC17-01	"M" 277+00	37
E-MV16	"M" 277+58 to 278+43	38
E-MV17	"M" 317+32 to 318+17	39
E-CC18-01	"M" 318+65	40
E-CC19-01	"M" 370+50	41
E-CC20-TEX	"C1" 151+65	42
W-MV19A-TEX-01	"C1" 159+26 to 160+11	43
W-CC21-01	"C1" 213+50	44
W-MV20	"C1" 214+04 to 214+89	45
W-MV21	"WCG" 14+80 to 15+65	46
E-CC22-01	"C1" 278+90	47

TABLE 2
Approximate Stationing for MVP, CCTV, and CMS Locations
SOL-80 Freeway Performance Initiative Project
Solano County, California

Location	Station Location	Dataset
E-MV21	"C1" 279+44 to 280+29	48
W-MV24	"WPV" 15+43 to 16+20	49
W-CC23-01	"C1" 308+65	50
W-MV23	"C1" 308+97 to 309+82	51
E-MV22	"EPV" 11+40 to 12+25	52
W-CC24-01	"C1" 344+90	53
W-MV25	"C1" 345+42 to 346+27	54
W-MV26A	"WA" 15+89 to 16+74	56
W-CC25-01	"C1" 376+85	57
E-MV26B	"D" 386+00 to 386+85	58
E-CC26-01	"C1" 411+00	59
E-MV27A	"EDS" 12+20 to 13+05	60
E-MV28	"C1" 433+15 to 434+00	61
E-CC27-01	"C1" 434+25	62
E-CM4-CLIF	"C1" 435+55	63
W-MV28A	"WM" 24+00 to 24+85	64
E-MV30-LOOP	"SAD" 17+35 to 18+20	66
W-CC28-01	"C1" 482+60	67
W-MV29	"C1" 483+00 to 483+85	68
E-MV31	"NAD" 20+00 to 20+85	69
W-MV-MONTE	"MT" 20+93 to 21+78	70
W-CC29-01	"C1" 525+75	71
E-MV32	"SF" 23+88 to 24+79	74
E-CC30-01	"C" 542+25	75

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-MV1-TEN-01	G1-0	1	0	0 to 3	11	---	---	---	---
E-MV1-TEN-01	G1-0.5	1	0.5	0 to 3	23	---	---	---	---
E-MV1-TEN-02	G2-0	1	0	3 to 6	2,200	160	---	2.2	---
E-MV1-TEN-02	G2-0.5	1	0.5	3 to 6	290	13	<0.50	---	---
E-MV1-TEN-03	G3-0	1	0	>9	3,100	160	---	1.6	---
E-MV1-TEN-03	G3-0.5	1	0.5	>9	74	5.3	<0.50	---	---
E-MV1-TEN-04	G4-0	1	0	0 to 3	16	---	---	---	---
E-MV1-TEN-04	G4-0.5	1	0.5	0 to 3	73	4.0	---	---	---
E-MV1-TEN-05	G5-0	1	0	3 to 6	460	31	---	<0.50	---
E-MV1-TEN-05	G5-0.5	1	0.5	3 to 6	720	37	---	<0.50	7.2
E-MV1-TEN-06	G6-0	1	0	>9	340	17	---	<0.50	---
E-MV1-TEN-06	G6-0.5	1	0.5	>9	43	---	---	---	---
E-CC1-TEN	G7-0	2	0	>9	140	10	<0.50	---	---
E-CC1-TEN	G7-0.5	2	0.5	>9	250	14	<0.50	---	---
E-CC1-TEN	G7-1.5	2	1.5	>9	110	8.7	<0.50	---	---
E-CC1-TEN	G7-2.5	2	2.5	>9	160	15	<0.50	---	---
E-CC1-TEN	G7-3.5	2	3.5	>9	160	9.0	<0.50	---	---
E-CC2	G8-0	3	0	>9	250	7.1	<0.50	---	7.5
E-CC2	G8-0.5	3	0.5	>9	20	---	---	---	---
W-MV2-RED-01	G9-0	4	0	0 to 3	61	2.4	---	---	---
W-MV2-RED-01	G9-0.5	4	0.5	0 to 3	55	1.7	---	---	7.6
W-MV2-RED-02	G10-0	4	0	3 to 6	61	2.7	---	---	---
W-MV2-RED-02	G10-0.5	4	0.5	3 to 6	44	---	---	---	---
W-MV2-RED-03	G11-0	4	0	>9	53	1.8	---	---	---
W-MV2-RED-03	G11-0.5	4	0.5	>9	79	3.8	---	---	---
W-MV2-RED-04	G12-0	4	0	0 to 3	63	2.5	---	---	---
W-MV2-RED-04	G12-0.5	4	0.5	0 to 3	260	8.3	<0.50	---	---
W-MV2-RED-05	G13-0	4	0	3 to 6	51	1.9	---	---	---
W-MV2-RED-05	G13-0.5	4	0.5	3 to 6	67	3.4	---	---	---
W-MV2-RED-06	G14-0	4	0	>9	38	---	---	---	---
W-MV2-RED-06	G14-0.5	4	0.5	>9	56	2.4	---	---	7.9
W-R37-A1	G15-0	5	0	0 to 3	28	---	---	---	8.6
W-R37-A1	G15-0.5	5	0.5	0 to 3	4.7	---	---	---	---
W-R37-A1	G15-1.5	5	1.5	0 to 3	11	---	---	---	---
W-R37-A1	G15-2.5	5	2.5	0 to 3	7.6	---	---	---	---
W-R37-B1	G16-0	5	0	0 to 3	27	---	---	---	---
W-R37-B1	G16-0.5	5	0.5	0 to 3	26	---	---	---	---
W-R37-B1	G16-1.5	5	1.5	0 to 3	25	---	---	---	---
W-R37-B1	G16-2.5	5	2.5	0 to 3	1.3	---	---	---	---
W-R37-C1	G17-0	5	0	0 to 3	14	---	---	---	---
W-R37-C1	G17-0.5	5	0.5	0 to 3	<1.0	---	---	---	8.8
W-R37-C1	G17-1.5	5	1.5	0 to 3	1.4	---	---	---	---
W-R37-C1	G17-2.5	5	2.5	0 to 3	1.1	---	---	---	---
W-R37-C2	G18-0	5	0	3 to 6	36	---	---	---	---
W-R37-C2	G18-0.5	5	0.5	3 to 6	1.8	---	---	---	---
W-R37-C2	G18-1.5	5	1.5	3 to 6	15	---	---	---	---
W-R37-C2	G18-2.5	5	2.5	3 to 6	1.7	---	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-R37-D1	G19-0	5	0	0 to 3	36	---	---	---	---
W-R37-D1	G19-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-D1	G19-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-D1	G19-2.5	5	2.5	0 to 3	1.4	---	---	---	9.0
W-R37-D2	G20-0	5	0	3 to 6	25	---	---	---	---
W-R37-D2	G20-0.5	5	0.5	3 to 6	5.3	---	---	---	---
W-R37-D2	G20-1.5	5	1.5	3 to 6	25	---	---	---	---
W-R37-D2	G20-2.5	5	2.5	3 to 6	29	---	---	---	---
W-R37-E1	G21-0	5	0	0 to 3	13	---	---	---	---
W-R37-E1	G21-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-E1	G21-1.5	5	1.5	0 to 3	1.5	---	---	---	---
W-R37-E1	G21-2.5	5	2.5	0 to 3	1.8	---	---	---	---
W-R37-E2	G22-0	5	0	3 to 6	4.4	---	---	---	---
W-R37-E2	G22-0.5	5	0.5	3 to 6	8.7	---	---	---	8.1
W-R37-E2	G22-1.5	5	1.5	3 to 6	2.5	---	---	---	---
W-R37-E2	G22-2.5	5	2.5	3 to 6	1.6	---	---	---	---
W-R37-F1	G23-0	5	0	0 to 3	<1.0	---	---	---	---
W-R37-F1	G23-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-F1	G23-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-F1	G23-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-F2	G24-0	5	0	6 to 9	36	---	---	---	---
W-R37-F2	G24-0.5	5	0.5	6 to 9	29	---	---	---	---
W-R37-F2	G24-1.5	5	1.5	6 to 9	5.9	---	---	---	---
W-R37-F2	G24-2.5	5	2.5	6 to 9	6.3	---	---	---	8.7
W-R37-G1	G33-0	5	0	0 to 3	2.5	---	---	---	---
W-R37-G1	G33-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-G1	G33-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-G1	G33-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-H1	G36-0	5	0	0 to 3	<1.0	---	---	---	---
W-R37-H1	G36-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-H1	G36-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-H1	G36-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-H2	G37-0	5	0	6 to 9	8.9	---	---	---	---
W-R37-H2	G37-0.5	5	0.5	6 to 9	11	---	---	---	8.3
W-R37-H2	G37-1.5	5	1.5	6 to 9	7.9	---	---	---	---
W-R37-H2	G37-2.5	5	2.5	6 to 9	6.5	---	---	---	---
W-R37-I1	G40-0	5	0	0 to 3	13	---	---	---	---
W-R37-I1	G40-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-I1	G40-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-I1	G40-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-I2	G41-0	5	0	3 to 6	<1.0	---	---	---	---
W-R37-I2	G41-0.5	5	0.5	3 to 6	8.6	---	---	---	---
W-R37-I2	G41-1.5	5	1.5	3 to 6	7.4	---	---	---	---
W-R37-I2	G41-2.5	5	2.5	3 to 6	7.1	---	---	---	8.7
W-R37-I3	G42-0	5	0	6 to 9	3.5	---	---	---	---
W-R37-I3	G42-0.5	5	0.5	6 to 9	8.9	---	---	---	---
W-R37-I3	G42-1.5	5	1.5	6 to 9	9.7	---	---	---	---
W-R37-I3	G42-2.5	5	2.5	6 to 9	8.7	---	---	---	---
W-R37-I4	G43-0	5	0	>9	7.3	---	---	---	---
W-R37-I4	G43-0.5	5	0.5	>9	10	---	---	---	---
W-R37-I4	G43-1.5	5	1.5	>9	8.6	---	---	---	---
W-R37-I4	G43-2.5	5	2.5	>9	8.1	---	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-R37-I5	G44-0	5	0	>9	7.7	---	---	---	---
W-R37-I5	G44-0.5	5	0.5	>9	7.5	---	---	---	8.2
W-R37-I5	G44-1.5	5	1.5	>9	9.4	---	---	---	---
W-R37-I5	G44-2.5	5	2.5	>9	8.8	---	---	---	---
W-R37-J1	G47-0	5	0	0 to 3	4.9	---	---	---	---
W-R37-J1	G47-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-J1	G47-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-J1	G47-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-J2	G48-0	5	0	3 to 6	<1.0	---	---	---	---
W-R37-J2	G48-0.5	5	0.5	3 to 6	<1.0	---	---	---	---
W-R37-J2	G48-1.5	5	1.5	3 to 6	8.1	---	---	---	---
W-R37-J2	G48-2.5	5	2.5	3 to 6	9.7	---	---	---	8.2
W-R37-J3	G49-0	5	0	6 to 9	8.6	---	---	---	---
W-R37-J3	G49-0.5	5	0.5	6 to 9	11	---	---	---	---
W-R37-J3	G49-1.5	5	1.5	6 to 9	7.8	---	---	---	---
W-R37-J3	G49-2.5	5	2.5	6 to 9	7.0	---	---	---	---
W-R37-K1	G52-0	5	0	0 to 3	31	---	---	---	---
W-R37-K1	G52-0.5	5	0.5	0 to 3	8.3	---	---	---	---
W-R37-K1	G52-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-K1	G52-2.5	5	2.5	0 to 3	6.1	---	---	---	---
W-R37-K2	G53-0	5	0	3 to 6	28	---	---	---	---
W-R37-K2	G53-0.5	5	0.5	3 to 6	31	---	---	---	8.4
W-R37-K2	G53-1.5	5	1.5	3 to 6	27	---	---	---	---
W-R37-K2	G53-2.5	5	2.5	3 to 6	16	---	---	---	---
W-R37-K3	G54-0	5	0	>9	45	---	---	---	---
W-R37-K3	G54-0.5	5	0.5	>9	88	3.1	---	---	---
W-R37-K3	G54-1.5	5	1.5	>9	36	---	---	---	---
W-R37-K3	G54-2.5	5	2.5	>9	11	---	---	---	---
W-R37-K4	G55-0	5	0	>9	16	---	---	---	---
W-R37-K4	G55-0.5	5	0.5	>9	40	---	---	---	---
W-R37-K4	G55-1.5	5	1.5	>9	130	4.5	---	---	---
W-R37-K4	G55-2.5	5	2.5	>9	15	---	---	---	7.9
W-R37-L1	G56-0	5	0	0 to 3	94	4.5	---	---	---
W-R37-L1	G56-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-L1	G56-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-L1	G56-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-L2	G57-0	5	0	3 to 6	<5.0	---	---	---	---
W-R37-L2	G57-0.5	5	0.5	3 to 6	4.6	---	---	---	---
W-R37-L2	G57-1.5	5	1.5	3 to 6	81	6.0	<0.50	---	---
W-R37-L2	G57-2.5	5	2.5	3 to 6	49	---	---	---	---
W-R37-L3	G58-0	5	0	6 to 9	14	---	---	---	---
W-R37-L3	G58-0.5	5	0.5	6 to 9	25	---	---	---	7.6
W-R37-L3	G58-1.5	5	1.5	6 to 9	140	8.3	<0.50	---	---
W-R37-L3	G58-2.5	5	2.5	6 to 9	210	2.4	---	---	---
W-R37-L4	G59-0	5	0	>9	28	---	---	---	---
W-R37-L4	G59-0.5	5	0.5	>9	71	2.7	---	---	---
W-R37-L4	G59-1.5	5	1.5	>9	17	---	---	---	---
W-R37-L4	G59-2.5	5	2.5	>9	160	1.4	---	---	---
W-R37-M1	G60-0	5	0	0 to 3	12	---	---	---	---
W-R37-M1	G60-0.5	5	0.5	0 to 3	3.3	---	---	---	---
W-R37-M1	G60-1.5	5	1.5	0 to 3	2.6	---	---	---	---
W-R37-M1	G60-2.5	5	2.5	0 to 3	<1.0	---	---	---	7.8

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-R37-M2	G61-0	5	0	3 to 6	670	9.4	---	<0.50	---
W-R37-M2	G61-0.5	5	0.5	3 to 6	<1.0	---	---	---	---
W-R37-M2	G61-1.5	5	1.5	3 to 6	100	2.2	---	---	---
W-R37-M2	G61-2.5	5	2.5	3 to 6	42	---	---	---	---
W-R37-M3	G62-0	5	0	6 to 9	26	---	---	---	---
W-R37-M3	G62-0.5	5	0.5	6 to 9	23	---	---	---	---
W-R37-M3	G62-1.5	5	1.5	6 to 9	87	2.4	---	---	---
W-R37-M3	G62-2.5	5	2.5	6 to 9	33	---	---	---	---
W-R37-M4	G63-0	5	0	>9	97	3.8	---	---	---
W-R37-M4	G63-0.5	5	0.5	>9	89	3.3	---	---	7.5
W-R37-M4	G63-1.5	5	1.5	>9	70	3.4	---	---	---
W-R37-M4	G63-2.5	5	2.5	>9	82	4.4	---	---	---
W-R37-N1	G64-0	5	0	0 to 3	420	37	---	0.93	---
W-R37-N1	G64-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-N1	G64-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-N1	G64-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-N2	G65-0	5	0	3 to 6	690	49	---	1.2	---
W-R37-N2	G65-0.5	5	0.5	3 to 6	86	5.1	<0.50	---	---
W-R37-N2	G65-1.5	5	1.5	3 to 6	39	---	---	---	---
W-R37-N2	G65-2.5	5	2.5	3 to 6	280	14	<0.50	---	7.7
W-R37-N3	G66-0	5	0	>9	94	2.7	---	---	---
W-R37-N3	G66-0.5	5	0.5	>9	59	2.4	---	---	---
W-R37-N3	G66-1.5	5	1.5	>9	51	2.6	---	---	---
W-R37-N3	G66-2.5	5	2.5	>9	170	12	<0.50	---	---
W-R37-O1	G68-0	5	0	0 to 3	120	3.7	---	---	---
W-R37-O1	G68-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-O1	G68-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-O1	G68-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-O2	G69-0	5	0	3 to 6	190	13	<0.50	---	---
W-R37-O2	G69-0.5	5	0.5	3 to 6	13	---	---	---	8.0
W-R37-O2	G69-1.5	5	1.5	3 to 6	60	1.9	---	---	---
W-R37-O2	G69-2.5	5	2.5	3 to 6	540	21	---	0.63	---
W-R37-O3	G70-0	5	0	6 to 9	190	13	<0.50	---	---
W-R37-O3	G70-0.5	5	0.5	6 to 9	34	---	---	---	---
W-R37-O3	G70-1.5	5	1.5	6 to 9	150	9.5	<0.50	---	---
W-R37-O3	G70-2.5	5	2.5	6 to 9	17	---	---	---	---
W-R37-O4	G71-0	5	0	>9	62	0.74	---	---	---
W-R37-O4	G71-0.5	5	0.5	>9	140	7.6	<0.50	---	---
W-R37-O4	G71-1.5	5	1.5	>9	6.3	---	---	---	---
W-R37-O4	G71-2.5	5	2.5	>9	<1.0	---	---	---	8.6
W-R37-P1	G72-0	5	0	0 to 3	130	4.9	---	---	---
W-R37-P1	G72-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-P1	G72-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-P1	G72-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-P2	G73-0	5	0	3 to 6	400	2.9	---	<0.50	---
W-R37-P2	G73-0.5	5	0.5	3 to 6	21	---	---	---	---
W-R37-P2	G73-1.5	5	1.5	3 to 6	13	---	---	---	---
W-R37-P2	G73-2.5	5	2.5	3 to 6	7.4	---	---	---	---
W-R37-P3	G74-0	5	0	6 to 9	20	---	---	---	---
W-R37-P3	G74-0.5	5	0.5	6 to 9	14	---	---	---	8.4
W-R37-P3	G74-1.5	5	1.5	6 to 9	11	---	---	---	---
W-R37-P3	G74-2.5	5	2.5	6 to 9	57	1.9	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-R37-P4	G75-0	5	0	>9	100	4.6	---	---	---
W-R37-P4	G75-0.5	5	0.5	>9	11	---	---	---	---
W-R37-P4	G75-1.5	5	1.5	>9	110	4.4	---	---	---
W-R37-P4	G75-2.5	5	2.5	>9	37	---	---	---	---
W-R37-Q1	G76-0	5	0	0 to 3	710	26	---	<0.50	---
W-R37-Q1	G76-0.5	5	0.5	0 to 3	1.2	---	---	---	---
W-R37-Q1	G76-1.5	5	1.5	0 to 3	<5.0	---	---	---	---
W-R37-Q1	G76-2.5	5	2.5	0 to 3	15	---	---	---	7.6
W-R37-Q2	G77-0	5	0	3 to 6	17	---	---	---	---
W-R37-Q2	G77-0.5	5	0.5	3 to 6	78	2.7	---	---	---
W-R37-Q2	G77-1.5	5	1.5	3 to 6	15	---	---	---	---
W-R37-Q2	G77-2.5	5	2.5	3 to 6	25	---	---	---	---
W-R37-Q3	G78-0	5	0	6 to 9	18	---	---	---	---
W-R37-Q3	G78-0.5	5	0.5	6 to 9	9.6	---	---	---	---
W-R37-Q3	G78-1.5	5	1.5	6 to 9	7.5	---	---	---	---
W-R37-Q3	G78-2.5	5	2.5	6 to 9	18	---	---	---	---
W-R37-Q4	G79-0	5	0	>9	64	2.2	---	---	---
W-R37-Q4	G79-0.5	5	0.5	>9	7.8	---	---	---	8.1
W-R37-Q4	G79-1.5	5	1.5	>9	30	---	---	---	---
W-R37-Q4	G79-2.5	5	2.5	>9	19	---	---	---	---
W-R37-R1	G80-0	5	0	0 to 3	170	9.9	<0.50	---	---
W-R37-R1	G80-0.5	5	0.5	0 to 3	1.6	---	---	---	---
W-R37-R1	G80-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-R1	G80-2.5	5	2.5	0 to 3	10	---	---	---	---
W-R37-R2	G81-0	5	0	3 to 6	58	3.8	---	---	---
W-R37-R2	G81-0.5	5	0.5	3 to 6	6.5	---	---	---	8.3
W-R37-R2	G81-1.5	5	1.5	3 to 6	8.8	---	---	---	---
W-R37-R2	G81-2.5	5	2.5	3 to 6	12	---	---	---	---
W-R37-R3	G82-0	5	0	6 to 9	9.5	---	---	---	---
W-R37-R3	G82-0.5	5	0.5	6 to 9	15	---	---	---	---
W-R37-R3	G82-1.5	5	1.5	6 to 9	15	---	---	---	---
W-R37-R3	G82-2.5	5	2.5	6 to 9	98	0.54	---	---	---
W-R37-R4	G83-0	5	0	>9	36	---	---	---	---
W-R37-R4	G83-0.5	5	0.5	>9	18	---	---	---	---
W-R37-R4	G83-1.5	5	1.5	>9	26	---	---	---	---
W-R37-R4	G83-2.5	5	2.5	>9	38	1.6	---	---	---
W-R37-S1	G84-0	5	0	0 to 3	330	17	---	<0.50	8.2
W-R37-S1	G84-0.5	5	0.5	0 to 3	1.5	---	---	---	---
W-R37-S1	G84-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-S1	G84-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-S2	G85-0	5	0	3 to 6	55	---	---	---	---
W-R37-S2	G85-0.5	5	0.5	3 to 6	25	---	---	---	---
W-R37-S2	G85-1.5	5	1.5	3 to 6	10	---	---	---	---
W-R37-S2	G85-2.5	5	2.5	3 to 6	23	---	---	---	---
W-R37-S3	G86-0	5	0	6 to 9	16	---	---	---	---
W-R37-S3	G86-0.5	5	0.5	6 to 9	8.5	---	---	---	---
W-R37-S3	G86-1.5	5	1.5	6 to 9	40	---	---	---	---
W-R37-S3	G86-2.5	5	2.5	6 to 9	16	---	---	---	8.2
W-R37-S4	G87-0	5	0	>9	14	---	---	---	---
W-R37-S4	G87-0.5	5	0.5	>9	38	---	---	---	---
W-R37-S4	G87-1.5	5	1.5	>9	37	---	---	---	---
W-R37-S4	G87-2.5	5	2.5	>9	26	---	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-R37-T1	G88-0	5	0	0 to 3	98	9.9	<0.50	---	---
W-R37-T1	G88-0.5	5	0.5	0 to 3	2.6	---	---	---	---
W-R37-T1	G88-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-T1	G88-2.5	5	2.5	0 to 3	<1.0	---	---	---	---
W-R37-T2	G89-0	5	0	3 to 6	17	---	---	---	---
W-R37-T2	G89-0.5	5	0.5	3 to 6	3.0	---	---	---	---
W-R37-T2	G89-1.5	5	1.5	3 to 6	28	---	---	---	8.1
W-R37-T2	G89-2.5	5	2.5	3 to 6	26	---	---	---	---
W-R37-T3	G90-0	5	0	6 to 9	25	---	---	---	7.8
W-R37-T3	G90-0.5	5	0.5	6 to 9	13	---	---	---	---
W-R37-T3	G90-1.5	5	1.5	6 to 9	7.9	---	---	---	---
W-R37-T3	G90-2.5	5	2.5	6 to 9	38	---	---	---	---
W-R37-T4	G91-0	5	0	>9	22	---	---	---	---
W-R37-T4	G91-0.5	5	0.5	>9	120	1.2	---	---	---
W-R37-T4	G91-1.5	5	1.5	>9	31	---	---	---	---
W-R37-T4	G91-2.5	5	2.5	>9	3.0	---	---	---	---
W-R37-U1	G92-0	5	0	0 to 3	36	---	---	---	---
W-R37-U1	G92-0.5	5	0.5	0 to 3	<1.0	---	---	---	---
W-R37-U1	G92-1.5	5	1.5	0 to 3	<1.0	---	---	---	---
W-R37-U1	G92-2.5	5	2.5	0 to 3	<1.0	---	---	---	7.7
W-R37-U2	G93-0	5	0	3 to 6	18	---	---	---	---
W-R37-U2	G93-0.5	5	0.5	3 to 6	28	---	---	---	---
W-R37-U2	G93-1.5	5	1.5	3 to 6	120	3.4	---	---	---
W-R37-U2	G93-2.5	5	2.5	3 to 6	24	---	---	---	---
W-R37-U3	G94-0	5	0	6 to 9	33	---	---	---	---
W-R37-U3	G94-0.5	5	0.5	6 to 9	38	---	---	---	---
W-R37-U3	G94-1.5	5	1.5	6 to 9	16	---	---	---	---
W-R37-U3	G94-2.5	5	2.5	6 to 9	20	---	---	---	---
W-R37-U4	G95-0	5	0	>9	26	---	---	---	---
W-R37-U4	G95-0.5	5	0.5	>9	59	2.2	---	---	---
W-R37-U4	G95-1.5	5	1.5	>9	15	---	---	---	7.0
W-R37-U4	G95-2.5	5	2.5	>9	2.2	---	---	---	---
E-MV3-01	G27-0	6	0	0 to 3	210	14	<0.50	---	---
E-MV3-01	G27-0.5	6	0.5	0 to 3	320	14	---	<0.50	---
E-MV3-02	G28-0	6	0	3 to 6	220	8.0	<0.50	---	---
E-MV3-02	G28-0.5	6	0.5	3 to 6	130	4.8	---	---	---
E-MV3-03	G29-0	6	0	>9	170	7.0	<0.50	---	---
E-MV3-03	G29-0.5	6	0.5	>9	140	6.1	<0.50	---	---
E-MV3-04	G30-0	6	0	0 to 3	430	25	---	<0.50	---
E-MV3-04	G30-0.5	6	0.5	0 to 3	200	1.7	---	---	8.2
E-MV3-05	G31-0	6	0	3 to 6	18	---	---	---	---
E-MV3-05	G31-0.5	6	0.5	3 to 6	210	1.1	---	---	---
E-MV3-06	G32-0	6	0	>9	270	10	<0.50	---	---
E-MV3-06	G32-0.5	6	0.5	>9	41	---	---	---	---
E-CC4-01	G67-0	7	0	>9	34	---	---	---	---
E-CC4-01	G67-0.5	7	0.5	>9	1.4	---	---	---	---
E-CC4-01	G67-1.5	7	1.5	>9	9.0	---	---	---	---
E-CC4-01	G67-2.5	7	2.5	>9	13	---	---	---	---
E-CC4-01	G67-3.5	7	3.5	>9	9.7	---	---	---	---
E-CC4-01	G67-4.5	7	4.5	>9	8.6	---	---	---	---
E-CC4-01	G67-5.5	7	5.5	>9	9.6	---	---	---	---
E-CC4-01	G67-6.5	7	6.5	>9	7.0	---	---	---	8.6

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-R37-FL1	G25-0	8	0	0 to 3	27	---	---	---	---
W-R37-FL1	G25-0.5	8	0.5	0 to 3	1.1	---	---	---	8.0
W-R37-FL1	G25-1.5	8	1.5	0 to 3	15	---	---	---	---
W-R37-FL1	G25-2.5	8	2.5	0 to 3	8.9	---	---	---	---
W-R37-FL2	G26-0	8	0	3 to 6	11	---	---	---	---
W-R37-FL2	G26-0.5	8	0.5	3 to 6	14	---	---	---	---
W-R37-FL2	G26-1.5	8	1.5	3 to 6	15	---	---	---	---
W-R37-FL2	G26-2.5	8	2.5	3 to 6	8.1	---	---	---	---
W-R37-GL1	G34-0	8	0	0 to 3	100	6.5	<0.50	---	---
W-R37-GL1	G34-0.5	8	0.5	0 to 3	4.8	---	---	---	---
W-R37-GL1	G34-1.5	8	1.5	0 to 3	1.3	---	---	---	---
W-R37-GL1	G34-2.5	8	2.5	0 to 3	16	---	---	---	---
W-R37-GL2	G35-0	8	0	3 to 6	110	4.5	---	---	7.5
W-R37-GL2	G35-0.5	8	0.5	3 to 6	39	---	---	---	---
W-R37-GL2	G35-1.5	8	1.5	3 to 6	6.2	---	---	---	---
W-R37-GL2	G35-2.5	8	2.5	3 to 6	130	6.5	<0.50	---	---
W-R37-HL1	G38-0	8	0	0 to 3	15	---	---	---	---
W-R37-HL1	G38-0.5	8	0.5	0 to 3	3.7	---	---	---	---
W-R37-HL1	G38-1.5	8	1.5	0 to 3	1.2	---	---	---	---
W-R37-HL1	G38-2.5	8	2.5	0 to 3	<1.0	---	---	---	---
W-R37-HL2	G39-0	8	0	3 to 6	83	5.0	<0.50	---	---
W-R37-HL2	G39-0.5	8	0.5	3 to 6	9.4	---	---	---	---
W-R37-HL2	G39-1.5	8	1.5	3 to 6	<1.0	---	---	---	---
W-R37-HL2	G39-2.5	8	2.5	3 to 6	13	---	---	---	7.8
W-R37-IL1	G45-0	8	0	0 to 3	4.4	---	---	---	---
W-R37-IL1	G45-0.5	8	0.5	0 to 3	2.0	---	---	---	---
W-R37-IL1	G45-1.5	8	1.5	0 to 3	<1.0	---	---	---	---
W-R37-IL1	G45-2.5	8	2.5	0 to 3	<1.0	---	---	---	---
W-R37-IL2	G46-0	8	0	3 to 6	560	11	---	1.2	---
W-R37-IL2	G46-0.5	8	0.5	3 to 6	23	---	---	---	---
W-R37-IL2	G46-1.5	8	1.5	3 to 6	<1.0	---	---	---	---
W-R37-IL2	G46-2.5	8	2.5	3 to 6	8.2	---	---	---	---
W-R37-JL1	G50-0	8	0	0 to 3	260	8.7	<0.50	---	---
W-R37-JL1	G50-0.5	8	0.5	0 to 3	3.9	---	---	---	---
W-R37-JL1	G50-1.5	8	1.5	0 to 3	21	---	---	---	8.3
W-R37-JL1	G50-2.5	8	2.5	0 to 3	<1.0	---	---	---	---
W-R37-JL2	G51-0	8	0	3 to 6	6.2	---	---	---	---
W-R37-JL2	G51-0.5	8	0.5	3 to 6	9.5	---	---	---	---
W-R37-JL2	G51-1.5	8	1.5	3 to 6	29	---	---	---	---
W-R37-JL2	G51-2.5	8	2.5	3 to 6	8.9	---	---	---	---
W-MV3C-LOOP-01	G108-0	9	0	0 to 3	21	---	---	---	---
W-MV3C-LOOP-01	G108-0.5	9	0.5	0 to 3	7.1	---	---	---	---
W-MV3C-LOOP-02	G109-0	9	0	3 to 6	32	---	---	---	---
W-MV3C-LOOP-02	G109-0.5	9	0.5	3 to 6	20	---	---	---	---
W-MV3C-LOOP-03	G110-0	9	0	>9	95	3.8	---	---	---
W-MV3C-LOOP-03	G110-0.5	9	0.5	>9	35	---	---	---	7.6
W-MV3C-LOOP-04	G111-0	9	0	0 to 3	59	1.8	---	---	---
W-MV3C-LOOP-04	G111-0.5	9	0.5	0 to 3	17	---	---	---	---
W-MV3C-LOOP-05	G112-0	9	0	3 to 6	22	---	---	---	---
W-MV3C-LOOP-05	G112-0.5	9	0.5	3 to 6	16	---	---	---	---
W-MV3C-LOOP-06	G113-0	9	0	>9	15	---	---	---	---
W-MV3C-LOOP-06	G113-0.5	9	0.5	>9	16	---	---	---	---
E-MV3B-01	G102-0	10	0	0 to 3	23	---	---	---	---
E-MV3B-01	G102-0.5	10	0.5	0 to 3	12	---	---	---	---
E-MV3B-02	G103-0	10	0	3 to 6	27	---	---	---	---
E-MV3B-02	G103-0.5	10	0.5	3 to 6	26	---	---	---	8.0

TABLE 3
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SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-MV3B-03	G104-0	10	0	>9	23	---	---	---	---
E-MV3B-03	G104-0.5	10	0.5	>9	8.7	---	---	---	---
E-MV3B-04	G105-0	10	0	0 to 3	42	---	---	---	---
E-MV3B-04	G105-0.5	10	0.5	0 to 3	51	2.3	---	---	---
E-MV3B-05	G106-0	10	0	3 to 6	81	2.7	---	---	---
E-MV3B-05	G106-0.5	10	0.5	3 to 6	23	---	---	---	---
E-MV3B-06	G107-0	10	0	>9	68	1.3	---	---	---
E-MV3B-06	G107-0.5	10	0.5	>9	28	---	---	---	---
E-MV3A-01	G96-0	11	0	0 to 3	270	6.8	<0.50	---	---
E-MV3A-01	G96-0.5	11	0.5	0 to 3	670	7.7	---	<0.50	7.4
E-MV3A-02	G97-0	11	0	3 to 6	220	5.2	<0.50	---	---
E-MV3A-02	G97-0.5	11	0.5	3 to 6	130	4.5	---	---	---
E-MV3A-03	G98-0	11	0	>9	150	4.9	---	---	---
E-MV3A-03	G98-0.5	11	0.5	>9	86	2.7	---	---	---
E-MV3A-04	G99-0	11	0	0 to 3	370	15	---	<0.50	---
E-MV3A-04	G99-0.5	11	0.5	0 to 3	54	2.2	---	---	---
E-MV3A-05	G100-0	11	0	3 to 6	49	---	---	---	---
E-MV3A-05	G100-0.5	11	0.5	3 to 6	32	---	---	---	---
E-MV3A-06	G101-0	11	0	>9	200	6.7	<0.50	---	---
E-MV3A-06	G101-0.5	11	0.5	>9	56	2.0	---	---	7.8
W-CC5-01	G114-0	12	0	>9	15	---	---	---	---
W-CC5-01	G114-0.5	12	0.5	>9	9.7	---	---	---	---
W-CC5-01	G114-1.5	12	1.5	>9	10	---	---	---	---
W-CC5-01	G114-2.5	12	2.5	>9	9.1	---	---	---	---
W-CC5-01	G114-3.5	12	3.5	>9	7.8	---	---	---	---
W-CC5-01	G114-4.5	12	4.5	>9	11	---	---	---	---
W-MV4-01	G115-0	13	0	0 to 3	82	4.9	---	---	---
W-MV4-01	G115-0.5	13	0.5	0 to 3	140	7.7	<0.50	---	---
W-MV4-02	G116-0	13	0	3 to 6	280	13	<0.50	---	---
W-MV4-02	G116-0.5	13	0.5	3 to 6	130	5.9	<0.50	---	8.0
W-MV4-03	G117-0	13	0	>9	160	6.0	<0.50	---	---
W-MV4-03	G117-0.5	13	0.5	>9	85	9.8	<0.50	---	---
W-MV4-04	G118-0	13	0	0 to 3	27	---	---	---	---
W-MV4-04	G118-0.5	13	0.5	0 to 3	260	10	<0.50	---	---
W-MV4-05	G119-0	13	0	3 to 6	290	10	<0.50	---	---
W-MV4-05	G119-0.5	13	0.5	3 to 6	270	23	<0.50	---	---
W-MV4-06	G120-0	13	0	>9	240	14	<0.50	---	---
W-MV4-06	G120-0.5	13	0.5	>9	18	---	---	---	---
W-CC6-01	G121-0	14	0	>9	69	2.9	---	---	---
W-CC6-01	G121-0.5	14	0.5	>9	55	1.8	---	---	7.8
W-CC6-01	G121-1.5	14	1.5	>9	7.3	---	---	---	---
W-MV6-AME-01	G128-0	15	0	0 to 3	140	8.1	<0.50	---	---
W-MV6-AME-01	G128-0.5	15	0.5	0 to 3	190	9.1	<0.50	---	---

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SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-MV6-AME-02	G129-0	15	0	3 to 6	380	20	---	<0.50	---
W-MV6-AME-02	G129-0.5	15	0.5	3 to 6	460	26	---	<0.50	---
W-MV6-AME-03	G130-0	15	0	>9	370	17	---	<0.50	---
W-MV6-AME-03	G130-0.5	15	0.5	>9	19	---	---	---	---
W-MV6-AME-04	G131-0	15	0	0 to 3	35	---	---	---	---
W-MV6-AME-04	G131-0.5	15	0.5	0 to 3	57	2.0	---	---	7.7
W-MV6-AME-05	G132-0	15	0	3 to 6	170	28	<0.50	---	---
W-MV6-AME-05	G132-0.5	15	0.5	3 to 6	100	4.9	---	---	---
W-MV6-AME-06	G133-0	15	0	>9	48	---	---	---	7.8
W-MV6-AME-06	G133-0.5	15	0.5	>9	8.5	---	---	---	---
W-CM1-01	G134-0	16	0	6 to 9	64	3.8	---	---	---
W-CM1-01	G134-0.5	16	0.5	6 to 9	65	3.2	---	---	---
W-CM1-01	G134-1.5	16	1.5	6 to 9	84	1.2	---	---	---
W-CM1-01	G134-2.5	16	2.5	6 to 9	<1.0	---	---	---	---
W-CM1-01	G134-3.5	16	3.5	6 to 9	27	---	---	---	---
W-CM1-01	G134-4.5	16	4.5	6 to 9	12	---	---	---	---
W-CM1-01	G134-5.5	16	5.5	6 to 9	10	---	---	---	---
W-CM1-01	G134-6.5	16	6.5	6 to 9	9.5	---	---	---	---
E-MV5-AME-01	G122-0	17	0	0 to 3	1.8	---	---	---	---
E-MV5-AME-01	G122-0.5	17	0.5	0 to 3	38	---	---	---	---
E-MV5-AME-02	G123-0	17	0	3 to 6	31	---	---	---	---
E-MV5-AME-02	G123-0.5	17	0.5	3 to 6	40	---	---	---	---
E-MV5-AME-03	G124-0	17	0	>9	50	1.7	---	---	---
E-MV5-AME-03	G124-0.5	17	0.5	>9	220	6.8	<0.50	---	---
E-MV5-AME-04	G125-0	17	0	0 to 3	2.3	---	---	---	---
E-MV5-AME-04	G125-0.5	17	0.5	0 to 3	21	---	---	---	---
E-MV5-AME-05	G126-0	17	0	3 to 6	29	---	---	---	---
E-MV5-AME-05	G126-0.5	17	0.5	3 to 6	94	4.6	---	---	8.0
E-MV5-AME-06	G127-0	17	0	>9	53	2.1	---	---	---
E-MV5-AME-06	G127-0.5	17	0.5	>9	64	2.5	---	---	---
W-MV7A-01	G135-0	18	0	0 to 3	380	13	---	<0.50	---
W-MV7A-01	G135-0.5	18	0.5	0 to 3	9.4	---	---	---	---
W-MV7A-02	G136-0	18	0	3 to 6	350	17	---	<0.50	---
W-MV7A-02	G136-0.5	18	0.5	3 to 6	25	---	---	---	---
W-MV7A-03	G137-0	18	0	>9	38	---	---	---	---
W-MV7A-03	G137-0.5	18	0.5	>9	2.6	---	---	---	8.0
W-MV7A-04	G138-0	18	0	0 to 3	3.7	---	---	---	---
W-MV7A-04	G138-0.5	18	0.5	0 to 3	170	7.1	<0.50	---	---
W-MV7A-05	G139-0	18	0	3 to 6	680	27	---	<0.50	---
W-MV7A-05	G139-0.5	18	0.5	3 to 6	100	5.1	<0.50	---	---
W-MV7A-06	G140-0	18	0	>9	79	2.8	---	---	---
W-MV7A-06	G140-0.5	18	0.5	>9	33	---	---	---	---
W-CC7-01	G141-0	19	0	>9	52	2.3	---	---	---
W-CC7-01	G141-0.5	19	0.5	>9	12	---	---	---	---
W-CC7-01	G141-1.5	19	1.5	>9	9.2	---	---	---	---
W-CC7-01	G141-2.5	19	2.5	>9	7.9	---	---	---	7.3
W-CC7-01	G141-3.5	19	3.5	>9	5.6	---	---	---	---
W-CC8-01	G142-0	20	0	>9	47	---	---	---	---
W-CC8-01	G142-0.5	20	0.5	>9	4.4	---	---	---	7.1

TABLE 3
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SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-CC9-01	G143-0	21	0	>9	100	5.5	<0.50	---	---
E-CC9-01	G143-0.5	21	0.5	>9	17	---	---	---	---
E-CC9-01	G143-1.5	21	1.5	>9	7.3	---	---	---	---
E-CC9-01	G143-2.5	21	2.5	>9	8.9	---	---	---	---
E-CC9-01	G143-3.5	21	3.5	>9	7.4	---	---	---	---
E-CC9-01	G143-4.5	21	4.5	>9	7.6	---	---	---	---
E-CC9-01	G143-5.5	21	5.5	>9	9.2	---	---	---	---
E-CM2	G144-0	22	0	>9	19	---	---	---	---
E-CM2	G144-0.5	22	0.5	>9	150	15	<0.50	---	---
E-CM2	G144-1.5	22	1.5	>9	160	8.7	<0.50	---	---
E-CM2	G144-2.5	22	2.5	>9	6.4	---	---	---	---
E-CM2	G144-3.5	22	3.5	>9	23	---	---	---	---
E-CM2	G144-4.5	22	4.5	>9	7.0	---	---	---	---
E-CM2	G144-5.5	22	5.5	>9	7.0	---	---	---	7.9
E-CM2	G144-6.5	22	6.5	>9	7.4	---	---	---	---
W-CC10-01	G151-0	23	0	>9	120	4.4	---	---	---
W-CC10-01	G151-0.5	23	0.5	>9	77	3.2	---	---	---
W-CC10-01	G151-1.5	23	1.5	>9	8.3	---	---	---	---
W-CC10-01	G151-2.5	23	2.5	>9	4.6	---	---	---	---
W-CC10-01	G151-3.5	23	3.5	>9	6.3	---	---	---	---
W-CC10-01	G151-4.5	23	4.5	>9	9.3	---	---	---	---
W-MV9-01	G145-0	24	0	0 to 3	15	---	---	---	---
W-MV9-01	G145-0.5	24	0.5	0 to 3	110	11	<0.50	---	---
W-MV9-02	G146-0	24	0	3 to 6	210	10	<0.50	---	---
W-MV9-02	G146-0.5	24	0.5	3 to 6	12	---	---	---	---
W-MV9-03	G147-0	24	0	>9	33	---	---	---	---
W-MV9-03	G147-0.5	24	0.5	>9	9.4	---	---	---	---
W-MV9-04	G148-0	24	0	0 to 3	3.0	---	---	---	---
W-MV9-04	G148-0.5	24	0.5	0 to 3	69	10	<0.50	---	8.0
W-MV9-05	G149-0	24	0	3 to 6	70	3.9	---	---	---
W-MV9-05	G149-0.5	24	0.5	3 to 6	280	4.3	---	---	---
W-MV9-06	G150-0	24	0	>9	61	1.7	---	---	---
W-MV9-06	G150-0.5	24	0.5	>9	170	6.8	<0.50	---	---
E-CC11-01	G152-0	25	0	>9	140	6.6	<0.50	---	---
E-CC11-01	G152-0.5	25	0.5	>9	55	1.3	---	---	8.0
E-CC11-01	G152-1.5	25	1.5	>9	30	---	---	---	---
E-CC11-01	G152-2.5	25	2.5	>9	8.5	---	---	---	---
E-CC11-01	G152-3.5	25	3.5	>9	7.7	---	---	---	---
E-CC11-01	G152-4.5	25	4.5	>9	6.0	---	---	---	---
E-CC11-01	G152-5.5	25	5.5	>9	4.6	---	---	---	---
E-CC11-01	G152-6.5	25	6.5	>9	5.1	---	---	---	---
E-MV11-01	G153-0	26	0	0 to 3	22	---	---	---	---
E-MV11-01	G153-0.5	26	0.5	0 to 3	86	2.8	---	---	---
E-MV11-02	G154-0	26	0	3 to 6	40	---	---	---	---
E-MV11-02	G154-0.5	26	0.5	3 to 6	90	2.5	---	---	---
E-MV11-03	G155-0	26	0	>9	98	3.3	---	---	---
E-MV11-03	G155-0.5	26	0.5	>9	50	1.2	---	---	---
E-MV11-04	G156-0	26	0	0 to 3	75	3.3	---	---	---
E-MV11-04	G156-0.5	26	0.5	0 to 3	26	---	---	---	8.7
E-MV11-05	G157-0	26	0	3 to 6	64	4.3	---	---	---
E-MV11-05	G157-0.5	26	0.5	3 to 6	12	---	---	---	---
E-MV11-06	G158-0	26	0	>9	52	1.3	---	---	---
E-MV11-06	G158-0.5	26	0.5	>9	7.1	---	---	---	---
E-CM3	G159-0	27	0	6 to 9	84	4.3	---	---	---
E-CM3	G159-0.5	27	0.5	6 to 9	380	25	---	<0.50	---
E-CM3	G159-1.5	27	1.5	6 to 9	10	---	---	---	---
E-CM3	G159-2.5	27	2.5	6 to 9	9.6	---	---	---	8.1

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-CM3	G159-3.5	27	3.5	6 to 9	5.9	---	---	---	---
E-CM3	G159-4.5	27	4.5	6 to 9	7.5	---	---	---	---
E-CM3	G159-5.5	27	5.5	6 to 9	7.2	---	---	---	---
E-CM3	G159-6.5	27	6.5	6 to 9	16	---	---	---	---
E-CM3	G159-11.5	27	11.5	6 to 9	6.8	---	---	---	---
W-CC12-01	G166-0	28	0	>9	32	---	---	---	---
W-CC12-01	G166-0.5	28	0.5	>9	15	---	---	---	---
W-CC12-01	G166-1.5	28	1.5	>9	8.2	---	---	---	---
W-CC12-01	G166-2.5	28	2.5	>9	8.5	---	---	---	7.3
W-CC12-01	G166-3.5	28	3.5	>9	6.8	---	---	---	---
W-CC12-01	G166-4.5	28	4.5	>9	6.5	---	---	---	---
W-CC12-01	G166-5.5	28	5.5	>9	5.2	---	---	---	---
W-CC12-01	G166-6.5	28	6.5	>9	7.5	---	---	---	---
W-MV12-01	G160-0	29	0	0 to 3	11	---	---	---	---
W-MV12-01	G160-0.5	29	0.5	0 to 3	33	---	---	---	---
W-MV12-02	G161-0	29	0	3 to 6	13	---	---	---	---
W-MV12-02	G161-0.5	29	0.5	3 to 6	7.4	---	---	---	---
W-MV12-03	G162-0	29	0	>9	4.2	---	---	---	---
W-MV12-03	G162-0.5	29	0.5	>9	4.4	---	---	---	---
W-MV12-04	G163-0	29	0	0 to 3	5.9	---	---	---	---
W-MV12-04	G163-0.5	29	0.5	0 to 3	18	---	---	---	---
W-MV12-05	G164-0	29	0	3 to 6	11	---	---	---	---
W-MV12-05	G164-0.5	29	0.5	3 to 6	17	---	---	---	7.0
W-MV12-06	G165-0	29	0	>9	11	---	---	---	---
W-MV12-06	G165-0.5	29	0.5	>9	30	---	---	---	---
E-MV13-01	G167-0	30	0	0 to 3	21	---	---	---	---
E-MV13-01	G167-0.5	30	0.5	0 to 3	18	---	---	---	---
E-MV13-02	G168-0	30	0	3 to 6	26	---	---	---	---
E-MV13-02	G168-0.5	30	0.5	3 to 6	25	---	---	---	---
E-MV13-03	G169-0	30	0	>9	25	---	---	---	---
E-MV13-03	G169-0.5	30	0.5	>9	6.0	---	---	---	8.2
E-MV13-04	G170-0	30	0	0 to 3	48	---	---	---	---
E-MV13-04	G170-0.5	30	0.5	0 to 3	38	---	---	---	---
E-MV13-05	G171-0	30	0	3 to 6	17	---	---	---	---
E-MV13-05	G171-0.5	30	0.5	3 to 6	15	---	---	---	---
E-MV13-06	G172-0	30	0	>9	140	3.5	---	---	---
E-MV13-06	G172-0.5	30	0.5	>9	60	1.1	---	---	---
E-CC13-01	G173-0	31	0	>9	16	---	---	---	---
E-CC13-01	G173-0.5	31	0.5	>9	11	---	---	---	---
E-CC13-01	G173-1.5	31	1.5	>9	11	---	---	---	---
E-CC13-01	G173-2.5	31	2.5	>9	5.1	---	---	---	---
E-CC13-01	G173-3.5	31	3.5	>9	6.0	---	---	---	7.5
E-CC14-01	G180-0	32	0	>9	8.6	---	---	---	---
E-CC14-01	G180-0.5	32	0.5	>9	5.0	---	---	---	---
E-CC14-01	G180-1.5	32	1.5	>9	5.4	---	---	---	---
E-CC14-01	G180-2.5	32	2.5	>9	5.7	---	---	---	---
E-MV14-01	G174-0	33	0	0 to 3	36	---	---	---	---
E-MV14-01	G174-0.5	33	0.5	0 to 3	15	---	---	---	---
E-MV14-02	G175-0	33	0	3 to 6	30	---	---	---	---
E-MV14-02	G175-0.5	33	0.5	3 to 6	13	---	---	---	7.9
E-MV14-03	G176-0	33	0	>9	18	---	---	---	---
E-MV14-03	G176-0.5	33	0.5	>9	8.3	---	---	---	---
E-MV14-04	G177-0	33	0	0 to 3	8.6	---	---	---	---
E-MV14-04	G177-0.5	33	0.5	0 to 3	21	---	---	---	---

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SOL-80 Freeway Performance Initiative Project
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Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-MV14-05	G178-0	33	0	3 to 6	71	3.2	---	---	---
E-MV14-05	G178-0.5	33	0.5	3 to 6	22	---	---	---	---
E-MV14-06	G179-0	33	0	>9	79	2.4	---	---	---
E-MV14-06	G179-0.5	33	0.5	>9	24	---	---	---	---
E-MV15-01	G181-0	34	0	0 to 3	9.3	---	---	---	---
E-MV15-01	G181-0.5	34	0.5	0 to 3	11	---	---	---	---
E-MV15-02	G182-0	34	0	3 to 6	190	9.8	<0.50	---	7.8
E-MV15-02	G182-0.5	34	0.5	3 to 6	4.4	---	---	---	---
E-MV15-03	G183-0	34	0	>9	250	11	<0.50	---	---
E-MV15-03	G183-0.5	34	0.5	>9	60	1.7	---	---	---
E-MV15-04	G184-0	34	0	0 to 3	7.9	---	---	---	---
E-MV15-04	G184-0.5	34	0.5	0 to 3	16	---	---	---	---
E-MV15-05	G185-0	34	0	3 to 6	590	31	---	0.96	---
E-MV15-05	G185-0.5	34	0.5	3 to 6	7.9	---	---	---	---
E-MV15-06	G186-0	34	0	>9	110	10	<0.50	---	---
E-MV15-06	G186-0.5	34	0.5	>9	17	---	---	---	---
E-CC15-01	G187-0	35	0	>9	46	---	---	---	---
E-CC15-01	G187-0.5	35	0.5	>9	35	---	---	---	---
E-CC15-01	G187-1.5	35	1.5	>9	25	---	---	---	---
E-CC15-01	G187-2.5	35	2.5	>9	27	---	---	---	---
E-CC15-01	G187-3.5	35	3.5	>9	19	---	---	---	---
W-CC16-01	G188-0	36	0	>9	53	2.2	---	---	---
W-CC16-01	G188-0.5	36	0.5	>9	15	---	---	---	---
W-CC16-01	G188-1.5	36	1.5	>9	14	---	---	---	---
W-CC16-01	G188-2.5	36	2.5	>9	15	---	---	---	---
W-CC16-01	G188-3.5	36	3.5	>9	8.6	---	---	---	---
W-CC16-01	G188-4.5	36	4.5	>9	6.5	---	---	---	---
W-CC16-01	G188-5.5	36	5.5	>9	5.4	---	---	---	7.7
W-CC16-01	G188-6.5	36	6.5	>9	6.4	---	---	---	7.6
E-CC17-01	G195-0	37	0	>9	110	6.6	<0.50	---	---
E-CC17-01	G195-0.5	37	0.5	>9	71	2.4	---	---	---
E-CC17-01	G195-1.5	37	1.5	>9	18	---	---	---	---
E-CC17-01	G195-2.5	37	2.5	>9	9.4	---	---	---	---
E-CC17-01	G195-3.5	37	3.5	>9	7.4	---	---	---	---
E-CC17-01	G195-4.5	37	4.5	>9	8.3	---	---	---	---
E-CC17-01	G195-5.5	37	5.5	>9	11	---	---	---	8.2
E-MV16-01	G189-0	38	0	0 to 3	44	---	---	---	---
E-MV16-01	G189-0.5	38	0.5	0 to 3	1,500	130	---	4.4	---
E-MV16-02	G190-0	38	0	3 to 6	63	3.4	---	---	7.7
E-MV16-02	G190-0.5	38	0.5	3 to 6	4.2	---	---	---	---
E-MV16-03	G191-0	38	0	>9	190	16	<0.50	---	---
E-MV16-03	G191-0.5	38	0.5	>9	85	3.0	---	---	---
E-MV16-04	G192-0	38	0	0 to 3	13	---	---	---	---
E-MV16-04	G192-0.5	38	0.5	0 to 3	44	---	---	---	8.3

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Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-MV16-05	G193-0	38	0	3 to 6	32	---	---	---	---
E-MV16-05	G193-0.5	38	0.5	3 to 6	34	---	---	---	---
E-MV16-06	G194-0	38	0	>9	1,100	49	---	1.2	---
E-MV16-06	G194-0.5	38	0.5	>9	110	2.0	---	---	---
E-MV17-01	G196-0	39	0	0 to 3	11	---	---	---	---
E-MV17-01	G196-0.5	39	0.5	0 to 3	190	3.7	---	---	---
E-MV17-02	G197-0	39	0	3 to 6	170	4.9	---	---	---
E-MV17-02	G197-0.5	39	0.5	3 to 6	64	2.0	---	---	---
E-MV17-03	G198-0	39	0	>9	65	2.8	---	---	7.8
E-MV17-03	G198-0.5	39	0.5	>9	63	3.5	---	---	---
E-MV17-04	G199-0	39	0	0 to 3	72	1.8	---	---	---
E-MV17-04	G199-0.5	39	0.5	0 to 3	220	4.8	---	---	---
E-MV17-05	G200-0	39	0	3 to 6	41	---	---	---	---
E-MV17-05	G200-0.5	39	0.5	3 to 6	36	---	---	---	---
E-MV17-06	G201-0	39	0	>9	48	---	---	---	---
E-MV17-06	G201-0.5	39	0.5	>9	49	---	---	---	---
E-CC18-01	G202-0	40	0	>9	18	---	---	---	---
E-CC18-01	G202-0.5	40	0.5	>9	14	---	---	---	---
E-CC18-01	G202-1.5	40	1.5	>9	16	---	---	---	---
E-CC18-01	G202-2.5	40	2.5	>9	23	---	---	---	---
E-CC18-01	G202-3.5	40	3.5	>9	9.6	---	---	---	---
E-CC18-01	G202-4.5	40	4.5	>9	10	---	---	---	7.4
E-CC18-01	G202-5.5	40	5.5	>9	8.7	---	---	---	---
E-CC18-01	G202-6.5	40	6.5	>9	5.0	---	---	---	---
E-CC19-01	G203-0	41	0	>9	240	12	<0.50	---	---
E-CC19-01	G203-0.5	41	0.5	>9	55	0.53	---	---	---
E-CC19-01	G203-1.5	41	1.5	>9	15	---	---	---	---
E-CC19-01	G203-2.5	41	2.5	>9	19	---	---	---	---
E-CC19-01	G203-3.5	41	3.5	>9	11	---	---	---	---
E-CC19-01	G203-4.5	41	4.5	>9	7.8	---	---	---	---
E-CC19-01	G203-5.5	41	5.5	>9	8.8	---	---	---	---
E-CC19-01	G203-6.5	41	6.5	>9	9.3	---	---	---	---
E-CC20-TEX-01	G210-0	42	0	>9	7.8	---	---	---	---
E-CC20-TEX-01	G210-0.5	42	0.5	>9	30	---	---	---	---
E-CC20-TEX-01	G210-1.5	42	1.5	>9	19	---	---	---	---
E-CC20-TEX-01	G210-2.5	42	2.5	>9	16	---	---	---	---
W-MV19A-TEX-01	G204-0	43	0	0 to 3	6.3	---	---	---	---
W-MV19A-TEX-01	G204-0.5	43	0.5	0 to 3	40	---	---	---	---
W-MV19A-TEX-02	G205-0	43	0	3 to 6	210	7.7	<0.50	---	---
W-MV19A-TEX-02	G205-0.5	43	0.5	3 to 6	110	1.6	---	---	---
W-MV19A-TEX-03	G206-0	43	0	>9	87	2.2	---	---	---
W-MV19A-TEX-03	G206-0.5	43	0.5	>9	20	---	---	---	---
W-MV19A-TEX-04	G207-0	43	0	0 to 3	81	6.0	<0.50	---	---
W-MV19A-TEX-04	G207-0.5	43	0.5	0 to 3	52	1.7	---	---	---
W-MV19A-TEX-05	G208-0	43	0	3 to 6	180	11	<0.50	---	6.9
W-MV19A-TEX-05	G208-0.5	43	0.5	3 to 6	21	---	---	---	---
W-MV19A-TEX-06	G209-0	43	0	>9	130	3.8	---	---	---
W-MV19A-TEX-06	G209-0.5	43	0.5	>9	30	---	---	---	---
W-CC21-01	G217-0	44	0	>9	110	4.1	---	---	---
W-CC21-01	G217-0.5	44	0.5	>9	19	---	---	---	7.7
W-CC21-01	G217-1.5	44	1.5	>9	11	---	---	---	---
W-CC21-01	G217-2	44	2	>9	71	3.4	---	---	---

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W-MV20-01	G211-0	45	0	0 to 3	74	7.4	<0.50	---	---
W-MV20-01	G211-0.5	45	0.5	0 to 3	67	4.1	---	---	---
W-MV20-02	G212-0	45	0	3 to 6	130	13	<0.50	---	---
W-MV20-02	G212-0.5	45	0.5	3 to 6	120	7.0	<0.50	---	---
W-MV20-03	G213-0	45	0	>9	200	11	<0.50	---	---
W-MV20-03	G213-0.5	45	0.5	>9	240	16	<0.50	---	---
W-MV20-04	G214-0	45	0	0 to 3	260	14	<0.50	---	---
W-MV20-04	G214-0.5	45	0.5	0 to 3	240	20	<0.50	---	---
W-MV20-05	G215-0	45	0	3 to 6	200	18	<0.50	---	7.2
W-MV20-05	G215-0.5	45	0.5	3 to 6	120	4.2	---	---	---
W-MV20-06	G216-0	45	0	>9	150	9.0	<0.50	---	---
W-MV20-06	G216-0.5	45	0.5	>9	130	6.2	<0.50	---	---
W-MV21-01	G224-0	46	0	0 to 3	97	4.1	---	---	6.5
W-MV21-01	G224-0.5	46	0.5	0 to 3	8.3	---	---	---	---
W-MV21-02	G225-0	46	0	3 to 6	79	2.9	---	---	---
W-MV21-02	G225-0.5	46	0.5	3 to 6	38	---	---	---	---
W-MV21-03	G226-0	46	0	>9	890	49	---	0.92	---
W-MV21-03	G226-0.5	46	0.5	>9	590	17	---	<0.50	---
W-MV21-04	G227-0	46	0	0 to 3	47	---	---	---	---
W-MV21-04	G227-0.5	46	0.5	0 to 3	11	---	---	---	---
W-MV21-05	G228-0	46	0	3 to 6	36	---	---	---	---
W-MV21-05	G228-0.5	46	0.5	3 to 6	9.4	---	---	---	---
W-MV21-06	G229-0	46	0	>9	180	8.1	<0.50	---	6.2
W-MV21-06	G229-0.5	46	0.5	>9	68	2.8	---	---	---
E-CC22-01	G230-0	47	0	>9	50	2.3	---	---	---
E-CC22-01	G230-0.5	47	0.5	>9	17	---	---	---	---
E-CC22-01	G230-1.5	47	1.5	>9	6.3	---	---	---	---
E-CC22-01	G230-2.5	47	2.5	>9	7.5	---	---	---	7.5
E-MV21-01	G218-0	48	0	0 to 3	8.1	---	---	---	---
E-MV21-01	G218-0.5	48	0.5	0 to 3	2.7	---	---	---	---
E-MV21-02	G219-0	48	0	3 to 6	43	---	---	---	---
E-MV21-02	G219-0.5	48	0.5	3 to 6	31	---	---	---	---
E-MV21-03	G220-0	48	0	>9	89	1.4	---	---	---
E-MV21-03	G220-0.5	48	0.5	>9	36	---	---	---	---
E-MV21-04	G221-0	48	0	0 to 3	11	---	---	---	---
E-MV21-04	G221-0.5	48	0.5	0 to 3	48	---	---	---	---
E-MV21-05	G222-0	48	0	3 to 6	10	---	---	---	---
E-MV21-05	G222-0.5	48	0.5	3 to 6	25	---	---	---	6.8
E-MV21-06	G223-0	48	0	>9	40	---	---	---	---
E-MV21-06	G223-0.5	48	0.5	>9	21	---	---	---	---
W-MV24-01	G243-0	49	0	0 to 3	6.6	---	---	---	---
W-MV24-01	G243-0.5	49	0.5	0 to 3	40	---	---	---	---
W-MV24-02	G244-0	49	0	3 to 6	36	---	---	---	7.1
W-MV24-02	G244-0.5	49	0.5	3 to 6	52	1.3	---	---	---
W-MV24-03	G245-0	49	0	>9	28	---	---	---	---
W-MV24-03	G245-0.5	49	0.5	>9	56	1.3	---	---	---
W-MV24-04	G246-0	49	0	0 to 3	9.7	---	---	---	---
W-MV24-04	G246-0.5	49	0.5	0 to 3	41	---	---	---	---

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W-MV24-05	G247-0	49	0	3 to 6	63	2.9	---	---	---
W-MV24-05	G247-0.5	49	0.5	3 to 6	120	4.8	---	---	---
W-MV24-06	G248-0	49	0	>9	30	---	---	---	---
W-MV24-06	G248-0.5	49	0.5	>9	110	2.7	---	---	---
W-CC23-01	G249-0	50	0	>9	100	4.2	---	---	---
W-CC23-01	G249-0.5	50	0.5	>9	17	---	---	---	---
W-CC23-01	G249-1.5	50	1.5	>9	14	---	---	---	---
W-CC23-01	G249-2.5	50	2.5	>9	15	---	---	---	---
W-CC23-01	G249-3.5	50	3.5	>9	9.8	---	---	---	7.6
W-CC23-01	G249-4.5	50	4.5	>9	8.8	---	---	---	---
W-CC23-01	G249-5.5	50	5.5	>9	9.8	---	---	---	---
W-CC23-01	G249-6.5	50	6.5	>9	8.8	---	---	---	---
W-MV23-01	G237-0	51	0	0 to 3	7.4	---	---	---	---
W-MV23-01	G237-0.5	51	0.5	0 to 3	31	---	---	---	---
W-MV23-02	G238-0	51	0	3 to 6	410	19	---	<0.50	---
W-MV23-02	G238-0.5	51	0.5	3 to 6	38	---	---	---	---
W-MV23-03	G239-0	51	0	>9	210	10	<0.50	---	7.0
W-MV23-03	G239-0.5	51	0.5	>9	140	6.4	<0.50	---	---
W-MV23-04	G240-0	51	0	0 to 3	6.2	---	---	---	---
W-MV23-04	G240-0.5	51	0.5	0 to 3	7.8	---	---	---	---
W-MV23-05	G241-0	51	0	3 to 6	79	3.2	---	---	---
W-MV23-05	G241-0.5	51	0.5	3 to 6	210	6.5	<0.50	---	---
W-MV23-06	G242-0	51	0	>9	190	11	<0.50	---	---
W-MV23-06	G242-0.5	51	0.5	>9	150	6.3	<0.50	---	---
E-MV22-01	G231-0	52	0	0 to 3	5.4	---	---	---	---
E-MV22-01	G231-0.5	52	0.5	0 to 3	10	---	---	---	8.4
E-MV22-02	G232-0	52	0	3 to 6	140	9.8	<0.50	---	---
E-MV22-02	G232-0.5	52	0.5	3 to 6	310	16	---	<0.50	---
E-MV22-03	G233-0	52	0	>9	370	16	---	<0.50	---
E-MV22-03	G233-0.5	52	0.5	>9	9.7	---	---	---	---
E-MV22-04	G234-0	52	0	0 to 3	8.6	---	---	---	---
E-MV22-04	G234-0.5	52	0.5	0 to 3	21	---	---	---	---
E-MV22-05	G235-0	52	0	3 to 6	93	4.0	---	---	---
E-MV22-05	G235-0.5	52	0.5	3 to 6	29	---	---	---	---
E-MV22-06	G236-0	52	0	>9	260	7.2	<0.50	---	---
E-MV22-06	G236-0.5	52	0.5	>9	48	---	---	---	8.0
W-CC24-01	G256-0	53	0	>9	34	---	---	---	---
W-CC24-01	G256-0.5	53	0.5	>9	15	---	---	---	---
W-CC24-01	G256-1.5	53	1.5	>9	11	---	---	---	---
W-CC24-01	G256-2.5	53	2.5	>9	15	---	---	---	---
W-CC24-01	G256-3.5	53	3.5	>9	13	---	---	---	---
W-MV25-01	G250-0	54	0	0 to 3	8.1	---	---	---	---
W-MV25-01	G250-0.5	54	0.5	0 to 3	7.6	---	---	---	---
W-MV25-02	G251-0	54	0	3 to 6	460	21	---	0.53	---
W-MV25-02	G251-0.5	54	0.5	3 to 6	250	7.2	<0.50	---	---
W-MV25-03	G252-0	54	0	>9	260	10	<0.50	---	---
W-MV25-03	G252-0.5	54	0.5	>9	40	---	---	---	---
W-MV25-04	G253-0	54	0	0 to 3	6.7	---	---	---	7.2
W-MV25-04	G253-0.5	54	0.5	0 to 3	10	---	---	---	---
W-MV25-05	G254-0	54	0	3 to 6	990	6.3	---	<0.50	---
W-MV25-05	G254-0.5	54	0.5	3 to 6	40	---	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-MV25-06	G255-0	54	0	>9	180	8.3	<0.50	---	---
W-MV25-06	G255-0.5	54	0.5	>9	20	---	---	---	---
W-ALAM-A1	G264-0	55	0	0 to 3	330	9.7	---	<0.50	---
W-ALAM-A1	G264-0.5	55	0.5	0 to 3	130	6.2	<0.50	---	---
W-ALAM-A1	G264-1.5	55	1.5	0 to 3	4.2	---	---	---	---
W-ALAM-A1	G264-2.5	55	2.5	0 to 3	15	---	---	---	---
W-ALAM-B1	G266-0	55	0	0 to 3	280	15	<0.50	---	---
W-ALAM-B1	G266-0.5	55	0.5	0 to 3	76	4.0	---	---	---
W-ALAM-B1	G266-1.5	55	1.5	0 to 3	190	6.1	<0.50	---	---
W-ALAM-B1	G266-2.5	55	2.5	0 to 3	9.2	---	---	---	---
W-ALAM-B2	G267-0	55	0	3 to 6	340	20	---	<0.50	---
W-ALAM-B2	G267-0.5	55	0.5	3 to 6	96	1.5	---	---	7.6
W-ALAM-B2	G267-1.5	55	1.5	3 to 6	45	---	---	---	---
W-ALAM-B2	G267-2.5	55	2.5	3 to 6	21	---	---	---	---
W-ALAM-B3	G268-0	55	0	>9	510	17	---	<0.50	---
W-ALAM-B3	G268-0.5	55	0.5	>9	28	---	---	---	---
W-ALAM-B3	G268-1.5	55	1.5	>9	41	---	---	---	---
W-ALAM-B3	G268-2.5	55	2.5	>9	24	---	---	---	---
W-ALAM-C1	G257-0	55	0	0 to 3	470	23	---	<0.50	---
W-ALAM-C1	G257-0.5	55	0.5	0 to 3	28	---	---	---	---
W-ALAM-C1	G257-1.5	55	1.5	0 to 3	140	3.0	---	---	---
W-ALAM-C1	G257-2.5	55	2.5	0 to 3	15	---	---	---	7.9
W-ALAM-C2	G269-0	55	0	3 to 6	350	17	---	<0.50	---
W-ALAM-C2	G269-0.5	55	0.5	3 to 6	56	1.1	---	---	---
W-ALAM-C2	G269-1.5	55	1.5	3 to 6	65	0.92	---	---	---
W-ALAM-C2	G269-2.5	55	2.5	3 to 6	23	---	---	---	---
W-ALAM-C3	G270-0	55	0	>9	240	15	<0.50	---	---
W-ALAM-C3	G270-0.5	55	0.5	>9	59	0.76	---	---	---
W-ALAM-C3	G270-1.5	55	1.5	>9	25	---	---	---	---
W-ALAM-C3	G270-2.5	55	2.5	>9	15	---	---	---	---
W-ALAM-D1	G271-0	55	0	0 to 3	250	13	<0.50	---	---
W-ALAM-D1	G271-0.5	55	0.5	0 to 3	44	---	---	---	6.4
W-ALAM-D1	G271-1.5	55	1.5	0 to 3	45	---	---	---	---
W-ALAM-D1	G271-2.5	55	2.5	0 to 3	44	---	---	---	---
W-ALAM-D2	G272-0	55	0	3 to 6	290	13	<0.50	---	---
W-ALAM-D2	G272-0.5	55	0.5	3 to 6	48	---	---	---	---
W-ALAM-D2	G272-1.5	55	1.5	3 to 6	57	2.1	---	---	---
W-ALAM-D2	G272-2.5	55	2.5	3 to 6	49	---	---	---	---
W-ALAM-D3	G273-0	55	0	>9	330	15	---	<0.50	---
W-ALAM-D3	G273-0.5	55	0.5	>9	50	0.76	---	---	---
W-ALAM-D3	G273-1.5	55	1.5	>9	23	---	---	---	---
W-ALAM-D3	G273-2.5	55	2.5	>9	12	---	---	---	6.1
W-ALAM-E1	G274-0	55	0	0 to 3	200	12	<0.50	---	---
W-ALAM-E1	G274-0.5	55	0.5	0 to 3	280	10	<0.50	---	---
W-ALAM-E1	G274-1.5	55	1.5	0 to 3	49	---	---	---	---
W-ALAM-E1	G274-2.5	55	2.5	0 to 3	32	---	---	---	---
W-ALAM-E2	G275-0	55	0	3 to 6	420	16	---	<0.50	---
W-ALAM-E2	G275-0.5	55	0.5	3 to 6	52	1.2	---	---	---
W-ALAM-E2	G275-1.5	55	1.5	3 to 6	25	---	---	---	---
W-ALAM-E2	G275-2.5	55	2.5	3 to 6	18	---	---	---	---
W-ALAM-E3	G276-0	55	0	>9	230	10	<0.50	---	---
W-ALAM-E3	G276-0.5	55	0.5	>9	31	---	---	---	6.9
W-ALAM-E3	G276-1.5	55	1.5	>9	15	---	---	---	---
W-ALAM-E3	G276-2.5	55	2.5	>9	11	---	---	---	---
W-ALAM-F1	G277-0	55	0	0 to 3	100	5.4	<0.50	---	---
W-ALAM-F1	G277-0.5	55	0.5	0 to 3	88	2.1	---	---	---
W-ALAM-F1	G277-1.5	55	1.5	0 to 3	7.3	---	---	---	---
W-ALAM-F1	G277-2.5	55	2.5	0 to 3	15	---	---	---	---

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Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-ALAM-F2	G278-0	55	0	3 to 6	160	230	<0.50	---	---
W-ALAM-F2	G278-0.5	55	0.5	3 to 6	23	---	---	---	---
W-ALAM-F2	G278-1.5	55	1.5	3 to 6	98	4.0	---	---	---
W-ALAM-F2	G278-2.5	55	2.5	3 to 6	16	---	---	---	7.1
W-ALAM-F3	G279-0	55	0	>9	260	16	<0.50	---	---
W-ALAM-F3	G279-0.5	55	0.5	>9	62	1.9	---	---	---
W-ALAM-F3	G279-1.5	55	1.5	>9	26	---	---	---	---
W-ALAM-F3	G279-2.5	55	2.5	>9	17	---	---	---	---
W-ALAM-G1	G280-0	55	0	0 to 3	93	5.5	<0.50	---	---
W-ALAM-G1	G280-0.5	55	0.5	0 to 3	92	2.1	---	---	---
W-ALAM-G1	G280-1.5	55	1.5	0 to 3	9.9	---	---	---	---
W-ALAM-G1	G280-2.5	55	2.5	0 to 3	12	---	---	---	---
W-ALAM-G2	G281-0	55	0	3 to 6	100	13	<0.50	---	---
W-ALAM-G2	G281-0.5	55	0.5	3 to 6	100	2.2	---	---	7.6
W-ALAM-G2	G281-1.5	55	1.5	3 to 6	68	1.5	---	---	---
W-ALAM-G2	G281-2.5	55	2.5	3 to 6	23	---	---	---	---
W-ALAM-G3	G282-0	55	0	>9	190	10	<0.50	---	---
W-ALAM-G3	G282-0.5	55	0.5	>9	85	1.6	---	---	---
W-ALAM-G3	G282-1.5	55	1.5	>9	29	---	---	---	---
W-ALAM-G3	G282-2.5	55	2.5	>9	15	---	---	---	---
W-ALAM-H1	G283-0	55	0	0 to 3	110	3.2	---	---	---
W-ALAM-H1	G283-0.5	55	0.5	0 to 3	26	---	---	---	---
W-ALAM-H1	G283-1.5	55	1.5	0 to 3	8.4	---	---	---	---
W-ALAM-H1	G283-2.5	55	2.5	0 to 3	12	---	---	---	7.5
W-ALAM-H2	G284-0	55	0	3 to 6	140	6.9	<0.50	---	---
W-ALAM-H2	G284-0.5	55	0.5	3 to 6	75	0.64	---	---	---
W-ALAM-H2	G284-1.5	55	1.5	3 to 6	27	---	---	---	---
W-ALAM-H2	G284-2.5	55	2.5	3 to 6	21	---	---	---	---
W-ALAM-H3	G285-0	55	0	>9	320	20	---	<0.50	---
W-ALAM-H3	G285-0.5	55	0.5	>9	58	1.7	---	---	---
W-ALAM-H3	G285-1.5	55	1.5	>9	19	---	---	---	---
W-ALAM-H3	G285-2.5	55	2.5	>9	17	---	---	---	---
W-ALAM-I1	G286-0	55	0	0 to 3	290	15	<0.50	---	---
W-ALAM-I1	G286-0.5	55	0.5	0 to 3	280	13	<0.50	---	8.2
W-ALAM-I1	G286-1.5	55	1.5	0 to 3	11	---	---	---	---
W-ALAM-I1	G286-2.5	55	2.5	0 to 3	18	---	---	---	---
W-ALAM-I2	G287-0	55	0	3 to 6	180	14	<0.50	---	---
W-ALAM-I2	G287-0.5	55	0.5	3 to 6	110	4.9	---	---	---
W-ALAM-I2	G287-1.5	55	1.5	3 to 6	39	---	---	---	---
W-ALAM-I2	G287-2.5	55	2.5	3 to 6	26	---	---	---	---
W-ALAM-J1	G289-0	55	0	0 to 3	6.5	---	---	---	---
W-ALAM-J1	G289-0.5	55	0.5	0 to 3	15	---	---	---	---
W-ALAM-J1	G289-1.5	55	1.5	0 to 3	15	---	---	---	---
W-ALAM-J1	G289-2.5	55	2.5	0 to 3	9.2	---	---	---	7.3
W-ALAM-J2	G290-0	55	0	3 to 6	670	27	---	<0.50	---
W-ALAM-J2	G290-0.5	55	0.5	3 to 6	60	1.1	---	---	---
W-ALAM-J2	G290-1.5	55	1.5	3 to 6	100	1.4	---	---	---
W-ALAM-J2	G290-2.5	55	2.5	3 to 6	22	---	---	---	---
W-ALAM-K1	G292-0	55	0	0 to 3	8.5	---	---	---	---
W-ALAM-K1	G292-0.5	55	0.5	0 to 3	24	---	---	---	---
W-ALAM-K1	G292-1.5	55	1.5	0 to 3	16	---	---	---	---
W-ALAM-K1	G292-2.5	55	2.5	0 to 3	12	---	---	---	---
W-ALAM-K2	G293-0	55	0	3 to 6	350	27	---	<0.50	---
W-ALAM-K2	G293-0.5	55	0.5	3 to 6	18	---	---	---	7.0
W-ALAM-K2	G293-1.5	55	1.5	3 to 6	10	---	---	---	---
W-ALAM-K2	G293-2.5	55	2.5	3 to 6	12	---	---	---	---

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SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-ALAM-K3	G294-0	55	0	6 to 9	140	4.5	---	---	---
W-ALAM-K3	G294-0.5	55	0.5	6 to 9	9.2	---	---	---	---
W-ALAM-K3	G294-1.5	55	1.5	6 to 9	9.7	---	---	---	---
W-ALAM-K3	G294-2.5	55	2.5	6 to 9	8.9	---	---	---	---
W-ALAM-L1	G295-0	55	0	0 to 3	8.5	---	---	---	---
W-ALAM-L1	G295-0.5	55	0.5	0 to 3	17	---	---	---	---
W-ALAM-L1	G295-1.5	55	1.5	0 to 3	8.9	---	---	---	---
W-ALAM-L1	G295-2.5	55	2.5	0 to 3	7.6	---	---	---	7.1
W-ALAM-L2	G296-0	55	0	3 to 6	230	7.2	<0.50	---	---
W-ALAM-L2	G296-0.5	55	0.5	3 to 6	100	0.66	---	---	---
W-ALAM-L2	G296-1.5	55	1.5	3 to 6	10	---	---	---	---
W-ALAM-L2	G296-2.5	55	2.5	3 to 6	17	---	---	---	---
W-ALAM-L3	G297-0	55	0	6 to 9	380	26	---	<0.50	---
W-ALAM-L3	G297-0.5	55	0.5	6 to 9	37	---	---	---	---
W-ALAM-L3	G297-1.5	55	1.5	6 to 9	13	---	---	---	---
W-ALAM-L3	G297-2.5	55	2.5	6 to 9	22	---	---	---	---
W-ALAM-L4	G298-0	55	0	>9	130	4.0	---	---	---
W-ALAM-L4	G298-0.5	55	0.5	>9	13	---	---	---	6.8
W-ALAM-L4	G298-1.5	55	1.5	>9	8.5	---	---	---	---
W-ALAM-L4	G298-2.5	55	2.5	>9	9.7	---	---	---	---
W-ALAM-M1	G299-0	55	0	0 to 3	33	---	---	---	---
W-ALAM-M1	G299-0.5	55	0.5	0 to 3	11	---	---	---	---
W-ALAM-M1	G299-1.5	55	1.5	0 to 3	8.8	---	---	---	---
W-ALAM-M1	G299-2.5	55	2.5	0 to 3	8.5	---	---	---	---
W-ALAM-M2	G300-0	55	0	3 to 6	690	440	---	0.61	---
W-ALAM-M2	G300-0.5	55	0.5	3 to 6	93	2.4	---	---	---
W-ALAM-M2	G300-1.5	55	1.5	3 to 6	22	---	---	---	---
W-ALAM-M2	G300-2.5	55	2.5	3 to 6	18	---	---	---	6.7
W-ALAM-M3	G301-0	55	0	6 to 9	600	48	---	<0.50	---
W-ALAM-M3	G301-0.5	55	0.5	6 to 9	63	1.1	---	---	---
W-ALAM-M3	G301-1.5	55	1.5	6 to 9	16	---	---	---	---
W-ALAM-M3	G301-2.5	55	2.5	6 to 9	24	---	---	---	---
W-ALAM-N1	G302-0	55	0	0 to 3	210	8.8	<0.50	---	---
W-ALAM-N1	G302-0.5	55	0.5	0 to 3	20	---	---	---	---
W-ALAM-N1	G302-1.5	55	1.5	0 to 3	17	---	---	---	---
W-ALAM-N1	G302-2.5	55	2.5	0 to 3	23	---	---	---	---
W-ALAM-N2	G303-0	55	0	6 to 9	670	43	---	<0.50	---
W-ALAM-N2	G303-0.5	55	0.5	6 to 9	31	---	---	---	6.9
W-ALAM-N2	G303-1.5	55	1.5	6 to 9	31	---	---	---	---
W-ALAM-N2	G303-2.5	55	2.5	6 to 9	19	---	---	---	---
W-ALAM-O1	G304-0	55	0	0 to 3	88	41	<0.50	---	---
W-ALAM-O1	G304-0.5	55	0.5	0 to 3	110	1.6	---	---	---
W-ALAM-O1	G304-1.5	55	1.5	0 to 3	21	---	---	---	---
W-ALAM-O1	G304-2.5	55	2.5	0 to 3	14	---	---	---	---
W-ALAM-O2	G305-0	55	0	3 to 6	810	46	---	<0.50	---
W-ALAM-O2	G305-0.5	55	0.5	3 to 6	37	---	---	---	---
W-ALAM-O2	G305-1.5	55	1.5	3 to 6	34	---	---	---	---
W-ALAM-O2	G305-2.5	55	2.5	3 to 6	19	---	---	---	7.2
W-ALAM-P1	G306-0	55	0	0 to 3	21	---	---	---	---
W-ALAM-P1	G306-0.5	55	0.5	0 to 3	1,300	85	---	3.0	---
W-ALAM-P1	G306-1.5	55	1.5	0 to 3	27	---	---	---	---
W-ALAM-P1	G306-2.5	55	2.5	0 to 3	8.8	---	---	---	---
W-ALAM-Q1	G307-0	55	0	0 to 3	10	---	---	---	---
W-ALAM-Q1	G307-0.5	55	0.5	0 to 3	780	14	---	<0.50	---
W-ALAM-Q1	G307-1.5	55	1.5	0 to 3	18	---	---	---	---
W-ALAM-Q1	G307-2.5	55	2.5	0 to 3	9.0	---	---	---	---

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Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-ALAM-R1	G308-0	55	0	0 to 3	12	---	---	---	---
W-ALAM-R1	G308-0.5	55	0.5	0 to 3	470	40	---	<0.50	7.5
W-ALAM-R1	G308-1.5	55	1.5	0 to 3	21	---	---	---	---
W-ALAM-R1	G308-2.5	55	2.5	0 to 3	59	2.2	---	---	---
W-ALAM-S1	G309-0	55	0	0 to 3	36	---	---	---	---
W-ALAM-S1	G309-0.5	55	0.5	0 to 3	9.3	---	---	---	---
W-ALAM-S1	G309-1.5	55	1.5	0 to 3	14	---	---	---	---
W-ALAM-S1	G309-2.5	55	2.5	0 to 3	9.6	---	---	---	---
W-ALAM-S2	G310-0	55	0	3 to 6	110	8.3	<0.50	---	---
W-ALAM-S2	G310-0.5	55	0.5	3 to 6	140	5.1	<0.50	---	---
W-ALAM-S2	G310-1.5	55	1.5	3 to 6	6.7	---	---	---	---
W-ALAM-S2	G310-2.5	55	2.5	3 to 6	7.9	---	---	---	7.5
W-ALAM-S3	G311-0	55	0	>9	670	56	---	<0.50	---
W-ALAM-S3	G311-0.5	55	0.5	>9	54	1.5	---	---	---
W-ALAM-S3	G311-1.5	55	1.5	>9	19	---	---	---	---
W-ALAM-S3	G311-2.5	55	2.5	>9	26	---	---	---	---
W-ALAM-T1	G312-0	55	0	0 to 3	1,700	220	---	3.4	---
W-ALAM-T1	G312-0.5	55	0.5	0 to 3	220	22	<0.50	---	---
W-ALAM-T1	G312-1.5	55	1.5	0 to 3	10	---	---	---	---
W-ALAM-T1	G312-2.5	55	2.5	0 to 3	12	---	---	---	---
W-ALAM-T2	G313-0	55	0	3 to 6	2,000	140	---	1.5	---
W-ALAM-T2	G313-0.5	55	0.5	3 to 6	150	6.2	<0.50	---	7.7
W-ALAM-T2	G313-1.5	55	1.5	3 to 6	12	---	---	---	---
W-ALAM-T2	G313-2.5	55	2.5	3 to 6	11	---	---	---	---
W-ALAM-T3	G314-0	55	0	>9	760	52	---	0.52	---
W-ALAM-T3	G314-0.5	55	0.5	>9	91	4.0	---	---	---
W-ALAM-T3	G314-1.5	55	1.5	>9	29	---	---	---	---
W-ALAM-T3	G314-2.5	55	2.5	>9	16	---	---	---	7.8
W-MV26A-01	G258-0	56	0	0 to 3	300	25	---	<0.50	---
W-MV26A-01	G258-0.5	56	0.5	0 to 3	93	4.4	---	---	---
W-MV26A-02	G259-0	56	0	3 to 6	210	15	<0.50	---	---
W-MV26A-02	G259-0.5	56	0.5	3 to 6	89	5.3	<0.50	---	---
W-MV26A-03	G260-0	56	0	>9	330	30	---	<0.50	---
W-MV26A-03	G260-0.5	56	0.5	>9	150	6.0	<0.50	---	---
W-MV26A-04	G261-0	56	0	0 to 3	870	32	---	<0.50	---
W-MV26A-04	G261-0.5	56	0.5	0 to 3	12	---	---	---	---
W-MV26A-05	G262-0	56	0	3 to 6	490	30	---	<0.50	9.1
W-MV26A-05	G262-0.5	56	0.5	3 to 6	88	2.9	---	---	---
W-MV26A-06	G263-0	56	0	>9	330	17	---	<0.50	---
W-MV26A-06	G263-0.5	56	0.5	>9	220	5.0	<0.50	---	---
W-CC25-01	G315-0	57	0	>9	170	7.6	<0.50	---	---
W-CC25-01	G315-0.5	57	0.5	>9	49	---	---	---	---
W-CC25-01	G315-1.5	57	1.5	>9	36	---	---	---	---
W-CC25-01	G315-2.5	57	2.5	>9	30	---	---	---	---
W-CC25-01	G315-3.5	57	3.5	>9	31	---	---	---	---
W-CC25-01	G315-4.5	57	4.5	>9	29	---	---	---	---
W-CC25-01	G315-5.5	57	5.5	>9	11	---	---	---	---
W-CC25-01	G315-6.5	57	6.5	>9	9.6	---	---	---	6.6
E-MV26B-01	G316-0	58	0	0 to 3	200	9.9	<0.50	---	---
E-MV26B-01	G316-0.5	58	0.5	0 to 3	20	---	---	---	---
E-MV26B-02	G317-0	58	0	3 to 6	130	7.8	<0.50	---	---
E-MV26B-02	G317-0.5	58	0.5	3 to 6	28	---	---	---	---
E-MV26B-03	G318-0	58	0	>9	45	---	---	---	---
E-MV26B-03	G318-0.5	58	0.5	>9	28	---	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-MV26B-04	G319-0	58	0	0 to 3	120	8.4	<0.50	---	---
E-MV26B-04	G319-0.5	58	0.5	0 to 3	34	---	---	---	7.4
E-MV26B-05	G320-0	58	0	3 to 6	84	5.3	<0.50	---	---
E-MV26B-05	G320-0.5	58	0.5	3 to 6	40	---	---	---	---
E-MV26B-06	G321-0	58	0	>9	110	5.7	<0.50	---	---
E-MV26B-06	G321-0.5	58	0.5	>9	25	---	---	---	---
E-CC26-01	G328-0	59	0	>9	140	6.5	<0.50	---	---
E-CC26-01	G328-0.5	59	0.5	>9	14	---	---	---	---
E-CC26-01	G328-1.5	59	1.5	>9	13	---	---	---	7.1
E-CC26-01	G328-2.5	59	2.5	>9	10	---	---	---	---
E-CC26-01	G328-3.5	59	3.5	>9	14	---	---	---	---
E-MV27A-01	G322-0	60	0	0 to 3	10	---	---	---	---
E-MV27A-01	G322-0.5	60	0.5	0 to 3	10	---	---	---	---
E-MV27A-02	G323-0	60	0	3 to 6	18	---	---	---	---
E-MV27A-02	G323-0.5	60	0.5	3 to 6	33	---	---	---	---
E-MV27A-03	G324-0	60	0	>9	540	35	---	<0.50	---
E-MV27A-03	G324-0.5	60	0.5	>9	49	---	---	---	---
E-MV27A-04	G325-0	60	0	0 to 3	100	5.0	<0.50	---	6.6
E-MV27A-04	G325-0.5	60	0.5	0 to 3	64	3.9	---	---	---
E-MV27A-05	G326-0	60	0	3 to 6	76	3.3	---	---	---
E-MV27A-05	G326-0.5	60	0.5	3 to 6	9.0	---	---	---	---
E-MV27A-06	G327-0	60	0	>9	74	4.0	---	---	---
E-MV27A-06	G327-0.5	60	0.5	>9	9.2	---	---	---	7.4
E-MV28-01	G329-0	61	0	0 to 3	7.1	---	---	---	---
E-MV28-01	G329-0.5	61	0.5	0 to 3	10	---	---	---	---
E-MV28-02	G330-0	61	0	3 to 6	30	---	---	---	---
E-MV28-02	G330-0.5	61	0.5	3 to 6	12	---	---	---	---
E-MV28-03	G331-0	61	0	>9	19	---	---	---	---
E-MV28-03	G331-0.5	61	0.5	>9	11	---	---	---	7.5
E-MV28-04	G332-0	61	0	0 to 3	8.5	---	---	---	---
E-MV28-04	G332-0.5	61	0.5	0 to 3	35	---	---	---	---
E-MV28-05	G333-0	61	0	3 to 6	67	2.1	---	---	---
E-MV28-05	G333-0.5	61	0.5	3 to 6	36	---	---	---	---
E-MV28-06	G334-0	61	0	>9	17	---	---	---	---
E-MV28-06	G334-0.5	61	0.5	>9	17	---	---	---	---
E-CC27-01	G341-0	62	0	>9	25	---	---	---	---
E-CC27-01	G341-0.5	62	0.5	>9	4.6	---	---	---	---
E-CC27-01	G341-1.5	62	1.5	>9	5.3	---	---	---	---
E-CC27-01	G341-2.5	62	2.5	>9	6.2	---	---	---	---
E-CC27-01	G341-3.5	62	3.5	>9	4.6	---	---	---	---
E-CC27-01	G341-4	62	4	>9	3.2	---	---	---	---
E-CM4-CLIF	G342-0	63	0	3 to 6	48	---	---	---	---
E-CM4-CLIF	G342-0.5	63	0.5	3 to 6	9.4	---	---	---	---
E-CM4-CLIF	G342-1.5	63	1.5	3 to 6	6.5	---	---	---	---
E-CM4-CLIF	G342-2.5	63	2.5	3 to 6	7.8	---	---	---	---
E-CM4-CLIF	G342-3.5	63	3.5	3 to 6	6.4	---	---	---	---
E-CM4-CLIF	G342-4.5	63	4.5	3 to 6	5.1	---	---	---	---
E-CM4-CLIF	G342-5.5	63	5.5	3 to 6	6.4	---	---	---	---
E-CM4-CLIF	G342-6.5	63	6.5	3 to 6	5.7	---	---	---	8.0
W-MV28A-01	G335-0	64	0	0 to 3	3.4	---	---	---	8.2
W-MV28A-01	G335-0.5	64	0.5	0 to 3	160	6.1	<0.50	---	---
W-MV28A-02	G336-0	64	0	3 to 6	3.5	---	---	---	---
W-MV28A-02	G336-0.5	64	0.5	3 to 6	160	4.7	---	---	---

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SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-MV28A-03	G337-0	64	0	>9	5.1	---	---	---	---
W-MV28A-03	G337-0.5	64	0.5	>9	140	5.6	<0.50	---	---
W-MV28A-04	G338-0	64	0	0 to 3	4.1	---	---	---	---
W-MV28A-04	G338-0.5	64	0.5	0 to 3	130	5.0	<0.50	---	---
W-MV28A-05	G339-0	64	0	3 to 6	3.1	---	---	---	---
W-MV28A-05	G339-0.5	64	0.5	3 to 6	150	6.4	<0.50	---	---
W-MV28A-06	G340-0	64	0	>9	6.6	---	---	---	---
W-MV28A-06	G340-0.5	64	0.5	>9	13	---	---	---	---
E-CLIF-A1	G343-0	65	0	0 to 3	9.8	---	---	---	---
E-CLIF-A1	G343-0.5	65	0.5	0 to 3	5.7	---	---	---	---
E-CLIF-A1	G343-1.5	65	1.5	0 to 3	8.4	---	---	---	---
E-CLIF-A1	G343-2.5	65	2.5	0 to 3	6.1	---	---	---	---
E-CLIF-A2	G344-0	65	0	3 to 6	7.2	---	---	---	---
E-CLIF-A2	G344-0.5	65	0.5	3 to 6	5.8	---	---	---	---
E-CLIF-A2	G344-1.5	65	1.5	3 to 6	5.7	---	---	---	---
E-CLIF-A2	G344-2.5	65	2.5	3 to 6	4.8	---	---	---	---
E-CLIF-A3	G345-0	65	0	6 to 9	6.6	---	---	---	---
E-CLIF-A3	G345-0.5	65	0.5	6 to 9	6.8	---	---	---	5.3
E-CLIF-A3	G345-1.5	65	1.5	6 to 9	5.6	---	---	---	---
E-CLIF-A3	G345-2.5	65	2.5	6 to 9	3.1	---	---	---	---
E-CLIF-A4	G346-0	65	0	>9	9.6	---	---	---	---
E-CLIF-A4	G346-0.5	65	0.5	>9	5.1	---	---	---	---
E-CLIF-A4	G346-1.5	65	1.5	>9	5.0	---	---	---	---
E-CLIF-A4	G346-2.5	65	2.5	>9	3.8	---	---	---	---
E-CLIF-A5	G347-0	65	0	>9	6.5	---	---	---	---
E-CLIF-A5	G347-0.5	65	0.5	>9	4.6	---	---	---	---
E-CLIF-A5	G347-1.5	65	1.5	>9	4.8	---	---	---	---
E-CLIF-A5	G347-2.5	65	2.5	>9	3.3	---	---	---	8.3
E-CLIF-B1	G348-0	65	0	0 to 3	10	---	---	---	---
E-CLIF-B1	G348-0.5	65	0.5	0 to 3	5.6	---	---	---	---
E-CLIF-B1	G348-1.5	65	1.5	0 to 3	7.7	---	---	---	---
E-CLIF-B1	G348-2.5	65	2.5	0 to 3	4.4	---	---	---	---
E-CLIF-B2	G349-0	65	0	3 to 6	7.4	---	---	---	---
E-CLIF-B2	G349-0.5	65	0.5	3 to 6	6.7	---	---	---	---
E-CLIF-B2	G349-1.5	65	1.5	3 to 6	9.0	---	---	---	---
E-CLIF-B2	G349-2.5	65	2.5	3 to 6	6.3	---	---	---	---
E-CLIF-B3	G350-0	65	0	6 to 9	7.0	---	---	---	---
E-CLIF-B3	G350-0.5	65	0.5	6 to 9	2.8	---	---	---	10.0
E-CLIF-B3	G350-1.5	65	1.5	6 to 9	12	---	---	---	---
E-CLIF-B3	G350-2.5	65	2.5	6 to 9	6.2	---	---	---	---
E-CLIF-B4	G351-0	65	0	>9	6.6	---	---	---	---
E-CLIF-B4	G351-0.5	65	0.5	>9	9.1	---	---	---	---
E-CLIF-B4	G351-1.5	65	1.5	>9	6.1	---	---	---	---
E-CLIF-B4	G351-2.5	65	2.5	>9	4.5	---	---	---	---
E-CLIF-B5	G352-0	65	0	>9	9.0	---	---	---	---
E-CLIF-B5	G352-0.5	65	0.5	>9	10	---	---	---	---
E-CLIF-B5	G352-1.5	65	1.5	>9	5.7	---	---	---	---
E-CLIF-B5	G352-2.5	65	2.5	>9	3.3	---	---	---	8.2
E-CLIF-C1	G353-0	65	0	0 to 3	15	---	---	---	---
E-CLIF-C1	G353-0.5	65	0.5	0 to 3	10	---	---	---	---
E-CLIF-C1	G353-1.5	65	1.5	0 to 3	5.9	---	---	---	---
E-CLIF-C1	G353-2.5	65	2.5	0 to 3	7.1	---	---	---	---
E-CLIF-C2	G354-0	65	0	3 to 6	7.4	---	---	---	---
E-CLIF-C2	G354-0.5	65	0.5	3 to 6	4.2	---	---	---	---
E-CLIF-C2	G354-1.5	65	1.5	3 to 6	5.8	---	---	---	---
E-CLIF-C2	G354-2.5	65	2.5	3 to 6	6.6	---	---	---	---

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E-CLIF-C3	G355-0	65	0	6 to 9	5.9	---	---	---	---
E-CLIF-C3	G355-0.5	65	0.5	6 to 9	5.3	---	---	---	7.1
E-CLIF-C3	G355-1.5	65	1.5	6 to 9	4.8	---	---	---	---
E-CLIF-C3	G355-2.5	65	2.5	6 to 9	6.2	---	---	---	---
E-CLIF-C4	G356-0	65	0	>9	6.1	---	---	---	---
E-CLIF-C4	G356-0.5	65	0.5	>9	5.8	---	---	---	---
E-CLIF-C4	G356-1.5	65	1.5	>9	6.2	---	---	---	---
E-CLIF-C4	G356-2.5	65	2.5	>9	5.6	---	---	---	---
E-CLIF-C5	G357-0	65	0	>9	6.5	---	---	---	---
E-CLIF-C5	G357-0.5	65	0.5	>9	5.5	---	---	---	---
E-CLIF-C5	G357-1.5	65	1.5	>9	15	---	---	---	---
E-CLIF-C5	G357-2.5	65	2.5	>9	7.7	---	---	---	6.8
E-CLIF-D1	G358-0	65	0	0 to 3	5.6	---	---	---	---
E-CLIF-D1	G358-0.5	65	0.5	0 to 3	17	---	---	---	---
E-CLIF-D1	G358-1.5	65	1.5	0 to 3	2.6	---	---	---	---
E-CLIF-D1	G358-2.5	65	2.5	0 to 3	5.3	---	---	---	---
E-CLIF-D2	G359-0	65	0	3 to 6	11	---	---	---	---
E-CLIF-D2	G359-0.5	65	0.5	3 to 6	6.8	---	---	---	---
E-CLIF-D2	G359-1.5	65	1.5	3 to 6	2.6	---	---	---	---
E-CLIF-D2	G359-2.5	65	2.5	3 to 6	4.8	---	---	---	---
E-CLIF-D3	G360-0	65	0	6 to 9	13	---	---	---	---
E-CLIF-D3	G360-0.5	65	0.5	6 to 9	9.6	---	---	---	8.3
E-CLIF-D3	G360-1.5	65	1.5	6 to 9	5.9	---	---	---	---
E-CLIF-D3	G360-2.5	65	2.5	6 to 9	4.3	---	---	---	---
E-CLIF-D4	G361-0	65	0	>9	8.5	---	---	---	---
E-CLIF-D4	G361-0.5	65	0.5	>9	5.7	---	---	---	---
E-CLIF-D4	G361-1.5	65	1.5	>9	4.9	---	---	---	---
E-CLIF-D4	G361-2.5	65	2.5	>9	6.0	---	---	---	---
E-CLIF-D5	G362-0	65	0	>9	9.9	---	---	---	6.8
E-CLIF-D5	G362-0.5	65	0.5	>9	6.7	---	---	---	---
E-CLIF-D5	G362-1.5	65	1.5	>9	9.6	---	---	---	---
E-CLIF-D5	G362-2.5	65	2.5	>9	6.7	---	---	---	---
E-CLIF-E1	G363-0	65	0	0 to 3	8.9	---	---	---	---
E-CLIF-E1	G363-0.5	65	0.5	0 to 3	11	---	---	---	---
E-CLIF-E1	G363-1.5	65	1.5	0 to 3	36	---	---	---	---
E-CLIF-E1	G363-2.5	65	2.5	0 to 3	2.9	---	---	---	7.6
E-CLIF-E2	G364-0	65	0	3 to 6	10	---	---	---	---
E-CLIF-E2	G364-0.5	65	0.5	3 to 6	19	---	---	---	---
E-CLIF-E2	G364-1.5	65	1.5	3 to 6	5.8	---	---	---	---
E-CLIF-E2	G364-2.5	65	2.5	3 to 6	4.1	---	---	---	---
E-CLIF-E3	G365-0	65	0	6 to 9	30	---	---	---	---
E-CLIF-E3	G365-0.5	65	0.5	6 to 9	11	---	---	---	---
E-CLIF-E3	G365-1.5	65	1.5	6 to 9	6.9	---	---	---	---
E-CLIF-E3	G365-2.5	65	2.5	6 to 9	3.2	---	---	---	---
E-CLIF-E4	G366-0	65	0	>9	29	---	---	---	---
E-CLIF-E4	G366-0.5	65	0.5	>9	120	1.9	---	---	---
E-CLIF-E4	G366-1.5	65	1.5	>9	9.3	---	---	---	---
E-CLIF-E4	G366-2.5	65	2.5	>9	9.6	---	---	---	---
E-CLIF-E5	G367-0	65	0	>9	49	---	---	---	---
E-CLIF-E5	G367-0.5	65	0.5	>9	160	5.2	<0.50	---	---
E-CLIF-E5	G367-1.5	65	1.5	>9	40	---	---	---	7.6
E-CLIF-E5	G367-2.5	65	2.5	>9	41	---	---	---	---
E-CLIF-F1	G368-0	65	0	0 to 3	6.8	---	---	---	---
E-CLIF-F1	G368-0.5	65	0.5	0 to 3	11	---	---	---	8.5
E-CLIF-F1	G368-1.5	65	1.5	0 to 3	5.5	---	---	---	---
E-CLIF-F1	G368-2.5	65	2.5	0 to 3	11	---	---	---	---

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Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-CLIF-F2	G369-0	65	0	3 to 6	7.0	---	---	---	---
E-CLIF-F2	G369-0.5	65	0.5	3 to 6	15	---	---	---	---
E-CLIF-F2	G369-1.5	65	1.5	3 to 6	29	---	---	---	---
E-CLIF-F2	G369-2.5	65	2.5	3 to 6	9.1	---	---	---	---
E-CLIF-F3	G370-0	65	0	6 to 9	7.9	---	---	---	---
E-CLIF-F3	G370-0.5	65	0.5	6 to 9	7.4	---	---	---	---
E-CLIF-F3	G370-1.5	65	1.5	6 to 9	4.6	---	---	---	---
E-CLIF-F3	G370-2.5	65	2.5	6 to 9	5.8	---	---	---	---
E-CLIF-G1	G371-0	65	0	0 to 3	5.4	---	---	---	---
E-CLIF-G1	G371-0.5	65	0.5	0 to 3	26	---	---	---	---
E-CLIF-G1	G371-1.5	65	1.5	0 to 3	3.8	---	---	---	---
E-CLIF-G1	G371-2.5	65	2.5	0 to 3	6.1	---	---	---	8.6
E-CLIF-G2	G372-0	65	0	3 to 6	64	2.0	---	---	---
E-CLIF-G2	G372-0.5	65	0.5	3 to 6	7.7	---	---	---	---
E-CLIF-G2	G372-1.5	65	1.5	3 to 6	5.7	---	---	---	---
E-CLIF-G2	G372-2.5	65	2.5	3 to 6	6.1	---	---	---	---
E-CLIF-G3	G373-0	65	0	6 to 9	210	4.3	---	---	---
E-CLIF-G3	G373-0.5	65	0.5	6 to 9	89	3.8	---	---	---
E-CLIF-G3	G373-1.5	65	1.5	6 to 9	14	---	---	---	---
E-CLIF-G3	G373-2.5	65	2.5	6 to 9	4.9	---	---	---	---
E-CLIF-H1	G374-0	65	0	0 to 3	7.3	---	---	---	---
E-CLIF-H1	G374-0.5	65	0.5	0 to 3	56	4.5	---	---	7.5
E-CLIF-H1	G374-1.5	65	1.5	0 to 3	7.6	---	---	---	---
E-CLIF-H1	G374-2.5	65	2.5	0 to 3	6.3	---	---	---	---
E-CLIF-H2	G375-0	65	0	3 to 6	47	---	---	---	---
E-CLIF-H2	G375-0.5	65	0.5	3 to 6	71	1.8	---	---	---
E-CLIF-H2	G375-1.5	65	1.5	3 to 6	6.7	---	---	---	---
E-CLIF-H2	G375-2.5	65	2.5	3 to 6	6.0	---	---	---	---
E-CLIF-H3	G376-0	65	0	6 to 9	180	7.9	<0.50	---	---
E-CLIF-H3	G376-0.5	65	0.5	6 to 9	210	6.5	<0.50	---	---
E-CLIF-H3	G376-1.5	65	1.5	6 to 9	25	---	---	---	---
E-CLIF-H3	G376-2.5	65	2.5	6 to 9	5.1	---	---	---	7.8
E-CLIF-I1	G377-0	65	0	0 to 3	9.5	---	---	---	---
E-CLIF-I1	G377-0.5	65	0.5	0 to 3	9.3	---	---	---	---
E-CLIF-I1	G377-1.5	65	1.5	0 to 3	35	---	---	---	---
E-CLIF-I1	G377-2.5	65	2.5	0 to 3	3.7	---	---	---	---
E-CLIF-I2	G378-0	65	0	3 to 6	110	1.7	---	---	---
E-CLIF-I2	G378-0.5	65	0.5	3 to 6	55	1.1	---	---	---
E-CLIF-I2	G378-1.5	65	1.5	3 to 6	6.2	---	---	---	---
E-CLIF-I2	G378-2.5	65	2.5	3 to 6	6.1	---	---	---	---
E-CLIF-J1	G379-0	65	0	0 to 3	9.0	---	---	---	---
E-CLIF-J1	G379-0.5	65	0.5	0 to 3	100	5.3	<0.50	---	8.1
E-CLIF-J1	G379-1.5	65	1.5	0 to 3	21	---	---	---	---
E-CLIF-J1	G379-2.5	65	2.5	0 to 3	6.3	---	---	---	---
E-CLIF-J2	G380-0	65	0	3 to 6	17	---	---	---	---
E-CLIF-J2	G380-0.5	65	0.5	3 to 6	150	7.2	<0.50	---	---
E-CLIF-J2	G380-1.5	65	1.5	3 to 6	76	4.3	---	---	---
E-CLIF-J2	G380-2.5	65	2.5	3 to 6	5.4	---	---	---	---
E-CLIF-K1	G381-0	65	0	0 to 3	9.0	---	---	---	---
E-CLIF-K1	G381-0.5	65	0.5	0 to 3	17	---	---	---	---
E-CLIF-K1	G381-1.5	65	1.5	0 to 3	2.9	---	---	---	---
E-CLIF-K1	G381-2.5	65	2.5	0 to 3	4.1	---	---	---	8.3
E-CLIF-K2	G382-0	65	0	0 to 3	50	4.7	---	---	---
E-CLIF-K2	G382-0.5	65	0.5	0 to 3	6.3	---	---	---	---
E-CLIF-K2	G382-1.5	65	1.5	0 to 3	4.2	---	---	---	---
E-CLIF-K2	G382-2.5	65	2.5	0 to 3	6.3	---	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-CLIF-L1	G383-0	65	0	0 to 3	260	10	<0.50	---	8.6
E-CLIF-L1	G383-0.5	65	0.5	0 to 3	5.3	---	---	---	---
E-CLIF-L1	G383-1.5	65	1.5	0 to 3	12	---	---	---	---
E-CLIF-L1	G383-2.5	65	2.5	0 to 3	6.2	---	---	---	---
E-CLIF-M1	G384-0	65	0	0 to 3	700	47	---	1.8	---
E-CLIF-M1	G384-0.5	65	0.5	0 to 3	24	---	---	---	---
E-CLIF-M1	G384-1.5	65	1.5	0 to 3	7.5	---	---	---	---
E-CLIF-M1	G384-2.5	65	2.5	0 to 3	14	---	---	---	---
E-CLIF-N1	G385-0	65	0	0 to 3	640	41	---	1.0	---
E-CLIF-N1	G385-0.5	65	0.5	0 to 3	11	---	---	---	---
E-CLIF-N1	G385-1.5	65	1.5	0 to 3	6.7	---	---	---	6.5
E-CLIF-N1	G385-2.5	65	2.5	0 to 3	6.6	---	---	---	---
E-CLIF-O1	G386-0	65	0	0 to 3	790	70	---	1.3	---
E-CLIF-O1	G386-0.5	65	0.5	0 to 3	360	25	---	0.83	---
E-CLIF-O1	G386-1.5	65	1.5	0 to 3	16	---	---	---	---
E-CLIF-O1	G386-2.5	65	2.5	0 to 3	17	---	---	---	---
E-CLIF-P1	G387-0	65	0	0 to 3	2,500	140	<0.50	11	---
E-CLIF-P1	G387-0.5	65	0.5	0 to 3	210	14	<0.50	---	---
E-CLIF-P1	G387-1.5	65	1.5	0 to 3	140	1.9	---	---	---
E-CLIF-P1	G387-2.5	65	2.5	0 to 3	5.4	---	---	---	---
E-CLIF-Q1	G388-0	65	0	0 to 3	740	54	---	3.0	---
E-CLIF-Q1	G388-0.5	65	0.5	0 to 3	910	52	---	0.95	---
E-CLIF-Q1	G388-1.5	65	1.5	0 to 3	1,000	50	---	1.6	---
E-CLIF-Q1	G388-2.5	65	2.5	0 to 3	140	<0.50	---	---	---
E-CLIF-R1	G389-0	65	0	0 to 3	2,000	170	---	<0.50	---
E-CLIF-R1	G389-0.5	65	0.5	0 to 3	290	13	<0.50	---	---
E-CLIF-R1	G389-1.5	65	1.5	0 to 3	13	---	---	---	---
E-CLIF-R1	G389-2.5	65	2.5	0 to 3	43	---	---	---	---
E-CLIF-S1	G390-0	65	0	0 to 3	1,200	150	<0.50	10	---
E-CLIF-S1	G390-0.5	65	0.5	0 to 3	100	3.5	---	---	---
E-CLIF-S1	G390-1.5	65	1.5	0 to 3	18	---	---	---	7.7
E-CLIF-S1	G390-2.5	65	2.5	0 to 3	120	11	<0.50	---	---
E-CLIF-T1	G391-0	65	0	0 to 3	3,100	270	1.9	11	---
E-CLIF-T1	G391-0.5	65	0.5	0 to 3	340	32	---	1.2	---
E-CLIF-T1	G391-1.5	65	1.5	0 to 3	250	10	<0.50	---	---
E-CLIF-T1	G391-2.5	65	2.5	0 to 3	170	12	<0.50	---	---
E-MV30-LOOP-01	G392-0	66	0	0 to 3	7.5	---	---	---	---
E-MV30-LOOP-01	G392-0.5	66	0.5	0 to 3	5.3	---	---	---	---
E-MV30-LOOP-02	G393-0	66	0	3 to 6	7.2	---	---	---	---
E-MV30-LOOP-02	G393-0.5	66	0.5	3 to 6	5.5	---	---	---	7.7
E-MV30-LOOP-03	G394-0	66	0	>9	7.0	---	---	---	---
E-MV30-LOOP-03	G394-0.5	66	0.5	>9	6.6	---	---	---	---
E-MV30-LOOP-04	G395-0	66	0	0 to 3	6.4	---	---	---	---
E-MV30-LOOP-04	G395-0.5	66	0.5	0 to 3	7.7	---	---	---	---
E-MV30-LOOP-05	G396-0	66	0	3 to 6	8.9	---	---	---	---
E-MV30-LOOP-05	G396-0.5	66	0.5	3 to 6	8.1	---	---	---	---
E-MV30-LOOP-06	G397-0	66	0	>9	8.8	---	---	---	---
E-MV30-LOOP-06	G397-0.5	66	0.5	>9	6.5	---	---	---	---
W-CC28-01	G410-0	67	0	>9	6.5	---	---	---	---
W-CC28-01	G410-0.5	67	0.5	>9	7.2	---	---	---	---
W-CC28-01	G410-1.5	67	1.5	>9	6.8	---	---	---	---
W-CC28-01	G410-2.5	67	2.5	>9	6.9	---	---	---	---
W-MV29-01	G404-0	68	0	0 to 3	7.0	---	---	---	---
W-MV29-01	G404-0.5	68	0.5	0 to 3	4.7	---	---	---	---

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Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-MV29-02	G405-0	68	0	3 to 6	11	---	---	---	---
W-MV29-02	G405-0.5	68	0.5	3 to 6	48	---	---	---	---
W-MV29-03	G406-0	68	0	>9	29	---	---	---	---
W-MV29-03	G406-0.5	68	0.5	>9	9.5	---	---	---	8.0
W-MV29-04	G407-0	68	0	0 to 3	5.2	---	---	---	---
W-MV29-04	G407-0.5	68	0.5	0 to 3	14	---	---	---	---
W-MV29-05	G408-0	68	0	3 to 6	24	---	---	---	---
W-MV29-05	G408-0.5	68	0.5	3 to 6	17	---	---	---	---
W-MV29-06	G409-0	68	0	>9	19	---	---	---	---
W-MV29-06	G409-0.5	68	0.5	>9	16	---	---	---	8.6
E-MV31-01	G398-0	69	0	0 to 3	6.1	---	---	---	---
E-MV31-01	G398-0.5	69	0.5	0 to 3	37	---	---	---	7.9
E-MV31-02	G399-0	69	0	3 to 6	17	---	---	---	---
E-MV31-02	G399-0.5	69	0.5	3 to 6	7.6	---	---	---	---
E-MV31-03	G400-0	69	0	>9	11	---	---	---	---
E-MV31-03	G400-0.5	69	0.5	>9	7.9	---	---	---	---
E-MV31-04	G401-0	69	0	0 to 3	5.5	---	---	---	---
E-MV31-04	G401-0.5	69	0.5	0 to 3	6.3	---	---	---	---
E-MV31-05	G402-0	69	0	3 to 6	9.7	---	---	---	---
E-MV31-05	G402-0.5	69	0.5	3 to 6	6.6	---	---	---	---
E-MV31-06	G403-0	69	0	>9	9.3	---	---	---	---
E-MV31-06	G403-0.5	69	0.5	>9	13	---	---	---	7.1
W-MV-MONTE-01	G411-0	70	0	0 to 3	19	---	---	---	---
W-MV-MONTE-01	G411-0.5	70	0.5	0 to 3	14	---	---	---	---
W-MV-MONTE-02	G412-0	70	0	3 to 6	11	---	---	---	---
W-MV-MONTE-02	G412-0.5	70	0.5	3 to 6	2.7	---	---	---	---
W-MV-MONTE-03	G413-0	70	0	>9	13	---	---	---	---
W-MV-MONTE-03	G413-0.5	70	0.5	>9	2.3	---	---	---	---
W-MV-MONTE-04	G414-0	70	0	0 to 3	15	---	---	---	---
W-MV-MONTE-04	G414-0.5	70	0.5	0 to 3	2.3	---	---	---	8.2
W-MV-MONTE-05	G415-0	70	0	3 to 6	15	---	---	---	---
W-MV-MONTE-05	G415-0.5	70	0.5	3 to 6	18	---	---	---	---
W-MV-MONTE-06	G416-0	70	0	>9	15	---	---	---	---
W-MV-MONTE-06	G416-0.5	70	0.5	>9	5.3	---	---	---	---
W-CC29-01	G428-0	71	0	>9	12	---	---	---	---
W-CC29-01	G428-0.5	71	0.5	>9	21	---	---	---	---
W-CC29-01	G428-1.5	71	1.5	>9	23	---	---	---	---
W-CC29-01	G428-2.5	71	2.5	>9	19	---	---	---	---
W-CC29-01	G428-3.5	71	3.5	>9	15	---	---	---	---
W-CC29-01	G428-4.5	71	4.5	>9	15	---	---	---	---
W-CC29-01	G428-5.5	71	5.5	>9	13	---	---	---	---
W-CC29-01	G428-6.5	71	6.5	>9	17	---	---	---	8.0
W-505-BL1	G472-0	72	0	0 to 3	31	---	---	---	---
W-505-BL1	G472-0.5	72	0.5	0 to 3	17	---	---	---	---
W-505-BL1	G472-1.5	72	1.5	0 to 3	7.8	---	---	---	---
W-505-BL1	G472-2.5	72	2.5	0 to 3	5.5	---	---	---	8.0
W-505-CL1	G475-0	72	0	0 to 3	27	---	---	---	---
W-505-CL1	G475-0.5	72	0.5	0 to 3	27	---	---	---	7.6
W-505-CL1	G475-1.5	72	1.5	0 to 3	14	---	---	---	---
W-505-CL1	G475-2.5	72	2.5	0 to 3	4.9	---	---	---	---

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Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-505-DL1	G478-0	72	0	0 to 3	6.7	---	---	---	---
W-505-DL1	G478-0.5	72	0.5	0 to 3	5.4	---	---	---	---
W-505-DL1	G478-1.5	72	1.5	0 to 3	16	---	---	---	---
W-505-DL1	G478-2.5	72	2.5	0 to 3	150	<0.50	---	---	---
W-505-EL1	G481-0	72	0	0 to 3	220	<0.50	---	---	---
W-505-EL1	G481-0.5	72	0.5	0 to 3	6.9	---	---	---	---
W-505-EL1	G481-1.5	72	1.5	0 to 3	7.4	---	---	---	---
W-505-EL1	G481-2.5	72	2.5	0 to 3	230	<0.50	---	---	---
W-505-FL1	G484-0	72	0	0 to 3	250	<0.50	---	---	---
W-505-FL1	G484-0.5	72	0.5	0 to 3	250	<0.50	---	---	---
W-505-FL1	G484-1.5	72	1.5	0 to 3	6.7	---	---	---	---
W-505-FL1	G484-2.5	72	2.5	0 to 3	8.0	---	---	---	---
W-505-GL1	G487-0	72	0	0 to 3	23	---	---	---	---
W-505-GL1	G487-0.5	72	0.5	0 to 3	29	---	---	---	---
W-505-GL1	G487-1.5	72	1.5	0 to 3	170	<0.50	---	---	---
W-505-GL1	G487-2.5	72	2.5	0 to 3	16	---	---	---	7.2
W-505-HL1	G490-0	72	0	0 to 3	19	---	---	---	---
W-505-HL1	G490-0.5	72	0.5	0 to 3	18	---	---	---	7.5
W-505-HL1	G490-1.5	72	1.5	0 to 3	11	---	---	---	---
W-505-HL1	G490-2.5	72	2.5	0 to 3	8.0	---	---	---	---
W-505-IL1	G492-0	72	0	0 to 3	26	---	---	---	---
W-505-IL1	G492-0.5	72	0.5	0 to 3	20	---	---	---	---
W-505-IL1	G492-1.5	72	1.5	0 to 3	7.5	---	---	---	---
W-505-IL1	G492-2.5	72	2.5	0 to 3	7.2	---	---	---	7.1
W-505-JL1	G494-0	72	0	0 to 3	19	---	---	---	---
W-505-JL1	G494-0.5	72	0.5	0 to 3	29	---	---	---	---
W-505-JL1	G494-1.5	72	1.5	0 to 3	8.5	---	---	---	---
W-505-JL1	G494-2.5	72	2.5	0 to 3	12	---	---	---	---
W-505-KL1	G496-0	72	0	0 to 3	10	---	---	---	---
W-505-KL1	G496-0.5	72	0.5	0 to 3	3.0	---	---	---	---
W-505-KL1	G496-1.5	72	1.5	0 to 3	2.1	---	---	---	---
W-505-KL1	G496-2.5	72	2.5	0 to 3	7.4	---	---	---	---
W-505-LL1	G498-0	72	0	0 to 3	18	---	---	---	---
W-505-LL1	G498-0.5	72	0.5	0 to 3	4.2	---	---	---	---
W-505-LL1	G498-1.5	72	1.5	0 to 3	2.1	---	---	---	---
W-505-LL1	G498-2.5	72	2.5	0 to 3	7.1	---	---	---	---
W-505-ML1	G500-0	72	0	0 to 3	17	---	---	---	---
W-505-ML1	G500-0.5	72	0.5	0 to 3	5.2	---	---	---	8.8
W-505-ML1	G500-1.5	72	1.5	0 to 3	2.5	---	---	---	---
W-505-ML1	G500-2.5	72	2.5	0 to 3	18	---	---	---	---
W-505-NL1	G502-0	72	0	0 to 3	15	---	---	---	---
W-505-NL1	G502-0.5	72	0.5	0 to 3	4.7	---	---	---	---
W-505-NL1	G502-1.5	72	1.5	0 to 3	1.9	---	---	---	---
W-505-NL1	G502-2.5	72	2.5	0 to 3	2.0	---	---	---	---
W-505-OL1	G504-0	72	0	0 to 3	8.2	---	---	---	---
W-505-OL1	G504-0.5	72	0.5	0 to 3	3.2	---	---	---	---
W-505-OL1	G504-1.5	72	1.5	0 to 3	2.2	---	---	---	---
W-505-OL1	G504-2.5	72	2.5	0 to 3	24	---	---	---	7.3
W-505-PL1	G506-0	72	0	0 to 3	28	---	---	---	---
W-505-PL1	G506-0.5	72	0.5	0 to 3	11	---	---	---	---
W-505-PL1	G506-1.5	72	1.5	0 to 3	2.1	---	---	---	---
W-505-PL1	G506-2.5	72	2.5	0 to 3	3.3	---	---	---	---
W-505-QL1	G508-0	72	0	0 to 3	38	---	---	---	---
W-505-QL1	G508-0.5	72	0.5	0 to 3	51	3.9	---	---	---
W-505-QL1	G508-1.5	72	1.5	0 to 3	2.2	---	---	---	---
W-505-QL1	G508-2.5	72	2.5	0 to 3	2.0	---	---	---	7.2

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-505-RL1	G418-0	72	0	0 to 3	59	15	<0.50	---	---
W-505-RL1	G418-0.5	72	0.5	0 to 3	17	---	---	---	---
W-505-RL1	G418-1.5	72	1.5	0 to 3	13	---	---	---	---
W-505-RL1	G418-2.5	72	2.5	0 to 3	2.6	---	---	---	---
W-505-SL1	G420-0	72	0	0 to 3	53	3.6	---	---	---
W-505-SL1	G420-0.5	72	0.5	0 to 3	60	12	<0.50	---	8.4
W-505-SL1	G420-1.5	72	1.5	0 to 3	3.2	---	---	---	---
W-505-SL1	G420-2.5	72	2.5	0 to 3	2.2	---	---	---	---
W-505-TL1	G422-0	72	0	0 to 3	240	37	<0.50	---	---
W-505-TL1	G422-0.5	72	0.5	0 to 3	290	11	<0.50	---	---
W-505-UL1	G424-0	72	0	0 to 3	5.0	---	---	---	---
W-505-UL1	G424-0.5	72	0.5	0 to 3	31	---	---	---	---
W-505-UL1	G424-1.5	72	1.5	0 to 3	3.1	---	---	---	---
W-505-UL1	G424-2.5	72	2.5	0 to 3	2.8	---	---	---	---
W-505-VL1	G426-0	72	0	0 to 3	110	3.0	---	---	---
W-505-VL1	G426-0.5	72	0.5	0 to 3	73	0.55	---	---	8.2
W-505-VL1	G426-1.5	72	1.5	0 to 3	3.7	---	---	---	---
W-505-VL1	G426-2.5	72	2.5	0 to 3	14	---	---	---	---
W-505-WL1	G427-0	72	0	0 to 3	51	0.69	---	---	---
W-505-WL1	G427-0.5	72	0.5	0 to 3	6.2	---	---	---	---
W-505-A1	G469-0	73	0	3 to 6	130	3.3	---	---	---
W-505-A1	G469-0.5	73	0.5	3 to 6	30	---	---	---	---
W-505-A1	G469-1.5	73	1.5	3 to 6	31	---	---	---	---
W-505-A1	G469-2.5	73	2.5	3 to 6	13	---	---	---	---
W-505-B1	G470-0	73	0	0 to 3	18	---	---	---	---
W-505-B1	G470-0.5	73	0.5	0 to 3	19	---	---	---	7.9
W-505-B1	G470-1.5	73	1.5	0 to 3	6.3	---	---	---	---
W-505-B1	G470-2.5	73	2.5	0 to 3	21	---	---	---	---
W-505-B2	G471-0	73	0	3 to 6	68	3.8	---	---	---
W-505-B2	G471-0.5	73	0.5	3 to 6	30	---	---	---	---
W-505-B2	G471-1.5	73	1.5	3 to 6	14	---	---	---	---
W-505-B2	G471-2.5	73	2.5	3 to 6	39	---	---	---	---
W-505-C1	G473-0	73	0	0 to 3	55	3.1	---	---	---
W-505-C1	G473-0.5	73	0.5	0 to 3	99	3.3	---	---	---
W-505-C1	G473-1.5	73	1.5	0 to 3	9.2	---	---	---	---
W-505-C1	G473-2.5	73	2.5	0 to 3	15	---	---	---	---
W-505-C2	G474-0	73	0	3 to 6	180	11	<0.50	---	---
W-505-C2	G474-0.5	73	0.5	3 to 6	29	---	---	---	---
W-505-C2	G474-1.5	73	1.5	3 to 6	16	---	---	---	---
W-505-C2	G474-2.5	73	2.5	3 to 6	29	---	---	---	---
W-505-D1	G476-0	73	0	0 to 3	67	4.3	---	---	---
W-505-D1	G476-0.5	73	0.5	0 to 3	22	---	---	---	---
W-505-D1	G476-1.5	73	1.5	0 to 3	9.3	---	---	---	---
W-505-D1	G476-2.5	73	2.5	0 to 3	230	0.79	---	---	---
W-505-D2	G477-0	73	0	3 to 6	20	---	---	---	---
W-505-D2	G477-0.5	73	0.5	3 to 6	12	---	---	---	---
W-505-D2	G477-1.5	73	1.5	3 to 6	78	0.67	---	---	---
W-505-D2	G477-2.5	73	2.5	3 to 6	7.4	---	---	---	7.8
W-505-E1	G479-0	73	0	0 to 3	240	0.63	---	---	---
W-505-E1	G479-0.5	73	0.5	0 to 3	240	0.54	---	---	---
W-505-E1	G479-1.5	73	1.5	0 to 3	9.6	---	---	---	---
W-505-E1	G479-2.5	73	2.5	0 to 3	6.6	---	---	---	---
W-505-E2	G480-0	73	0	3 to 6	8.7	---	---	---	---
W-505-E2	G480-0.5	73	0.5	3 to 6	9.0	---	---	---	7.0
W-505-E2	G480-1.5	73	1.5	3 to 6	8.7	---	---	---	---
W-505-E2	G480-2.5	73	2.5	3 to 6	7.3	---	---	---	---

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SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
W-505-F1	G482-0	73	0	0 to 3	12	---	---	---	---
W-505-F1	G482-0.5	73	0.5	0 to 3	8.6	---	---	---	---
W-505-F1	G482-1.5	73	1.5	0 to 3	240	<0.50	---	---	---
W-505-F1	G482-2.5	73	2.5	0 to 3	6.3	---	---	---	7.9
W-505-F2	G483-0	73	0	3 to 6	6.3	---	---	---	---
W-505-F2	G483-0.5	73	0.5	3 to 6	7.6	---	---	---	---
W-505-F2	G483-1.5	73	1.5	3 to 6	39	---	---	---	---
W-505-F2	G483-2.5	73	2.5	3 to 6	120	<0.50	---	---	---
W-505-G1	G485-0	73	0	0 to 3	6.4	---	---	---	---
W-505-G1	G485-0.5	73	0.5	0 to 3	35	---	---	---	8.1
W-505-G1	G485-1.5	73	1.5	0 to 3	5.6	---	---	---	---
W-505-G1	G485-2.5	73	2.5	0 to 3	8.0	---	---	---	---
W-505-G2	G486-0	73	0	3 to 6	8.2	---	---	---	---
W-505-G2	G486-0.5	73	0.5	3 to 6	40	---	---	---	---
W-505-G2	G486-1.5	73	1.5	3 to 6	21	---	---	---	---
W-505-G2	G486-2.5	73	2.5	3 to 6	240	<0.50	---	---	---
W-505-H1	G488-0	73	0	0 to 3	4.7	---	---	---	---
W-505-H1	G488-0.5	73	0.5	0 to 3	6.7	---	---	---	---
W-505-H1	G488-1.5	73	1.5	0 to 3	7.4	---	---	---	---
W-505-H1	G488-2.5	73	2.5	0 to 3	13	---	---	---	---
W-505-H2	G489-0	73	0	3 to 6	250	2.2	---	---	---
W-505-H2	G489-0.5	73	0.5	3 to 6	250	<0.50	---	---	---
W-505-H2	G489-1.5	73	1.5	3 to 6	55	<0.50	---	---	---
W-505-H2	G489-2.5	73	2.5	3 to 6	30	---	---	---	---
W-505-I1	G491-0	73	0	0 to 3	260	2.8	---	---	---
W-505-I1	G491-0.5	73	0.5	0 to 3	33	---	---	---	---
W-505-I1	G491-1.5	73	1.5	0 to 3	6.9	---	---	---	---
W-505-I1	G491-2.5	73	2.5	0 to 3	5.9	---	---	---	---
W-505-J1	G493-0	73	0	0 to 3	28	---	---	---	---
W-505-J1	G493-0.5	73	0.5	0 to 3	27	---	---	---	---
W-505-J1	G493-1.5	73	1.5	0 to 3	5.7	---	---	---	---
W-505-J1	G493-2.5	73	2.5	0 to 3	10	---	---	---	---
W-505-K1	G495-0	73	0	0 to 3	810	8.0	---	<0.50	---
W-505-K1	G495-0.5	73	0.5	0 to 3	14	---	---	---	8.1
W-505-K1	G495-1.5	73	1.5	0 to 3	7.4	---	---	---	---
W-505-K1	G495-2.5	73	2.5	0 to 3	6.5	---	---	---	---
W-505-L1	G497-0	73	0	0 to 3	35	---	---	---	---
W-505-L1	G497-0.5	73	0.5	0 to 3	6.9	---	---	---	---
W-505-L1	G497-1.5	73	1.5	0 to 3	7.3	---	---	---	---
W-505-L1	G497-2.5	73	2.5	0 to 3	14	---	---	---	8.3
W-505-M1	G499-0	73	0	0 to 3	12	---	---	---	---
W-505-M1	G499-0.5	73	0.5	0 to 3	9.8	---	---	---	---
W-505-M1	G499-1.5	73	1.5	0 to 3	4.4	---	---	---	---
W-505-M1	G499-2.5	73	2.5	0 to 3	3.9	---	---	---	---
W-505-N1	G501-0	73	0	0 to 3	15	---	---	---	---
W-505-N1	G501-0.5	73	0.5	0 to 3	6.3	---	---	---	8.2
W-505-N1	G501-1.5	73	1.5	0 to 3	4.9	---	---	---	---
W-505-N1	G501-2.5	73	2.5	0 to 3	5.1	---	---	---	---
W-505-O1	G503-0	73	0	0 to 3	35	---	---	---	---
W-505-O1	G503-0.5	73	0.5	0 to 3	5.2	---	---	---	---
W-505-O1	G503-1.5	73	1.5	0 to 3	5.5	---	---	---	---
W-505-O1	G503-2.5	73	2.5	0 to 3	4.4	---	---	---	---
W-505-P1	G505-0	73	0	0 to 3	29	---	---	---	---
W-505-P1	G505-0.5	73	0.5	0 to 3	12	---	---	---	---
W-505-P1	G505-1.5	73	1.5	0 to 3	5.0	---	---	---	---
W-505-P1	G505-2.5	73	2.5	0 to 3	8.1	---	---	---	8.1
W-505-Q1	G507-0	73	0	0 to 3	42	---	---	---	---
W-505-Q1	G507-0.5	73	0.5	0 to 3	42	---	---	---	---
W-505-Q1	G507-1.5	73	1.5	0 to 3	50	0.98	---	---	---

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W-505-R1	G417-0	73	0	3 to 6	45	---	---	---	---
W-505-R1	G417-0.5	73	0.5	3 to 6	7.0	---	---	---	---
W-505-R1	G417-1.5	73	1.5	3 to 6	9.1	---	---	---	---
W-505-R1	G417-2.5	73	2.5	3 to 6	6.2	---	---	---	---
W-505-S1	G419-0	73	0	3 to 6	5.7	---	---	---	---
W-505-S1	G419-0.5	73	0.5	3 to 6	8.1	---	---	---	---
W-505-S1	G419-1.5	73	1.5	3 to 6	11	---	---	---	---
W-505-S1	G419-2.5	73	2.5	3 to 6	5.0	---	---	---	---
E-MV32-01	G429-0	74	0	0 to 3	10	---	---	---	---
E-MV32-01	G429-0.5	74	0.5	0 to 3	6.0	---	---	---	---
E-MV32-02	G430-0	74	0	3 to 6	60	1.6	---	---	---
E-MV32-02	G430-0.5	74	0.5	3 to 6	19	---	---	---	---
E-MV32-03	G431-0	74	0	>9	39	---	---	---	---
E-MV32-03	G431-0.5	74	0.5	>9	11	---	---	---	---
E-MV32-04	G432-0	74	0	0 to 3	4.7	---	---	---	---
E-MV32-04	G432-0.5	74	0.5	0 to 3	30	---	---	---	---
E-MV32-05	G433-0	74	0	3 to 6	25	---	---	---	---
E-MV32-05	G433-0.5	74	0.5	3 to 6	11	---	---	---	7.7
E-MV32-06	G434-0	74	0	>9	71	1.6	---	---	---
E-MV32-06	G434-0.5	74	0.5	>9	19	---	---	---	---
E-CC30-01	G509-0	75	0	>9	79	5.0	<0.50	---	---
E-CC30-01	G509-0.5	75	0.5	>9	12	---	---	---	---
E-CC30-01	G509-1.5	75	1.5	>9	6.3	---	---	---	---
E-CC30-01	G509-2.5	75	2.5	>9	5.5	---	---	---	7.0
E-CC30-01	G509-3.5	75	3.5	>9	5.8	---	---	---	---
E-CC30-01	G509-4.5	75	4.5	>9	6.6	---	---	---	---
E-CC30-01	G509-5.5	75	5.5	>9	8.3	---	---	---	---
E-CC30-01	G509-6.5	75	6.5	>9	5.1	---	---	---	---
E-NUT-A1	G435-0	76	0	0 to 3	14	---	---	---	6.4
E-NUT-A1	G435-0.5	76	0.5	0 to 3	13	---	---	---	---
E-NUT-A1	G435-1.5	76	1.5	0 to 3	7.9	---	---	---	---
E-NUT-A1	G435-2.5	76	2.5	0 to 3	8.1	---	---	---	---
E-NUT-A2	G436-0	76	0	3 to 6	11	---	---	---	---
E-NUT-A2	G436-0.5	76	0.5	3 to 6	7.6	---	---	---	---
E-NUT-A2	G436-1.5	76	1.5	3 to 6	6.5	---	---	---	---
E-NUT-A2	G436-2.5	76	2.5	3 to 6	5.9	---	---	---	---
E-NUT-A3	G437-0	76	0	6 to 9	16	---	---	---	---
E-NUT-A3	G437-0.5	76	0.5	6 to 9	6.8	---	---	---	6.9
E-NUT-A3	G437-1.5	76	1.5	6 to 9	5.9	---	---	---	---
E-NUT-A3	G437-2.5	76	2.5	6 to 9	5.5	---	---	---	---
E-NUT-A4	G438-0	76	0	>9	9.2	---	---	---	---
E-NUT-A4	G438-0.5	76	0.5	>9	5.7	---	---	---	---
E-NUT-A4	G438-1.5	76	1.5	>9	6.1	---	---	---	---
E-NUT-A4	G438-2.5	76	2.5	>9	5.6	---	---	---	---
E-NUT-B1	G439-0	76	0	0 to 3	13	---	---	---	---
E-NUT-B1	G439-0.5	76	0.5	0 to 3	6.1	---	---	---	---
E-NUT-B1	G439-1.5	76	1.5	0 to 3	8.8	---	---	---	---
E-NUT-B1	G439-2.5	76	2.5	0 to 3	5.2	---	---	---	8.4
E-NUT-B2	G440-0	76	0	3 to 6	8.5	---	---	---	---
E-NUT-B2	G440-0.5	76	0.5	3 to 6	20	---	---	---	---
E-NUT-B2	G440-1.5	76	1.5	3 to 6	8.3	---	---	---	---
E-NUT-B2	G440-2.5	76	2.5	3 to 6	4.9	---	---	---	---
E-NUT-B3	G441-0	76	0	6 to 9	10	---	---	---	---
E-NUT-B3	G441-0.5	76	0.5	6 to 9	5.6	---	---	---	---
E-NUT-B3	G441-1.5	76	1.5	6 to 9	5.7	---	---	---	---
E-NUT-B3	G441-2.5	76	2.5	6 to 9	6.1	---	---	---	---

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Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-NUT-B4	G442-0	76	0	>9	10	---	---	---	---
E-NUT-B4	G442-0.5	76	0.5	>9	4.1	---	---	---	8.0
E-NUT-B4	G442-1.5	76	1.5	>9	5.3	---	---	---	---
E-NUT-B4	G442-2.5	76	2.5	>9	4.7	---	---	---	---
E-NUT-C1	G443-0	76	0	0 to 3	11	---	---	---	---
E-NUT-C1	G443-0.5	76	0.5	0 to 3	<5.0	---	---	---	---
E-NUT-C1	G443-1.5	76	1.5	0 to 3	5.4	---	---	---	---
E-NUT-C1	G443-2.5	76	2.5	0 to 3	5.3	---	---	---	---
E-NUT-C2	G444-0	76	0	3 to 6	12	---	---	---	---
E-NUT-C2	G444-0.5	76	0.5	3 to 6	7.5	---	---	---	---
E-NUT-C2	G444-1.5	76	1.5	3 to 6	15	---	---	---	---
E-NUT-C2	G444-2.5	76	2.5	3 to 6	5.7	---	---	---	7.7
E-NUT-D1	G445-0	76	0	0 to 3	2.7	---	---	---	---
E-NUT-D1	G445-0.5	76	0.5	0 to 3	5.5	---	---	---	---
E-NUT-D1	G445-1.5	76	1.5	0 to 3	5.4	---	---	---	---
E-NUT-D1	G445-2.5	76	2.5	0 to 3	5.9	---	---	---	---
E-NUT-E1	G446-0	76	0	0 to 3	3.4	---	---	---	---
E-NUT-E1	G446-0.5	76	0.5	0 to 3	5.8	---	---	---	---
E-NUT-E1	G446-1.5	76	1.5	0 to 3	5.6	---	---	---	---
E-NUT-E1	G446-2.5	76	2.5	0 to 3	5.8	---	---	---	---
E-NUT-F1	G447-0	76	0	0 to 3	2.8	---	---	---	---
E-NUT-F1	G447-0.5	76	0.5	0 to 3	9.7	---	---	---	8.0
E-NUT-F1	G447-1.5	76	1.5	0 to 3	5.8	---	---	---	---
E-NUT-F1	G447-2.5	76	2.5	0 to 3	6.2	---	---	---	---
E-NUT-G1	G448-0	76	0	0 to 3	23	---	---	---	---
E-NUT-G1	G448-0.5	76	0.5	0 to 3	1.9	---	---	---	---
E-NUT-G1	G448-1.5	76	1.5	0 to 3	6.9	---	---	---	---
E-NUT-G1	G448-2.5	76	2.5	0 to 3	6.0	---	---	---	---
E-NUT-H1	G449-0	76	0	0 to 3	4.7	---	---	---	---
E-NUT-H1	G449-0.5	76	0.5	0 to 3	3.2	---	---	---	---
E-NUT-H1	G449-1.5	76	1.5	0 to 3	2.1	---	---	---	---
E-NUT-H1	G449-2.5	76	2.5	0 to 3	6.9	---	---	---	7.3
E-NUT-H2	G450-0	76	0	3 to 6	13	---	---	---	---
E-NUT-H2	G450-0.5	76	0.5	3 to 6	2.1	---	---	---	---
E-NUT-H2	G450-1.5	76	1.5	3 to 6	5.5	---	---	---	---
E-NUT-H2	G450-2.5	76	2.5	3 to 6	6.0	---	---	---	---
E-NUT-I1	G451-0	76	0	0 to 3	9.8	---	---	---	---
E-NUT-I1	G451-0.5	76	0.5	0 to 3	1.8	---	---	---	---
E-NUT-I1	G451-1.5	76	1.5	0 to 3	68	<1.0	---	---	---
E-NUT-I1	G451-2.5	76	2.5	0 to 3	1.7	---	---	---	---
E-NUT-I2	G452-0	76	0	3 to 6	10	---	---	---	---
E-NUT-I2	G452-0.5	76	0.5	3 to 6	6.2	---	---	---	9.0
E-NUT-I2	G452-1.5	76	1.5	3 to 6	3.1	---	---	---	---
E-NUT-I2	G452-2.5	76	2.5	3 to 6	1.5	---	---	---	---
E-NUT-I3	G453-0	76	0	6 to 9	7.0	---	---	---	---
E-NUT-I3	G453-0.5	76	0.5	6 to 9	9.0	---	---	---	---
E-NUT-I3	G453-1.5	76	1.5	6 to 9	5.8	---	---	---	---
E-NUT-I3	G453-2.5	76	2.5	6 to 9	7.1	---	---	---	---
E-NUT-I4	G454-0	76	0	>9	7.7	---	---	---	---
E-NUT-I4	G454-0.5	76	0.5	>9	30	---	---	---	---
E-NUT-I4	G454-1.5	76	1.5	>9	18	---	---	---	---
E-NUT-I4	G454-2.5	76	2.5	>9	9.6	---	---	---	7.7
E-NUT-I5	G455-0	76	0	>9	18	---	---	---	---
E-NUT-I5	G455-0.5	76	0.5	>9	8.9	---	---	---	---
E-NUT-I5	G455-1.5	76	1.5	>9	7.2	---	---	---	---
E-NUT-I5	G455-2.5	76	2.5	>9	6.6	---	---	---	---
E-NUT-I6	G456-0	76	0	>9	19	---	---	---	---
E-NUT-I6	G456-0.5	76	0.5	>9	13	---	---	---	---
E-NUT-I6	G456-1.5	76	1.5	>9	11	---	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-NUT-I6	G456-2.5	76	2.5	>9	7.8	---	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-NUT-J1	G457-0	76	0	0 to 3	9.1	---	---	---	---
E-NUT-J1	G457-0.5	76	0.5	0 to 3	3.0	---	---	---	8.9
E-NUT-J1	G457-1.5	76	1.5	0 to 3	1.9	---	---	---	---
E-NUT-J1	G457-2.5	76	2.5	0 to 3	9.5	---	---	---	---
E-NUT-J2	G458-0	76	0	3 to 6	15	---	---	---	---
E-NUT-J2	G458-0.5	76	0.5	3 to 6	15	---	---	---	---
E-NUT-J2	G458-1.5	76	1.5	3 to 6	5.8	---	---	---	---
E-NUT-J2	G458-2.5	76	2.5	3 to 6	11	---	---	---	---
E-NUT-J3	G459-0	76	0	6 to 9	25	---	---	---	---
E-NUT-J3	G459-0.5	76	0.5	6 to 9	11	---	---	---	---
E-NUT-J3	G459-1.5	76	1.5	6 to 9	17	---	---	---	---
E-NUT-J3	G459-2.5	76	2.5	6 to 9	6.9	---	---	---	7.2
E-NUT-J4	G460-0	76	0	>9	54	1.2	---	---	---
E-NUT-J4	G460-0.5	76	0.5	>9	13	---	---	---	---
E-NUT-J4	G460-1.5	76	1.5	>9	13	---	---	---	---
E-NUT-J4	G460-2.5	76	2.5	>9	5.8	---	---	---	---
E-NUT-J5	G461-0	76	0	>9	52	1.1	---	---	---
E-NUT-J5	G461-0.5	76	0.5	>9	13	---	---	---	---
E-NUT-J5	G461-1.5	76	1.5	>9	8.3	---	---	---	---
E-NUT-J5	G461-2.5	76	2.5	>9	6.3	---	---	---	---
E-NUT-J6	G462-0	76	0	>9	44	---	---	---	---
E-NUT-J6	G462-0.5	76	0.5	>9	38	---	---	---	7.2
E-NUT-J6	G462-1.5	76	1.5	>9	13	---	---	---	---
E-NUT-J6	G462-2.5	76	2.5	>9	47	---	---	---	---
E-NUT-K1	G463-0	76	0	0 to 3	3.7	---	---	---	---
E-NUT-K1	G463-0.5	76	0.5	0 to 3	17	---	---	---	---
E-NUT-K1	G463-1.5	76	1.5	0 to 3	110	1.5	---	---	---
E-NUT-K1	G463-2.5	76	2.5	0 to 3	84	2.5	---	---	---
E-NUT-K2	G464-0	76	0	3 to 6	4.0	---	---	---	---
E-NUT-K2	G464-0.5	76	0.5	3 to 6	9.7	---	---	---	---
E-NUT-K2	G464-1.5	76	1.5	3 to 6	92	4.9	---	---	---
E-NUT-K2	G464-2.5	76	2.5	3 to 6	29	---	---	---	---
E-NUT-K3	G465-0	76	0	6 to 9	22	---	---	---	---
E-NUT-K3	G465-0.5	76	0.5	6 to 9	37	---	---	---	7.6
E-NUT-K3	G465-1.5	76	1.5	6 to 9	10	---	---	---	---
E-NUT-K3	G465-2.5	76	2.5	6 to 9	7.5	---	---	---	---
E-NUT-K4	G466-0	76	0	>9	13	---	---	---	---
E-NUT-K4	G466-0.5	76	0.5	>9	88	4.8	---	---	---
E-NUT-K4	G466-1.5	76	1.5	>9	7.9	---	---	---	---
E-NUT-K4	G466-2.5	76	2.5	>9	8.6	---	---	---	---
E-NUT-K5	G467-0	76	0	>9	19	---	---	---	---
E-NUT-K5	G467-0.5	76	0.5	>9	80	0.88	---	---	---
E-NUT-K5	G467-1.5	76	1.5	>9	18	---	---	---	---
E-NUT-K5	G467-2.5	76	2.5	>9	6.2	---	---	---	7.6
E-NUT-K6	G468-0	76	0	>9	13	---	---	---	---
E-NUT-K6	G468-0.5	76	0.5	>9	13	---	---	---	---
E-NUT-K6	G468-1.5	76	1.5	>9	5.9	---	---	---	---
E-NUT-K6	G468-2.5	76	2.5	>9	11	---	---	---	---
E-NUT-L1	G510-0	76	0	0 to 3	4.3	---	---	---	---
E-NUT-L1	G510-0.5	76	0.5	0 to 3	33	---	---	---	---
E-NUT-L1	G510-1.5	76	1.5	0 to 3	130	1.8	---	---	---
E-NUT-L1	G510-2.5	76	2.5	0 to 3	10	---	---	---	---
E-NUT-L2	G511-0	76	0	3 to 6	3.6	---	---	---	---
E-NUT-L2	G511-0.5	76	0.5	3 to 6	19	---	---	---	---
E-NUT-L2	G511-1.5	76	1.5	3 to 6	21	---	---	---	---
E-NUT-L2	G511-2.5	76	2.5	3 to 6	9.7	---	---	---	7.2
E-NUT-L3	G512-0	76	0	6 to 9	15	---	---	---	---
E-NUT-L3	G512-0.5	76	0.5	6 to 9	6.3	---	---	---	---
E-NUT-L3	G512-1.5	76	1.5	6 to 9	60	2.0	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-NUT-L3	G512-2.5	76	2.5	6 to 9	8.2	---	---	---	---

TABLE 3
Summary of Lead and pH Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
E-NUT-L4	G513-0	76	0	>9	18	---	---	---	---
E-NUT-L4	G513-0.5	76	0.5	>9	14	---	---	---	7.1
E-NUT-L4	G513-1.5	76	1.5	>9	7.2	---	---	---	---
E-NUT-L4	G513-2.5	76	2.5	>9	5.9	---	---	---	---
E-NUT-M1	G514-0	76	0	0 to 3	3.0	---	---	---	---
E-NUT-M1	G514-0.5	76	0.5	0 to 3	11	---	---	---	8.4
E-NUT-M1	G514-1.5	76	1.5	0 to 3	3.2	---	---	---	---
E-NUT-M1	G514-2.5	76	2.5	0 to 3	10	---	---	---	---
E-NUT-M2	G515-0	76	0	3 to 6	10	---	---	---	---
E-NUT-M2	G515-0.5	76	0.5	3 to 6	17	---	---	---	---
E-NUT-M2	G515-1.5	76	1.5	3 to 6	70	2.6	---	---	---
E-NUT-M2	G515-2.5	76	2.5	3 to 6	11	---	---	---	---
E-NUT-M3	G516-0	76	0	6 to 9	7.1	---	---	---	---
E-NUT-M3	G516-0.5	76	0.5	6 to 9	95	3.7	---	---	---
E-NUT-M3	G516-1.5	76	1.5	6 to 9	21	---	---	---	---
E-NUT-M3	G516-2.5	76	2.5	6 to 9	6.4	---	---	---	---
E-NUT-M4	G517-0	76	0	>9	33	---	---	---	---
E-NUT-M4	G517-0.5	76	0.5	>9	99	6.7	<0.50	---	---
E-NUT-M4	G517-1.5	76	1.5	>9	150	5.5	<0.50	---	---
E-NUT-M4	G517-2.5	76	2.5	>9	85	2.5	---	---	---
E-NUT-N1	G518-0	76	0	0 to 3	4.7	---	---	---	---
E-NUT-N1	G518-0.5	76	0.5	0 to 3	2.5	---	---	---	---
E-NUT-N1	G518-1.5	76	1.5	0 to 3	120	8.1	<0.50	---	---
E-NUT-N1	G518-2.5	76	2.5	0 to 3	30	---	---	---	7.1
E-NUT-N2	G519-0	76	0	6 to 9	16	---	---	---	---
E-NUT-N2	G519-0.5	76	0.5	6 to 9	33	---	---	---	---
E-NUT-N2	G519-1.5	76	1.5	6 to 9	130	14	<0.50	---	---
E-NUT-N2	G519-2.5	76	2.5	6 to 9	13	---	---	---	---
E-NUT-O1	G520-0	76	0	0 to 3	9.8	---	---	---	---
E-NUT-O1	G520-0.5	76	0.5	0 to 3	3.5	---	---	---	---
E-NUT-O1	G520-1.5	76	1.5	0 to 3	430	18	---	<0.50	---
E-NUT-O1	G520-2.5	76	2.5	0 to 3	20	---	---	---	---
E-NUT-P1	G521-0	76	0	0 to 3	2.7	---	---	---	---
E-NUT-P1	G521-0.5	76	0.5	0 to 3	5.5	---	---	---	8.2
E-NUT-P1	G521-1.5	76	1.5	0 to 3	9.7	---	---	---	---
E-NUT-P1	G521-2.5	76	2.5	0 to 3	250	5.1	<0.50	---	---
				Hazardous Waste Criteria					
				TTLC (mg/kg)	1,000	---	---	---	---
				STLC (mg/l)	---	5.0	---	---	---
				TCLP (mg/l)	---	---	---	5.0	---

Notes:
mg/kg = Milligrams per kilogram
mg/l = Milligrams per liter
--- = Not analyzed or no standard
< = Not detected above the laboratory reporting limit
WET = Waste Extraction Test using citric acid as the extraction fluid
DI-WET = Waste Extraction Test using deionized water as the extraction fluid
TCLP = Toxicity Characteristic Leaching Procedure
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
EOP = Edge of Pavement

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
W-R37-A1	G15-0	5	0	0 to 3	<2.0	<1.0	48	<1.0	<1.0	22	15	30	28	2.0	<1.0	26	<1.0	<1.0	<1.0	83	46
W-R37-A1	G15-0.5	5	0.5	0 to 3	<2.0	2.5	38	<1.0	<1.0	28	8.3	17	4.7	0.89	<1.0	32	<1.0	<1.0	<1.0	37	25
W-R37-A1	G15-1.5	5	1.5	0 to 3	<2.0	<1.0	49	<1.0	<1.0	17	10	19	11	1.4	<1.0	20	<1.0	<1.0	<1.0	58	37
W-R37-A1	G15-2.5	5	2.5	0 to 3	<2.0	1.9	42	<1.0	<1.0	29	10	19	7.6	2.0	<1.0	30	<1.0	<1.0	<1.0	57	33
W-R37-B1	G16-0	5	0	0 to 3	<2.0	<1.0	32	<1.0	<1.0	14	13	33	27	0.67	<1.0	22	<1.0	<1.0	<1.0	82	76
W-R37-B1	G16-0.5	5	0.5	0 to 3	<2.0	1.6	38	<1.0	<1.0	20	11	21	26	1.5	<1.0	26	<1.0	<1.0	<1.0	68	38
W-R37-B1	G16-1.5	5	1.5	0 to 3	<2.0	1.8	42	<1.0	<1.0	22	11	23	25	1.2	<1.0	26	<1.0	<1.0	<1.0	60	33
W-R37-B1	G16-2.5	5	2.5	0 to 3	<2.0	2.5	44	<1.0	<1.0	19	13	22	1.3	1.8	<1.0	24	<1.0	<1.0	<1.0	66	31
W-R37-C1	G17-0	5	0	0 to 3	<2.0	<1.0	23	<1.0	<1.0	14	14	29	14	28	<1.0	26	<1.0	<1.0	<1.0	97	44
W-R37-C1	G17-0.5	5	0.5	0 to 3	<2.0	<1.0	40	<1.0	<1.0	14	15	34	<1.0	1.3	<1.0	14	<1.0	<1.0	<1.0	100	42
W-R37-C1	G17-1.5	5	1.5	0 to 3	<2.0	1.5	37	<1.0	<1.0	26	7.3	11	1.4	0.35	<1.0	30	<1.0	<1.0	<1.0	35	21
W-R37-C1	G17-2.5	5	2.5	0 to 3	<2.0	<1.0	43	<1.0	<1.0	21	10	14	1.1	1.1	<1.0	27	<1.0	<1.0	<1.0	55	28
W-R37-C2	G18-0	5	0	3 to 6	<2.0	1.6	40	<1.0	<1.0	18	13	28	36	2.3	<1.0	22	<1.0	<1.0	<1.0	79	54
W-R37-C2	G18-0.5	5	0.5	3 to 6	<2.0	1.7	46	<1.0	<1.0	23	9.1	17	1.8	0.64	<1.0	25	<1.0	<1.0	<1.0	44	25
W-R37-C2	G18-1.5	5	1.5	3 to 6	<2.0	2.0	45	<1.0	<1.0	23	11	18	15	1.1	<1.0	24	<1.0	<1.0	<1.0	67	32
W-R37-C2	G18-2.5	5	2.5	3 to 6	<2.0	2.6	48	<1.0	<1.0	17	14	20	1.7	2.1	<1.0	19	<1.0	<1.0	<1.0	72	34
W-R37-D1	G19-0	5	0	0 to 3	<2.0	<1.0	25	<1.0	<1.0	12	14	29	36	3.5	<1.0	22	<1.0	<1.0	<1.0	81	43
W-R37-D1	G19-0.5	5	0.5	0 to 3	<2.0	<1.0	48	<1.0	<1.0	12	17	30	<1.0	7.8	<1.0	14	<1.0	<1.0	<1.0	88	38
W-R37-D1	G19-1.5	5	1.5	0 to 3	<2.0	<1.0	38	<1.0	<1.0	44	11	16	<1.0	1.4	<1.0	32	<1.0	<1.0	<1.0	58	27
W-R37-D1	G19-2.5	5	2.5	0 to 3	<2.0	2.3	47	<1.0	<1.0	21	12	18	1.4	1.0	<1.0	26	<1.0	<1.0	<1.0	56	30
W-R37-D2	G20-0	5	0	3 to 6	<2.0	2.1	46	<1.0	<1.0	17	12	34	25	1.1	<1.0	22	<1.0	<1.0	<1.0	70	100
W-R37-D2	G20-0.5	5	0.5	3 to 6	<2.0	1.3	48	<1.0	<1.0	21	8.7	13	5.3	1.5	<1.0	28	<1.0	<1.0	<1.0	49	27
W-R37-D2	G20-1.5	5	1.5	3 to 6	<2.0	1.7	47	<1.0	<1.0	19	12	21	25	4.8	<1.0	24	<1.0	<1.0	<1.0	65	37
W-R37-D2	G20-2.5	5	2.5	3 to 6	<2.0	1.7	42	<1.0	<1.0	27	11	18	29	1.7	<1.0	29	<1.0	<1.0	<1.0	55	30
W-R37-E1	G21-0	5	0	0 to 3	<2.0	1.7	36	<1.0	<1.0	16	11	25	13	1.8	<1.0	22	<1.0	<1.0	<1.0	67	39
W-R37-E1	G21-0.5	5	0.5	0 to 3	<2.0	<1.0	71	<1.0	<1.0	12	17	35	<1.0	1.9	<1.0	18	<1.0	<1.0	<1.0	100	47
W-R37-E1	G21-1.5	5	1.5	0 to 3	<2.0	1.6	45	<1.0	<1.0	25	7.2	9.0	1.5	0.28	<1.0	30	<1.0	<1.0	<1.0	28	19
W-R37-E1	G21-2.5	5	2.5	0 to 3	<2.0	1.9	53	<1.0	<1.0	28	6.3	8.5	1.8	0.11	<1.0	31	<1.0	<1.0	<1.0	27	18
W-R37-E2	G22-0	5	0	3 to 6	<2.0	2.0	47	<1.0	<1.0	19	11	17	4.4	1.3	<1.0	25	<1.0	<1.0	<1.0	49	28
W-R37-E2	G22-0.5	5	0.5	3 to 6	<2.0	1.2	43	<1.0	<1.0	23	11	18	8.7	2.7	<1.0	28	<1.0	<1.0	<1.0	62	32
W-R37-E2	G22-1.5	5	1.5	3 to 6	<2.0	1.4	45	<1.0	<1.0	21	6.7	11	2.5	0.20	<1.0	25	<1.0	<1.0	<1.0	31	20
W-R37-E2	G22-2.5	5	2.5	3 to 6	<2.0	1.6	45	<1.0	<1.0	24	5.4	7.7	1.6	0.20	<1.0	29	<1.0	<1.0	<1.0	22	17

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
W-R37-F1	G23-0	5	0	0 to 3	<2.0	<1.0	7.3	<1.0	<1.0	6.8	12	20	<1.0	0.40	<1.0	18	<1.0	<1.0	<1.0	97	40
W-R37-F1	G23-0.5	5	0.5	0 to 3	<2.0	<1.0	73	<1.0	<1.0	13	15	31	<1.0	6.3	<1.0	15	<1.0	<1.0	<1.0	100	42
W-R37-F1	G23-1.5	5	1.5	0 to 3	<2.0	<1.0	13	<1.0	<1.0	10	19	36	<1.0	0.49	<1.0	11	<1.0	<1.0	<1.0	140	50
W-R37-F1	G23-2.5	5	2.5	0 to 3	<2.0	<1.0	14	<1.0	<1.0	9.8	17	34	<1.0	0.98	<1.0	11	<1.0	<1.0	<1.0	130	48
W-R37-F2	G24-0	5	0	6 to 9	<2.0	<1.0	34	<1.0	<1.0	15	15	36	36	1.1	<1.0	15	<1.0	<1.0	<1.0	120	69
W-R37-F2	G24-0.5	5	0.5	6 to 9	<2.0	<1.0	24	<1.0	<1.0	12	17	40	29	1.6	<1.0	13	<1.0	<1.0	<1.0	130	51
W-R37-F2	G24-1.5	5	1.5	6 to 9	<2.0	<1.0	19	<1.0	<1.0	10	15	31	5.9	1.1	<1.0	11	<1.0	<1.0	<1.0	120	45
W-R37-F2	G24-2.5	5	2.5	6 to 9	<2.0	<1.0	27	<1.0	<1.0	11	18	38	6.3	2.3	<1.0	13	<1.0	<1.0	<1.0	130	52
W-R37-G1	G33-0	5	0	0 to 3	<2.0	<1.0	12	<1.0	<1.0	7.3	12	23	2.5	1.7	<1.0	16	<1.0	<1.0	<1.0	82	38
W-R37-G1	G33-0.5	5	0.5	0 to 3	<2.0	<1.0	27	<1.0	<1.0	14	14	31	<1.0	2.9	<1.0	11	<1.0	<1.0	<1.0	97	38
W-R37-G1	G33-1.5	5	1.5	0 to 3	<2.0	<1.0	20	<1.0	<1.0	9.7	17	30	<1.0	7.8	<1.0	13	<1.0	<1.0	<1.0	100	44
W-R37-G1	G33-2.5	5	2.5	0 to 3	<2.0	<1.0	13	<1.0	<1.0	11	16	36	<1.0	0.27	<1.0	11	<1.0	<1.0	<1.0	110	47
W-R37-H1	G36-0	5	0	0 to 3	<2.0	<1.0	6.9	<1.0	<1.0	6.3	11	22	<1.0	0.89	<1.0	16	<1.0	<1.0	<1.0	82	36
W-R37-H1	G36-0.5	5	0.5	0 to 3	<2.0	<1.0	78	<1.0	<1.0	11	13	27	<1.0	1.2	<1.0	13	<1.0	<1.0	<1.0	93	40
W-R37-H1	G36-1.5	5	1.5	0 to 3	<2.0	<1.0	11	<1.0	<1.0	9.8	17	31	<1.0	0.72	<1.0	10	<1.0	<1.0	<1.0	130	44
W-R37-H1	G36-2.5	5	2.5	0 to 3	<2.0	<1.0	8.2	<1.0	<1.0	7.7	16	32	<1.0	0.81	<1.0	9.4	<1.0	<1.0	<1.0	130	46
W-R37-H2	G37-0	5	0	6 to 9	<2.0	8.5	200	<1.0	<1.0	35	18	60	8.9	<0.10	<1.0	53	<1.0	<1.0	<1.0	42	82
W-R37-H2	G37-0.5	5	0.5	6 to 9	<2.0	7.2	250	<1.0	<1.0	31	19	46	11	<0.10	<1.0	52	<1.0	<1.0	<1.0	30	71
W-R37-H2	G37-1.5	5	1.5	6 to 9	<2.0	5.6	200	<1.0	<1.0	31	16	45	7.9	<0.10	<1.0	49	<1.0	<1.0	<1.0	36	67
W-R37-H2	G37-2.5	5	2.5	6 to 9	<2.0	5.0	210	<1.0	<1.0	28	15	43	6.5	<0.10	<1.0	40	<1.0	<1.0	<1.0	31	64
W-R37-I1	G40-0	5	0	0 to 3	<2.0	<1.0	26	<1.0	<1.0	11	14	25	13	0.58	<1.0	21	<1.0	<1.0	<1.0	91	47
W-R37-I1	G40-0.5	5	0.5	0 to 3	<2.0	<1.0	88	<1.0	<1.0	11	15	32	<1.0	4.2	<1.0	15	<1.0	<1.0	<1.0	110	43
W-R37-I1	G40-1.5	5	1.5	0 to 3	<2.0	<1.0	12	<1.0	<1.0	8.5	16	28	<1.0	1.3	<1.0	10	<1.0	<1.0	<1.0	130	47
W-R37-I1	G40-2.5	5	2.5	0 to 3	<2.0	<1.0	10	<1.0	<1.0	7.6	16	30	<1.0	1.3	<1.0	10	<1.0	<1.0	<1.0	130	48
W-R37-I2	G41-0	5	0	3 to 6	<2.0	<1.0	5.9	<1.0	<1.0	5.5	10	24	<1.0	0.15	<1.0	8.1	<1.0	<1.0	<1.0	77	39
W-R37-I2	G41-0.5	5	0.5	3 to 6	<2.0	6.3	240	<1.0	<1.0	35	19	53	8.6	<0.10	<1.0	50	<1.0	<1.0	<1.0	42	76
W-R37-I2	G41-1.5	5	1.5	3 to 6	<10	12	240	<5.0	<5.0	33	17	56	7.4	<0.10	<5.0	53	<5.0	<5.0	<5.0	35	77
W-R37-I2	G41-2.5	5	2.5	3 to 6	<2.0	9.4	200	<1.0	<1.0	37	15	47	7.1	<0.10	<1.0	44	<1.0	<1.0	<1.0	34	76
W-R37-I3	G42-0	5	0	6 to 9	<2.0	<1.0	27	<1.0	<1.0	11	12	32	3.5	0.34	<1.0	14	<1.0	<1.0	<1.0	96	57
W-R37-I3	G42-0.5	5	0.5	6 to 9	<2.0	7.9	300	<1.0	<1.0	43	23	57	8.9	0.12	<1.0	62	<1.0	<1.0	<1.0	48	92
W-R37-I3	G42-1.5	5	1.5	6 to 9	<2.0	8.5	310	<1.0	<1.0	41	18	60	9.7	<0.10	<1.0	55	<1.0	<1.0	<1.0	45	89
W-R37-I3	G42-2.5	5	2.5	6 to 9	<2.0	10	510	<1.0	<1.0	38	20	54	8.7	<0.10	<1.0	52	<1.0	<1.0	<1.0	41	77

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
W-R37-I4	G43-0	5	0	>9	<2.0	8.4	220	<1.0	<1.0	44	19	62	7.3	<0.10	<1.0	58	<1.0	<1.0	<1.0	44	89
W-R37-I4	G43-0.5	5	0.5	>9	<2.0	7.3	280	<1.0	<1.0	36	16	50	10	<0.10	<1.0	51	<1.0	<1.0	<1.0	38	77
W-R37-I4	G43-1.5	5	1.5	>9	<2.0	9.3	210	<1.0	<1.0	45	17	63	8.6	<0.10	<1.0	57	<1.0	<1.0	<1.0	51	92
W-R37-I4	G43-2.5	5	2.5	>9	<2.0	7.0	190	<1.0	<1.0	40	17	58	8.1	<0.10	<1.0	53	<1.0	<1.0	<1.0	42	84
W-R37-I5	G44-0	5	0	>9	<2.0	6.9	190	<1.0	<1.0	41	13	61	7.7	<0.10	<1.0	51	<1.0	<1.0	<1.0	42	87
W-R37-I5	G44-0.5	5	0.5	>9	<2.0	8.0	220	<1.0	<1.0	44	19	59	7.5	<0.10	<1.0	57	<1.0	<1.0	<1.0	44	88
W-R37-I5	G44-1.5	5	1.5	>9	<2.0	8.8	240	<1.0	<1.0	41	19	64	9.4	<0.10	<1.0	55	<1.0	<1.0	<1.0	46	85
W-R37-I5	G44-2.5	5	2.5	>9	<2.0	8.9	210	<1.0	<1.0	40	16	57	8.8	<0.10	<1.0	49	<1.0	<1.0	<1.0	45	75
W-R37-J1	G47-0	5	0	0 to 3	<2.0	<1.0	25	<1.0	<1.0	13	20	40	4.9	2.8	<1.0	15	<1.0	<1.0	<1.0	120	66
W-R37-J1	G47-0.5	5	0.5	0 to 3	<2.0	<1.0	26	<1.0	<1.0	14	18	48	<1.0	5.3	<1.0	12	<1.0	<1.0	<1.0	120	48
W-R37-J1	G47-1.5	5	1.5	0 to 3	<2.0	<1.0	10	<1.0	<1.0	12	20	37	<1.0	0.13	<1.0	13	<1.0	<1.0	<1.0	150	51
W-R37-J1	G47-2.5	5	2.5	0 to 3	<2.0	<1.0	15	<1.0	<1.0	11	18	29	<1.0	0.76	<1.0	12	<1.0	<1.0	<1.0	130	50
W-R37-J2	G48-0	5	0	3 to 6	<2.0	<1.0	14	<1.0	<1.0	8.7	17	31	<1.0	0.14	<1.0	11	<1.0	<1.0	<1.0	110	59
W-R37-J2	G48-0.5	5	0.5	3 to 6	<2.0	<1.0	98	<1.0	<1.0	13	15	35	<1.0	5.3	<1.0	16	<1.0	<1.0	<1.0	130	48
W-R37-J2	G48-1.5	5	1.5	3 to 6	<2.0	9.3	160	<1.0	<1.0	37	17	51	8.1	<0.10	<1.0	49	<1.0	<1.0	<1.0	42	76
W-R37-J2	G48-2.5	5	2.5	3 to 6	<2.0	9.2	330	<1.0	<1.0	39	21	61	9.7	<0.10	<1.0	59	<1.0	<1.0	<1.0	42	85
W-R37-J3	G49-0	5	0	6 to 9	<2.0	7.7	190	<1.0	<1.0	40	16	53	8.6	<0.10	<1.0	45	<1.0	<1.0	<1.0	50	69
W-R37-J3	G49-0.5	5	0.5	6 to 9	<20	20	1,000	<10	<10	40	23	53	11	<0.10	<10	58	<10	<10	<10	42	92
W-R37-J3	G49-1.5	5	1.5	6 to 9	<2.0	6.2	160	<1.0	<1.0	40	15	58	7.8	<0.10	<1.0	54	<1.0	<1.0	<1.0	41	84
W-R37-J3	G49-2.5	5	2.5	6 to 9	<2.0	5.9	220	<1.0	<1.0	35	16	50	7.0	<0.10	<1.0	51	<1.0	<1.0	<1.0	37	74
W-R37-K1	G52-0	5	0	0 to 3	<2.0	3.9	80	<1.0	<1.0	20	9.5	29	31	0.28	<1.0	25	<1.0	<1.0	<1.0	54	55
W-R37-K1	G52-0.5	5	0.5	0 to 3	<2.0	12	220	<1.0	<1.0	38	15	43	8.3	1.2	<1.0	60	<1.0	<1.0	<1.0	53	60
W-R37-K1	G52-1.5	5	1.5	0 to 3	<2.0	<1.0	24	<1.0	<1.0	12	13	27	<1.0	1.9	<1.0	14	<1.0	<1.0	<1.0	110	36
W-R37-K1	G52-2.5	5	2.5	0 to 3	<2.0	10	240	<1.0	<1.0	34	13	37	6.1	0.52	<1.0	58	<1.0	<1.0	<1.0	47	51
W-R37-K2	G53-0	5	0	3 to 6	<2.0	3.4	79	<1.0	<1.0	25	16	40	28	0.59	<1.0	28	<1.0	<1.0	<1.0	97	85
W-R37-K2	G53-0.5	5	0.5	3 to 6	<2.0	1.8	77	<1.0	<1.0	21	13	36	31	0.44	<1.0	25	<1.0	<1.0	<1.0	87	70
W-R37-K2	G53-1.5	5	1.5	3 to 6	<2.0	3.3	75	<1.0	<1.0	17	11	29	27	0.71	<1.0	26	<1.0	<1.0	<1.0	60	58
W-R37-K2	G53-2.5	5	2.5	3 to 6	<2.0	7.6	120	<1.0	<1.0	32	12	34	16	0.33	<1.0	51	<1.0	<1.0	<1.0	53	55
W-R37-K3	G54-0	5	0	>9	<2.0	8.1	140	<1.0	<1.0	25	14	42	45	0.17	<1.0	35	<1.0	<1.0	<1.0	52	98
W-R37-K3	G54-0.5	5	0.5	>9	<2.0	7.2	160	<1.0	<1.0	31	13	40	88	0.10	<1.0	40	<1.0	<1.0	<1.0	40	65
W-R37-K3	G54-1.5	5	1.5	>9	<2.0	12	300	<1.0	<1.0	6.7	7.1	13	36	<0.10	<1.0	19	<1.0	<1.0	<1.0	8.7	29
W-R37-K3	G54-2.5	5	2.5	>9	<2.0	7.7	150	<1.0	<1.0	32	13	37	11	0.45	<1.0	46	<1.0	<1.0	<1.0	43	57

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
W-R37-K4	G55-0	5	0	>9	<2.0	4.1	120	<1.0	<1.0	42	15	53	16	<0.10	<1.0	54	<1.0	<1.0	<1.0	45	82
W-R37-K4	G55-0.5	5	0.5	>9	<2.0	12	350	<1.0	<1.0	7.3	5.4	14	40	<0.10	<1.0	13	<1.0	<1.0	<1.0	10	47
W-R37-K4	G55-1.5	5	1.5	>9	<2.0	9.5	270	<1.0	<1.0	17	8.9	29	130	0.10	<1.0	27	<1.0	<1.0	<1.0	22	79
W-R37-K4	G55-2.5	5	2.5	>9	<2.0	11	230	<1.0	<1.0	49	14	33	15	<0.10	<1.0	51	<1.0	<1.0	<1.0	58	55
W-R37-L1	G56-0	5	0	0 to 3	<2.0	2.4	110	<1.0	<1.0	28	12	59	94	0.46	1.9	28	<1.0	<1.0	<1.0	79	190
W-R37-L1	G56-0.5	5	0.5	0 to 3	<2.0	<1.0	27	<1.0	<1.0	17	22	41	<1.0	1.2	<1.0	15	<1.0	<1.0	<1.0	130	50
W-R37-L1	G56-1.5	5	1.5	0 to 3	<2.0	<1.0	95	<1.0	<1.0	12	12	22	<1.0	1.2	<1.0	13	<1.0	<1.0	<1.0	100	39
W-R37-L1	G56-2.5	5	2.5	0 to 3	<2.0	<1.0	10	<1.0	<1.0	11	16	35	<1.0	0.36	<1.0	11	<1.0	<1.0	<1.0	140	51
W-R37-L2	G57-0	5	0	3 to 6	<10	<5.0	18	<5.0	<5.0	<5.0	9.2	<10	<5.0	<0.10	<5.0	<5.0	<5.0	<5.0	<5.0	71	34
W-R37-L2	G57-0.5	5	0.5	3 to 6	<2.0	5.7	60	<1.0	<1.0	39	6.6	41	4.6	<0.10	<1.0	43	<1.0	<1.0	<1.0	35	64
W-R37-L2	G57-1.5	5	1.5	3 to 6	<2.0	3.0	44	<1.0	<1.0	42	13	28	81	0.10	<1.0	43	<1.0	<1.0	<1.0	26	36
W-R37-L2	G57-2.5	5	2.5	3 to 6	<2.0	5.3	160	<1.0	<1.0	24	10	28	49	0.24	<1.0	40	<1.0	<1.0	<1.0	32	54
W-R37-L3	G58-0	5	0	6 to 9	<2.0	2.5	120	<1.0	<1.0	19	15	39	14	0.57	<1.0	30	<1.0	<1.0	<1.0	88	90
W-R37-L3	G58-0.5	5	0.5	6 to 9	<2.0	6.9	160	<1.0	<1.0	36	16	45	25	<0.10	<1.0	49	<1.0	<1.0	<1.0	41	65
W-R37-L3	G58-1.5	5	1.5	6 to 9	<2.0	7.8	100	<1.0	<1.0	39	17	50	140	<0.10	<1.0	47	<1.0	<1.0	<1.0	50	67
W-R37-L3	G58-2.5	5	2.5	6 to 9	<10	8.5	230	<5.0	<5.0	31	13	27	210	0.23	<5.0	46	<5.0	<5.0	<5.0	38	73
W-R37-L4	G59-0	5	0	>9	<2.0	2.3	190	<1.0	<1.0	18	17	38	28	0.20	<1.0	30	<1.0	<1.0	<1.0	100	89
W-R37-L4	G59-0.5	5	0.5	>9	<2.0	7.8	130	<1.0	<1.0	30	13	38	71	0.41	<1.0	44	<1.0	<1.0	<1.0	43	70
W-R37-L4	G59-1.5	5	1.5	>9	<2.0	8.4	95	<1.0	<1.0	28	13	37	17	<0.10	<1.0	35	<1.0	<1.0	<1.0	39	56
W-R37-L4	G59-2.5	5	2.5	>9	<2.0	9.8	220	<1.0	<1.0	34	16	37	160	0.68	<1.0	57	<1.0	<1.0	<1.0	49	66
W-R37-M1	G60-0	5	0	0 to 3	<2.0	1.9	59	<1.0	<1.0	14	23	38	12	0.42	<1.0	23	<1.0	<1.0	<1.0	110	95
W-R37-M1	G60-0.5	5	0.5	0 to 3	<2.0	<1.0	20	<1.0	<1.0	11	23	47	3.3	0.88	<1.0	11	<1.0	<1.0	<1.0	130	56
W-R37-M1	G60-1.5	5	1.5	0 to 3	<2.0	<1.0	24	<1.0	<1.0	17	15	35	2.6	1.1	<1.0	13	<1.0	<1.0	<1.0	110	43
W-R37-M1	G60-2.5	5	2.5	0 to 3	<2.0	<1.0	7.9	<1.0	<1.0	10	18	32	<1.0	<0.10	<1.0	11	<1.0	<1.0	<1.0	140	46
W-R37-M2	G61-0	5	0	3 to 6	<2.0	2.1	150	<1.0	<1.0	23	12	47	670	0.47	<1.0	33	<1.0	<1.0	<1.0	80	200
W-R37-M2	G61-0.5	5	0.5	3 to 6	<2.0	<1.0	27	<1.0	<1.0	15	18	35	<1.0	0.97	<1.0	14	<1.0	<1.0	<1.0	120	46
W-R37-M2	G61-1.5	5	1.5	3 to 6	<2.0	5.2	65	<1.0	<1.0	31	14	42	100	<0.10	<1.0	38	<1.0	<1.0	<1.0	40	45
W-R37-M2	G61-2.5	5	2.5	3 to 6	<2.0	2.4	60	<1.0	<1.0	33	6.4	13	42	<0.10	<1.0	52	<1.0	<1.0	<1.0	24	25
W-R37-M3	G62-0	5	0	6 to 9	<2.0	5.5	98	<1.0	<1.0	28	12	37	26	<0.10	<1.0	37	<1.0	<1.0	<1.0	35	56
W-R37-M3	G62-0.5	5	0.5	6 to 9	<2.0	4.8	81	<1.0	<1.0	22	9.2	30	23	0.20	<1.0	33	<1.0	<1.0	<1.0	27	45
W-R37-M3	G62-1.5	5	1.5	6 to 9	<2.0	8.5	120	<1.0	<1.0	39	17	48	87	<0.10	<1.0	47	<1.0	<1.0	<1.0	44	63
W-R37-M3	G62-2.5	5	2.5	6 to 9	<2.0	8.1	130	<1.0	<1.0	28	11	33	33	0.17	<1.0	46	<1.0	<1.0	<1.0	37	53

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Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
W-R37-M4	G63-0	5	0	>9	<2.0	4.9	110	<1.0	<1.0	39	13	42	97	0.19	<1.0	50	<1.0	<1.0	<1.0	41	65
W-R37-M4	G63-0.5	5	0.5	>9	<2.0	5.6	510	<1.0	<1.0	23	12	34	89	0.16	<1.0	43	1.0	<1.0	1.3	32	51
W-R37-M4	G63-1.5	5	1.5	>9	<2.0	5.6	110	<1.0	<1.0	27	12	33	70	0.50	<1.0	40	<1.0	<1.0	<1.0	35	51
W-R37-M4	G63-2.5	5	2.5	>9	<2.0	5.0	100	<1.0	<1.0	37	15	44	82	0.22	<1.0	46	<1.0	<1.0	<1.0	42	49
W-R37-N1	G64-0	5	0	0 to 3	<2.0	3.0	85	<1.0	<1.0	21	11	40	420	0.78	<1.0	26	<1.0	<1.0	<1.0	72	140
W-R37-N1	G64-0.5	5	0.5	0 to 3	<2.0	<1.0	14	<1.0	<1.0	12	15	39	<1.0	1.7	<1.0	11	<1.0	<1.0	<1.0	130	46
W-R37-N1	G64-1.5	5	1.5	0 to 3	<2.0	<1.0	9.9	<1.0	<1.0	12	24	50	<1.0	0.19	<1.0	13	<1.0	<1.0	<1.0	170	51
W-R37-N1	G64-2.5	5	2.5	0 to 3	<2.0	1.1	9.9	<1.0	<1.0	8.1	16	26	<1.0	0.90	<1.0	10	<1.0	<1.0	<1.0	140	46
W-R37-N2	G65-0	5	0	3 to 6	<2.0	3.7	88	<1.0	<1.0	28	13	81	690	0.63	<1.0	34	<1.0	<1.0	<1.0	77	140
W-R37-N2	G65-0.5	5	0.5	3 to 6	<2.0	5.1	83	<1.0	<1.0	23	10	30	86	0.12	<1.0	31	<1.0	<1.0	<1.0	27	45
W-R37-N2	G65-1.5	5	1.5	3 to 6	<2.0	5.4	150	<1.0	<1.0	24	16	32	39	0.26	<1.0	45	<1.0	<1.0	<1.0	30	48
W-R37-N2	G65-2.5	5	2.5	3 to 6	<2.0	4.0	77	<1.0	<1.0	30	13	35	280	0.13	<1.0	43	<1.0	<1.0	<1.0	33	60
W-R37-N3	G66-0	5	0	>9	<2.0	5.3	130	<1.0	<1.0	27	12	48	94	0.17	<1.0	39	<1.0	<1.0	<1.0	44	140
W-R37-N3	G66-0.5	5	0.5	>9	<2.0	8.8	100	<1.0	<1.0	36	14	52	59	<0.10	<1.0	45	<1.0	<1.0	<1.0	41	61
W-R37-N3	G66-1.5	5	1.5	>9	<2.0	4.0	79	<1.0	<1.0	30	15	38	51	<0.10	<1.0	37	<1.0	<1.0	<1.0	44	46
W-R37-N3	G66-2.5	5	2.5	>9	<10	7.0	120	<5.0	<5.0	32	12	44	170	0.11	<5.0	46	<5.0	<5.0	<5.0	36	85
W-R37-O1	G68-0	5	0	0 to 3	<2.0	<1.0	47	<1.0	<1.0	12	12	43	120	0.27	<1.0	18	<1.0	<1.0	<1.0	92	74
W-R37-O1	G68-0.5	5	0.5	0 to 3	<2.0	<1.0	14	<1.0	<1.0	11	26	37	<1.0	0.98	<1.0	14	<1.0	<1.0	<1.0	190	51
W-R37-O1	G68-1.5	5	1.5	0 to 3	<2.0	<1.0	7.8	<1.0	<1.0	9.8	27	40	<1.0	0.11	<1.0	24	<1.0	<1.0	<1.0	150	48
W-R37-O1	G68-2.5	5	2.5	0 to 3	<2.0	<1.0	10	<1.0	<1.0	8.3	16	33	<1.0	0.13	<1.0	9.8	<1.0	<1.0	<1.0	140	49
W-R37-O2	G69-0	5	0	3 to 6	<2.0	2.8	140	<1.0	<1.0	29	13	54	190	0.28	<1.0	34	<1.0	<1.0	<1.0	86	240
W-R37-O2	G69-0.5	5	0.5	3 to 6	<2.0	10	260	<1.0	<1.0	22	12	32	13	<0.10	<1.0	31	<1.0	<1.0	<1.0	32	48
W-R37-O2	G69-1.5	5	1.5	3 to 6	<2.0	8.6	180	<1.0	<1.0	20	9.4	27	60	<0.10	<1.0	26	<1.0	<1.0	<1.0	22	41
W-R37-O2	G69-2.5	5	2.5	3 to 6	<2.0	3.9	120	<1.0	<1.0	22	6.7	49	540	<0.10	<1.0	27	<1.0	<1.0	<1.0	23	95
W-R37-O3	G70-0	5	0	6 to 9	<2.0	6.7	110	<1.0	<1.0	26	12	57	190	0.11	<1.0	37	<1.0	<1.0	<1.0	45	77
W-R37-O3	G70-0.5	5	0.5	6 to 9	<2.0	7.3	140	<1.0	<1.0	28	14	43	34	<0.10	<1.0	40	<1.0	<1.0	<1.0	37	53
W-R37-O3	G70-1.5	5	1.5	6 to 9	<10	<5.0	34	<5.0	<5.0	24	6.6	19	150	0.10	<5.0	27	<5.0	<5.0	<5.0	21	60
W-R37-O3	G70-2.5	5	2.5	6 to 9	<2.0	1.5	25	<1.0	<1.0	39	15	33	17	0.29	<1.0	58	<1.0	<1.0	<1.0	47	32
W-R37-O4	G71-0	5	0	>9	<2.0	8.7	140	<1.0	<1.0	26	13	39	62	0.25	<1.0	41	<1.0	<1.0	<1.0	33	57
W-R37-O4	G71-0.5	5	0.5	>9	<10	<5.0	53	<5.0	<5.0	16	6.2	17	140	<0.10	<5.0	24	<5.0	<5.0	<5.0	22	62
W-R37-O4	G71-1.5	5	1.5	>9	<2.0	1.2	16	<1.0	<1.0	54	12	24	6.3	0.30	<1.0	55	<1.0	<1.0	<1.0	51	28
W-R37-O4	G71-2.5	5	2.5	>9	<2.0	<1.0	17	<1.0	<1.0	36	14	34	<1.0	0.16	<1.0	48	<1.0	<1.0	<1.0	59	22

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Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
W-R37-P1	G72-0	5	0	0 to 3	<2.0	1.3	72	<1.0	<1.0	18	12	62	130	0.29	<1.0	21	<1.0	<1.0	<1.0	89	150
W-R37-P1	G72-0.5	5	0.5	0 to 3	<2.0	<1.0	25	<1.0	<1.0	21	18	38	<1.0	8.4	<1.0	16	<1.0	<1.0	<1.0	130	44
W-R37-P1	G72-1.5	5	1.5	0 to 3	<2.0	<1.0	45	<1.0	<1.0	11	21	31	<1.0	2.0	<1.0	13	<1.0	<1.0	<1.0	130	43
W-R37-P1	G72-2.5	5	2.5	0 to 3	<2.0	<1.0	9.6	<1.0	<1.0	7.0	14	19	<1.0	0.32	<1.0	8.2	<1.0	<1.0	<1.0	120	41
W-R37-P2	G73-0	5	0	3 to 6	8.3	1.2	95	<1.0	<1.0	17	17	43	400	0.38	<1.0	21	<1.0	<1.0	<1.0	98	270
W-R37-P2	G73-0.5	5	0.5	3 to 6	<2.0	8.0	140	<1.0	<1.0	24	10	35	21	<0.10	<1.0	34	<1.0	<1.0	<1.0	30	51
W-R37-P2	G73-1.5	5	1.5	3 to 6	<2.0	15	330	<1.0	<1.0	34	29	45	13	15	<1.0	56	<1.0	<1.0	<1.0	69	69
W-R37-P2	G73-2.5	5	2.5	3 to 6	<2.0	6.8	220	<1.0	<1.0	33	13	30	7.4	<0.10	<1.0	27	<1.0	<1.0	<1.0	37	43
W-R37-P3	G74-0	5	0	6 to 9	<2.0	9.8	210	<1.0	<1.0	24	14	39	20	<0.10	<1.0	39	<1.0	<1.0	<1.0	35	57
W-R37-P3	G74-0.5	5	0.5	6 to 9	<2.0	11	220	<1.0	<1.0	34	22	40	14	<0.10	<1.0	55	<1.0	<1.0	<1.0	51	61
W-R37-P3	G74-1.5	5	1.5	6 to 9	<2.0	7.6	170	<1.0	<1.0	41	16	43	11	<0.10	<1.0	45	<1.0	<1.0	<1.0	59	55
W-R37-P3	G74-2.5	5	2.5	6 to 9	<2.0	2.8	53	<1.0	<1.0	32	14	36	57	<0.10	<1.0	38	<1.0	<1.0	<1.0	39	37
W-R37-P4	G75-0	5	0	>9	<2.0	4.9	120	<1.0	1.2	23	13	44	100	0.15	<1.0	32	<1.0	<1.0	<1.0	67	120
W-R37-P4	G75-0.5	5	0.5	>9	<2.0	4.0	95	<1.0	<1.0	28	13	49	11	<0.10	<1.0	39	<1.0	<1.0	<1.0	35	72
W-R37-P4	G75-1.5	5	1.5	>9	<2.0	9.2	78	<1.0	<1.0	30	13	42	110	<0.10	<1.0	40	<1.0	<1.0	<1.0	45	56
W-R37-P4	G75-2.5	5	2.5	>9	<2.0	7.9	150	<1.0	<1.0	38	16	49	37	<0.10	<1.0	59	<1.0	<1.0	<1.0	43	68
W-R37-Q1	G76-0	5	0	0 to 3	<2.0	3.8	870	<1.0	1.7	31	14	51	710	0.70	<1.0	53	<1.0	<1.0	<1.0	84	150
W-R37-Q1	G76-0.5	5	0.5	0 to 3	<2.0	<1.0	8.4	<1.0	1.2	11	15	39	1.2	0.17	<1.0	7.9	<1.0	<1.0	<1.0	150	46
W-R37-Q1	G76-1.5	5	1.5	0 to 3	<10	<5.0	8.0	<5.0	<5.0	12	24	37	<5.0	0.15	<5.0	11	<5.0	<5.0	<5.0	220	89
W-R37-Q1	G76-2.5	5	2.5	0 to 3	<2.0	8.1	100	<1.0	<1.0	31	14	44	15	<0.10	<1.0	35	<1.0	<1.0	<1.0	43	60
W-R37-Q2	G77-0	5	0	3 to 6	<2.0	<1.0	29	<1.0	<1.0	9.3	11	83	17	0.38	<1.0	11	<1.0	<1.0	<1.0	91	91
W-R37-Q2	G77-0.5	5	0.5	3 to 6	<2.0	5.3	95	<1.0	<1.0	24	11	34	78	0.12	<1.0	39	<1.0	<1.0	<1.0	30	55
W-R37-Q2	G77-1.5	5	1.5	3 to 6	<10	8.3	220	<5.0	<5.0	43	14	44	15	<0.10	<5.0	50	<5.0	<5.0	<5.0	47	77
W-R37-Q2	G77-2.5	5	2.5	3 to 6	<2.0	6.0	120	<1.0	<1.0	36	12	33	25	<0.10	<1.0	36	<1.0	<1.0	<1.0	46	72
W-R37-Q3	G78-0	5	0	6 to 9	<2.0	6.2	140	<1.0	<1.0	33	17	52	18	<0.10	<1.0	48	<1.0	<1.0	<1.0	55	80
W-R37-Q3	G78-0.5	5	0.5	6 to 9	<2.0	12	100	<1.0	1.1	41	18	64	9.6	<0.10	<1.0	60	<1.0	<1.0	<1.0	47	84
W-R37-Q3	G78-1.5	5	1.5	6 to 9	<10	9.6	270	<5.0	<5.0	45	21	49	7.5	<0.10	<5.0	59	<5.0	<5.0	<5.0	53	78
W-R37-Q3	G78-2.5	5	2.5	6 to 9	<2.0	8.3	160	<1.0	<1.0	41	16	45	18	<0.10	<1.0	47	<1.0	<1.0	<1.0	51	65
W-R37-Q4	G79-0	5	0	>9	<2.0	8.5	210	<1.0	1.2	35	17	52	64	0.15	<1.0	46	<1.0	<1.0	<1.0	62	100
W-R37-Q4	G79-0.5	5	0.5	>9	<2.0	11	120	<1.0	1.1	49	17	60	7.8	<0.10	<1.0	65	<1.0	<1.0	<1.0	51	84
W-R37-Q4	G79-1.5	5	1.5	>9	<2.0	7.3	220	<1.0	1.0	37	15	48	30	<0.10	<1.0	47	<1.0	<1.0	<1.0	42	70
W-R37-Q4	G79-2.5	5	2.5	>9	<10	<5.0	53	<5.0	<5.0	13	<5.0	<10	19	<0.10	<5.0	19	<5.0	<5.0	<5.0	16	41

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W-R37-R1	G80-0	5	0	0 to 3	<2.0	1.3	79	<1.0	1.4	25	13	53	170	0.58	<1.0	37	<1.0	<1.0	<1.0	82	130
W-R37-R1	G80-0.5	5	0.5	0 to 3	<2.0	<1.0	9.0	<1.0	1.4	12	17	39	1.6	35	<1.0	9.3	<1.0	<1.0	<1.0	130	49
W-R37-R1	G80-1.5	5	1.5	0 to 3	<2.0	<1.0	11	<1.0	1.2	8.9	15	33	<1.0	1.2	<1.0	8.3	<1.0	<1.0	<1.0	130	47
W-R37-R1	G80-2.5	5	2.5	0 to 3	<2.0	5.8	140	<1.0	<1.0	32	13	38	10	0.13	<1.0	36	<1.0	<1.0	<1.0	47	50
W-R37-R2	G81-0	5	0	3 to 6	<2.0	1.4	84	<1.0	2.9	19	12	48	58	0.29	<1.0	24	<1.0	<1.0	<1.0	79	180
W-R37-R2	G81-0.5	5	0.5	3 to 6	<2.0	6.3	110	<1.0	1.1	42	14	57	6.5	<0.10	<1.0	54	<1.0	<1.0	<1.0	41	71
W-R37-R2	G81-1.5	5	1.5	3 to 6	<2.0	7.7	130	<1.0	<1.0	44	16	38	8.8	<0.10	<1.0	37	<1.0	<1.0	<1.0	48	46
W-R37-R2	G81-2.5	5	2.5	3 to 6	<2.0	7.2	130	<1.0	<1.0	48	10	40	12	<0.10	<1.0	42	<1.0	<1.0	<1.0	46	53
W-R37-R3	G82-0	5	0	6 to 9	<2.0	5.2	110	<1.0	<1.0	36	12	45	9.5	0.15	<1.0	45	<1.0	<1.0	<1.0	36	63
W-R37-R3	G82-0.5	5	0.5	6 to 9	<2.0	8.2	180	<1.0	<1.0	41	18	45	15	0.12	<1.0	47	<1.0	<1.0	<1.0	47	61
W-R37-R3	G82-1.5	5	1.5	6 to 9	<2.0	3.6	59	<1.0	<1.0	18	6.2	17	15	<0.10	<1.0	20	<1.0	<1.0	<1.0	24	27
W-R37-R3	G82-2.5	5	2.5	6 to 9	<2.0	8.1	91	<1.0	<1.0	35	9.8	29	98	<0.10	<1.0	40	<1.0	<1.0	<1.0	33	55
W-R37-R4	G83-0	5	0	>9	<2.0	1.7	52	<1.0	<1.0	16	12	31	36	0.27	<1.0	31	<1.0	<1.0	<1.0	76	83
W-R37-R4	G83-0.5	5	0.5	>9	<2.0	6.0	200	<1.0	<1.0	22	10	29	18	<0.10	<1.0	28	<1.0	<1.0	<1.0	25	53
W-R37-R4	G83-1.5	5	1.5	>9	<2.0	6.7	150	<1.0	<1.0	38	16	35	26	<0.10	<1.0	44	<1.0	<1.0	<1.0	39	58
W-R37-R4	G83-2.5	5	2.5	>9	<4.0	2.6	55	<2.0	<2.0	18	8.0	23	38	<0.10	<2.0	24	<2.0	<2.0	<2.0	21	40
W-R37-S1	G84-0	5	0	0 to 3	<2.0	3.7	86	<1.0	<1.0	24	13	53	330	0.36	<1.0	35	<1.0	<1.0	<1.0	71	130
W-R37-S1	G84-0.5	5	0.5	0 to 3	<2.0	<1.0	11	<1.0	<1.0	12	15	38	1.5	0.24	<1.0	11	<1.0	<1.0	<1.0	120	46
W-R37-S1	G84-1.5	5	1.5	0 to 3	<2.0	<1.0	10	<1.0	<1.0	10	17	37	<1.0	0.53	<1.0	11	<1.0	<1.0	<1.0	150	53
W-R37-S1	G84-2.5	5	2.5	0 to 3	<2.0	<1.0	8.6	<1.0	<1.0	8.2	17	33	<1.0	4.7	<1.0	10	<1.0	<1.0	<1.0	140	47
W-R37-S2	G85-0	5	0	3 to 6	<2.0	8.9	130	<1.0	<1.0	28	13	42	55	0.12	<1.0	40	<1.0	<1.0	<1.0	36	68
W-R37-S2	G85-0.5	5	0.5	3 to 6	<2.0	7.3	120	<1.0	<1.0	31	15	33	25	0.14	<1.0	34	<1.0	<1.0	<1.0	37	56
W-R37-S2	G85-1.5	5	1.5	3 to 6	<2.0	6.9	170	<1.0	<1.0	40	18	49	10	<0.10	<1.0	53	<1.0	<1.0	<1.0	42	65
W-R37-S2	G85-2.5	5	2.5	3 to 6	<2.0	3.9	41	<1.0	<1.0	14	6.9	19	23	0.11	<1.0	20	<1.0	<1.0	<1.0	20	38
W-R37-S3	G86-0	5	0	6 to 9	<2.0	8.6	140	<1.0	<1.0	45	12	39	16	<0.10	<1.0	50	<1.0	<1.0	<1.0	48	56
W-R37-S3	G86-0.5	5	0.5	6 to 9	<2.0	8.6	160	<1.0	<1.0	42	16	36	8.5	<0.10	<1.0	44	<1.0	<1.0	<1.0	47	51
W-R37-S3	G86-1.5	5	1.5	6 to 9	<2.0	2.8	120	<1.0	<1.0	27	11	18	40	0.19	<1.0	52	<1.0	<1.0	<1.0	21	31
W-R37-S3	G86-2.5	5	2.5	6 to 9	<20	<10	32	<10	<10	23	<10	<20	16	0.14	<10	31	<10	<10	<10	23	41
W-R37-S4	G87-0	5	0	>9	<2.0	7.4	130	<1.0	<1.0	38	12	35	14	<0.10	<1.0	41	<1.0	<1.0	<1.0	41	51
W-R37-S4	G87-0.5	5	0.5	>9	<2.0	6.2	110	<1.0	<1.0	29	12	32	38	<0.10	<1.0	36	<1.0	<1.0	<1.0	34	54
W-R37-S4	G87-1.5	5	1.5	>9	<2.0	5.7	140	<1.0	<1.0	30	12	29	37	0.12	<1.0	37	<1.0	<1.0	<1.0	31	47
W-R37-S4	G87-2.5	5	2.5	>9	<2.0	3.7	89	<1.0	<1.0	24	8.0	26	26	<0.10	<1.0	28	<1.0	<1.0	<1.0	25	44

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
W-R37-T1	G88-0	5	0	0 to 3	<2.0	<1.0	61	<1.0	<1.0	17	13	43	98	1.8	<1.0	22	<1.0	<1.0	<1.0	85	130
W-R37-T1	G88-0.5	5	0.5	0 to 3	<2.0	<1.0	8.1	<1.0	<1.0	10	14	28	2.6	0.83	<1.0	9.5	<1.0	<1.0	<1.0	120	42
W-R37-T1	G88-1.5	5	1.5	0 to 3	<2.0	<1.0	10	<1.0	<1.0	7.9	16	28	<1.0	0.82	<1.0	10	<1.0	<1.0	<1.0	120	46
W-R37-T1	G88-2.5	5	2.5	0 to 3	<2.0	<1.0	14	<1.0	<1.0	8.8	17	35	<1.0	0.25	<1.0	10	<1.0	<1.0	<1.0	130	48
W-R37-T2	G89-0	5	0	3 to 6	<2.0	<1.0	25	<1.0	<1.0	16	17	46	17	3.4	<1.0	14	<1.0	<1.0	<1.0	110	52
W-R37-T2	G89-0.5	5	0.5	3 to 6	<2.0	<1.0	21	<1.0	<1.0	8.8	15	35	3.0	4.6	<1.0	11	<1.0	<1.0	<1.0	130	45
W-R37-T2	G89-1.5	5	1.5	3 to 6	<2.0	6.2	130	<1.0	<1.0	31	24	40	28	0.12	<1.0	51	<1.0	<1.0	<1.0	35	59
W-R37-T2	G89-2.5	5	2.5	3 to 6	<2.0	4.4	89	<1.0	<1.0	21	9.9	20	26	0.13	<1.0	28	<1.0	<1.0	<1.0	25	34
W-R37-T3	G90-0	5	0	6 to 9	<2.0	7.3	140	<1.0	<1.0	35	13	38	25	<0.10	<1.0	46	<1.0	<1.0	<1.0	41	59
W-R37-T3	G90-0.5	5	0.5	6 to 9	<2.0	7.6	160	<1.0	<1.0	48	16	39	13	<0.10	<1.0	48	<1.0	<1.0	<1.0	45	55
W-R37-T3	G90-1.5	5	1.5	6 to 9	<2.0	7.5	190	<1.0	<1.0	42	19	50	7.9	<0.10	<1.0	57	<1.0	<1.0	<1.0	46	69
W-R37-T3	G90-2.5	5	2.5	6 to 9	<2.0	5.1	74	<1.0	<1.0	29	10	22	38	0.13	<1.0	38	<1.0	<1.0	<1.0	27	45
W-R37-T4	G91-0	5	0	>9	<2.0	7.9	110	<1.0	<1.0	35	13	40	22	<0.10	<1.0	50	<1.0	<1.0	<1.0	40	65
W-R37-T4	G91-0.5	5	0.5	>9	<2.0	6.6	110	<1.0	<1.0	34	12	33	120	0.12	<1.0	45	<1.0	<1.0	<1.0	35	54
W-R37-T4	G91-1.5	5	1.5	>9	<2.0	6.4	120	<1.0	<1.0	34	14	34	31	<0.10	<1.0	52	<1.0	<1.0	<1.0	35	57
W-R37-T4	G91-2.5	5	2.5	>9	<2.0	1.7	26	<1.0	<1.0	5.9	2.2	7.3	3.0	<0.10	<1.0	6.9	<1.0	<1.0	<1.0	4.8	14
W-R37-U1	G92-0	5	0	0 to 3	<2.0	<1.0	32	<1.0	<1.0	13	16	36	36	2.1	<1.0	20	<1.0	<1.0	<1.0	120	75
W-R37-U1	G92-0.5	5	0.5	0 to 3	<2.0	<1.0	7.8	<1.0	<1.0	10	14	30	<1.0	0.70	<1.0	9.9	<1.0	<1.0	<1.0	110	41
W-R37-U1	G92-1.5	5	1.5	0 to 3	<2.0	<1.0	15	<1.0	<1.0	12	17	38	<1.0	0.28	<1.0	13	<1.0	<1.0	<1.0	130	49
W-R37-U1	G92-2.5	5	2.5	0 to 3	<2.0	<1.0	7.1	<1.0	<1.0	6.9	16	27	<1.0	2.5	<1.0	9.4	<1.0	<1.0	<1.0	120	44
W-R37-U2	G93-0	5	0	3 to 6	<2.0	<1.0	24	<1.0	<1.0	12	17	30	18	1.6	<1.0	16	<1.0	<1.0	<1.0	75	40
W-R37-U2	G93-0.5	5	0.5	3 to 6	<2.0	7.1	110	<1.0	<1.0	30	15	33	28	0.17	<1.0	36	<1.0	<1.0	<1.0	36	50
W-R37-U2	G93-1.5	5	1.5	3 to 6	<2.0	7.7	98	<1.0	<1.0	27	12	37	120	<0.10	<1.0	36	<1.0	<1.0	<1.0	35	65
W-R37-U2	G93-2.5	5	2.5	3 to 6	<2.0	1.1	29	<1.0	<1.0	21	11	28	24	<0.10	<1.0	30	<1.0	<1.0	<1.0	23	22
W-R37-U3	G94-0	5	0	6 to 9	<2.0	2.0	32	<1.0	<1.0	24	9.0	20	33	0.15	<1.0	29	<1.0	<1.0	<1.0	26	38
W-R37-U3	G94-0.5	5	0.5	6 to 9	<2.0	7.2	290	<1.0	<1.0	20	12	30	38	<0.10	<1.0	30	<1.0	<1.0	1.6	29	53
W-R37-U3	G94-1.5	5	1.5	6 to 9	<2.0	12	130	<1.0	<1.0	35	22	52	16	<0.10	<1.0	53	<1.0	<1.0	<1.0	52	82
W-R37-U3	G94-2.5	5	2.5	6 to 9	<2.0	1.5	28	<1.0	<1.0	26	13	40	20	<0.10	<1.0	41	<1.0	<1.0	<1.0	27	26
W-R37-U4	G95-0	5	0	>9	<2.0	10	140	<1.0	<1.0	32	15	52	26	<0.10	<1.0	44	<1.0	<1.0	<1.0	39	75
W-R37-U4	G95-0.5	5	0.5	>9	<2.0	8.0	180	<1.0	<1.0	30	15	40	59	0.20	<1.0	46	<1.0	<1.0	<1.0	43	70
W-R37-U4	G95-1.5	5	1.5	>9	<2.0	16	97	<1.0	1.1	33	17	54	15	<0.10	<1.0	47	<1.0	<1.0	<1.0	44	74
W-R37-U4	G95-2.5	5	2.5	>9	<2.0	1.5	30	<1.0	<1.0	31	13	32	2.2	<0.10	<1.0	32	<1.0	<1.0	<1.0	34	27

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W-R37-FL1	G25-0	8	0	0 to 3	<2.0	<1.0	25	<1.0	1.2	11	13	32	27	5.3	<1.0	12	<1.0	<1.0	<1.0	110	71
W-R37-FL1	G25-0.5	8	0.5	0 to 3	<2.0	<1.0	18	<1.0	1.2	12	16	47	1.1	4.1	<1.0	9.8	<1.0	<1.0	<1.0	120	45
W-R37-FL1	G25-1.5	8	1.5	0 to 3	<2.0	6.1	130	<1.0	<1.0	29	13	41	15	0.55	<1.0	34	<1.0	<1.0	<1.0	45	53
W-R37-FL1	G25-2.5	8	2.5	0 to 3	<2.0	5.4	190	<1.0	<1.0	34	14	47	8.9	0.22	<1.0	40	<1.0	<1.0	<1.0	48	61
W-R37-FL2	G26-0	8	0	3 to 6	<2.0	3.9	98	<1.0	<1.0	22	13	37	11	0.35	<1.0	25	<1.0	<1.0	<1.0	62	45
W-R37-FL2	G26-0.5	8	0.5	3 to 6	<2.0	6.2	150	<1.0	<1.0	33	15	46	14	<0.10	<1.0	37	<1.0	<1.0	<1.0	59	61
W-R37-FL2	G26-1.5	8	1.5	3 to 6	<2.0	5.8	170	<1.0	<1.0	27	12	39	15	<0.10	<1.0	33	<1.0	<1.0	<1.0	35	47
W-R37-FL2	G26-2.5	8	2.5	3 to 6	<2.0	8.5	130	<1.0	<1.0	44	16	46	8.1	0.26	<1.0	39	<1.0	<1.0	<1.0	53	61
W-R37-GL1	G34-0	8	0	0 to 3	<2.0	1.4	51	<1.0	1.1	25	14	46	100	13	<1.0	20	<1.0	<1.0	<1.0	96	95
W-R37-GL1	G34-0.5	8	0.5	0 to 3	<2.0	<1.0	12	<1.0	<1.0	9.3	11	25	4.8	3.2	<1.0	14	<1.0	<1.0	<1.0	90	31
W-R37-GL1	G34-1.5	8	1.5	0 to 3	<2.0	<1.0	18	<1.0	1.3	13	16	46	1.3	3.4	<1.0	9.6	<1.0	<1.0	<1.0	140	49
W-R37-GL1	G34-2.5	8	2.5	0 to 3	<2.0	7.2	150	<1.0	<1.0	35	17	51	16	0.19	<1.0	42	<1.0	<1.0	<1.0	55	60
W-R37-GL2	G35-0	8	0	3 to 6	<2.0	3.0	67	<1.0	<1.0	22	8.2	27	110	0.21	<1.0	30	<1.0	<1.0	<1.0	44	83
W-R37-GL2	G35-0.5	8	0.5	3 to 6	<2.0	4.4	98	<1.0	<1.0	28	12	39	39	0.13	<1.0	38	<1.0	<1.0	<1.0	50	64
W-R37-GL2	G35-1.5	8	1.5	3 to 6	<2.0	2.5	65	<1.0	<1.0	26	13	33	6.2	<0.10	<1.0	32	<1.0	<1.0	<1.0	37	30
W-R37-GL2	G35-2.5	8	2.5	3 to 6	<10	5.9	150	<5.0	<5.0	30	12	38	130	<0.10	<5.0	40	<5.0	<5.0	<5.0	34	73
W-R37-HL1	G38-0	8	0	0 to 3	<2.0	<1.0	15	<1.0	1.0	7.1	13	28	15	1.8	<1.0	14	<1.0	<1.0	<1.0	99	41
W-R37-HL1	G38-0.5	8	0.5	0 to 3	<2.0	<1.0	18	<1.0	1.5	15	19	52	3.7	6.7	<1.0	13	<1.0	<1.0	<1.0	160	54
W-R37-HL1	G38-1.5	8	1.5	0 to 3	<2.0	<1.0	16	<1.0	1.3	13	15	48	1.2	6.5	<1.0	9.5	<1.0	<1.0	<1.0	140	48
W-R37-HL1	G38-2.5	8	2.5	0 to 3	<2.0	<1.0	9.0	<1.0	1.3	11	17	36	<1.0	0.36	<1.0	9.9	<1.0	<1.0	<1.0	140	52
W-R37-HL2	G39-0	8	0	3 to 6	<2.0	4.6	100	<1.0	1.0	29	13	45	83	0.13	<1.0	36	<1.0	<1.0	<1.0	69	68
W-R37-HL2	G39-0.5	8	0.5	3 to 6	<2.0	<1.0	22	<1.0	1.2	10	16	50	9.4	1.1	<1.0	13	<1.0	<1.0	<1.0	120	52
W-R37-HL2	G39-1.5	8	1.5	3 to 6	<2.0	<1.0	35	<1.0	<1.0	74	21	68	<1.0	0.11	<1.0	51	<1.0	<1.0	<1.0	42	22
W-R37-HL2	G39-2.5	8	2.5	3 to 6	<2.0	9.8	240	<1.0	<1.0	26	12	44	13	<0.10	<1.0	36	<1.0	<1.0	<1.0	33	60
W-R37-IL1	G45-0	8	0	0 to 3	<2.0	<1.0	24	<1.0	1.4	22	16	37	4.4	2.3	3.4	12	<1.0	<1.0	<1.0	120	54
W-R37-IL1	G45-0.5	8	0.5	0 to 3	<2.0	<1.0	24	<1.0	1.4	17	19	45	2.0	2.5	<1.0	23	<1.0	<1.0	<1.0	120	48
W-R37-IL1	G45-1.5	8	1.5	0 to 3	<2.0	<1.0	11	<1.0	1.4	9.8	16	40	<1.0	0.54	<1.0	8.9	<1.0	<1.0	<1.0	140	53
W-R37-IL1	G45-2.5	8	2.5	0 to 3	<2.0	<1.0	12	<1.0	1.5	10	19	42	<1.0	0.25	<1.0	11	<1.0	<1.0	<1.0	160	55
W-R37-IL2	G46-0	8	0	3 to 6	<2.0	4.7	94	<1.0	<1.0	34	13	52	560	0.47	<1.0	40	<1.0	<1.0	<1.0	62	96
W-R37-IL2	G46-0.5	8	0.5	3 to 6	<2.0	4.8	97	<1.0	<1.0	30	15	46	23	0.46	<1.0	38	<1.0	<1.0	<1.0	61	51
W-R37-IL2	G46-1.5	8	1.5	3 to 6	<2.0	<1.0	13	<1.0	<1.0	29	15	49	<1.0	<0.10	<1.0	32	<1.0	<1.0	<1.0	36	16
W-R37-IL2	G46-2.5	8	2.5	3 to 6	<2.0	10	200	<1.0	<1.0	27	11	43	8.2	<0.10	<1.0	34	<1.0	<1.0	<1.0	39	53

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W-R37-JL1	G50-0	8	0	0 to 3	<2.0	2.2	57	<1.0	1.8	33	16	58	260	1.2	<1.0	25	<1.0	<1.0	<1.0	97	130
W-R37-JL1	G50-0.5	8	0.5	0 to 3	<2.0	<1.0	25	<1.0	1.3	13	17	40	3.9	5.2	<1.0	13	<1.0	<1.0	<1.0	130	47
W-R37-JL1	G50-1.5	8	1.5	0 to 3	<2.0	8.9	90	<1.0	1.0	32	14	40	21	0.37	<1.0	36	<1.0	<1.0	<1.0	47	50
W-R37-JL1	G50-2.5	8	2.5	0 to 3	<2.0	<1.0	7.4	<1.0	1.4	9.2	16	39	<1.0	0.15	<1.0	8.3	<1.0	<1.0	<1.0	150	49
W-R37-JL2	G51-0	8	0	3 to 6	<2.0	<1.0	45	<1.0	1.2	11	15	34	6.2	1.2	<1.0	15	<1.0	<1.0	<1.0	110	51
W-R37-JL2	G51-0.5	8	0.5	3 to 6	<2.0	6.6	170	<1.0	1.1	27	15	47	9.5	0.17	<1.0	38	<1.0	<1.0	<1.0	60	64
W-R37-JL2	G51-1.5	8	1.5	3 to 6	<2.0	5.0	110	<1.0	<1.0	24	12	36	29	0.17	<1.0	34	<1.0	<1.0	<1.0	38	47
W-R37-JL2	G51-2.5	8	2.5	3 to 6	<2.0	8.8	260	<1.0	<1.0	30	14	38	8.9	<0.10	<1.0	41	<1.0	<1.0	<1.0	38	48
W-505-RL1	G418-0	72	0	0 to 3	<2.0	3.8	110	<1.0	<1.0	45	6.9	17	59	<0.10	<1.0	54	<1.0	<1.0	<1.0	33	61
W-505-RL1	G418-0.5	72	0.5	0 to 3	<2.0	3.3	56	<1.0	<1.0	36	7.1	10	17	<0.10	<1.0	60	<1.0	<1.0	<1.0	25	29
W-505-RL1	G418-1.5	72	1.5	0 to 3	<2.0	3.2	29	<1.0	<1.0	16	5.1	4.1	13	<0.10	<1.0	21	<1.0	<1.0	<1.0	19	23
W-505-RL1	G418-2.5	72	2.5	0 to 3	<2.0	5.0	25	<1.0	<1.0	10	5.3	3.7	2.6	<0.10	<1.0	10	<1.0	<1.0	<1.0	20	22
W-505-SL1	G420-0	72	0	0 to 3	<2.0	3.0	100	<1.0	<1.0	60	7.0	21	53	<0.10	<1.0	61	<1.0	<1.0	<1.0	30	100
W-505-SL1	G420-0.5	72	0.5	0 to 3	<2.0	3.7	72	<1.0	<1.0	81	9.0	17	60	0.28	<1.0	87	<1.0	<1.0	<1.0	30	49
W-505-SL1	G420-1.5	72	1.5	0 to 3	<2.0	3.2	80	<1.0	<1.0	90	13	14	3.2	0.22	<1.0	150	<1.0	<1.0	<1.0	43	38
W-505-SL1	G420-2.5	72	2.5	0 to 3	<2.0	2.8	32	<1.0	<1.0	20	5.6	4.9	2.2	<0.10	<1.0	30	<1.0	<1.0	<1.0	20	22
W-505-TL1	G422-0	72	0	0 to 3	<2.0	3.6	91	<1.0	<1.0	64	8.5	22	240	<0.10	<1.0	81	<1.0	<1.0	<1.0	30	120
W-505-TL1	G422-0.5	72	0.5	0 to 3	<2.0	3.4	78	<1.0	<1.0	72	8.8	17	290	0.11	<1.0	120	<1.0	<1.0	<1.0	27	78
W-505-UL1	G424-0	72	0	0 to 3	<2.0	4.2	100	<1.0	<1.0	31	5.3	14	5.0	<0.10	<1.0	47	<1.0	<1.0	<1.0	29	34
W-505-UL1	G424-0.5	72	0.5	0 to 3	<2.0	2.5	81	<1.0	<1.0	60	8.2	21	31	0.14	2.2	84	<1.0	<1.0	<1.0	28	70
W-505-UL1	G424-1.5	72	1.5	0 to 3	<2.0	5.5	62	<1.0	<1.0	38	6.1	11	3.1	<0.10	<1.0	56	<1.0	<1.0	<1.0	26	22
W-505-UL1	G424-2.5	72	2.5	0 to 3	<2.0	3.4	74	<1.0	<1.0	150	16	13	2.8	0.26	<1.0	280	<1.0	<1.0	<1.0	30	29
W-505-VL1	G426-0	72	0	0 to 3	<2.0	3.6	110	<1.0	<1.0	57	7.1	22	110	<0.10	<1.0	64	<1.0	<1.0	<1.0	33	130
W-505-VL1	G426-0.5	72	0.5	0 to 3	<2.0	3.7	57	<1.0	<1.0	41	7.0	17	73	<0.10	<1.0	66	<1.0	<1.0	<1.0	23	41
W-505-VL1	G426-1.5	72	1.5	0 to 3	<2.0	3.0	75	<1.0	<1.0	180	16	13	3.7	<0.10	<1.0	250	<1.0	<1.0	<1.0	33	30
W-505-VL1	G426-2.5	72	2.5	0 to 3	<2.0	2.5	120	<1.0	<1.0	29	11	18	14	<0.10	<1.0	60	<1.0	<1.0	<1.0	21	51
W-505-WL1	G427-0	72	0	0 to 3	<2.0	4.1	130	<1.0	<1.0	43	7.8	26	51	<0.10	<1.0	54	<1.0	<1.0	<1.0	39	120
W-505-WL1	G427-0.5	72	0.5	0 to 3	<2.0	3.9	63	<1.0	<1.0	41	7.1	14	6.2	<0.10	<1.0	66	<1.0	<1.0	<1.0	25	29
W-505-R1	G417-0	73	0	3 to 6	<2.0	4.5	110	<1.0	<1.0	69	11	22	45	<0.10	<1.0	130	<1.0	<1.0	<1.0	25	110
W-505-R1	G417-0.5	73	0.5	3 to 6	<2.0	3.1	190	<1.0	<1.0	37	12	17	7.0	<0.10	<1.0	90	<1.0	<1.0	<1.0	26	41
W-505-R1	G417-1.5	73	1.5	3 to 6	<2.0	3.3	220	<1.0	<1.0	40	13	18	9.1	<0.10	<1.0	95	<1.0	<1.0	<1.0	29	47
W-505-R1	G417-2.5	73	2.5	3 to 6	<2.0	1.6	130	<1.0	<1.0	15	6.9	12	6.2	<0.10	<1.0	28	<1.0	<1.0	<1.0	19	29

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
W-505-S1	G419-0	73	0	3 to 6	<2.0	3.5	120	<1.0	<1.0	26	6.9	17	5.7	<0.10	<1.0	40	<1.0	<1.0	<1.0	34	44
W-505-S1	G419-0.5	73	0.5	3 to 6	<2.0	3.6	160	<1.0	<1.0	36	10	14	8.1	<0.10	<1.0	73	<1.0	<1.0	<1.0	27	31
W-505-S1	G419-1.5	73	1.5	3 to 6	<2.0	3.2	160	<1.0	<1.0	46	12	16	11	<0.10	<1.0	90	<1.0	<1.0	<1.0	27	32
W-505-S1	G419-2.5	73	2.5	3 to 6	<2.0	2.2	170	<1.0	<1.0	40	12	14	5.0	<0.10	<1.0	88	<1.0	<1.0	<1.0	26	30
E-NUT-A1	G435-0	76	0	0 to 3	<2.0	4.9	160	<1.0	<1.0	20	7.4	20	14	<0.10	<1.0	23	<1.0	<1.0	<1.0	33	52
E-NUT-A1	G435-0.5	76	0.5	0 to 3	<2.0	6.5	150	<1.0	<1.0	24	10	25	13	<0.10	<1.0	25	<1.0	<1.0	<1.0	42	63
E-NUT-A1	G435-1.5	76	1.5	0 to 3	<2.0	3.8	130	<1.0	<1.0	18	8.8	18	7.9	<0.10	<1.0	19	<1.0	<1.0	<1.0	33	39
E-NUT-A1	G435-2.5	76	2.5	0 to 3	<2.0	5.3	130	<1.0	<1.0	20	12	20	8.1	<0.10	<1.0	20	<1.0	<1.0	<1.0	39	44
E-NUT-A2	G436-0	76	0	3 to 6	<2.0	5.4	120	<1.0	<1.0	21	7.8	19	11	<0.10	<1.0	30	<1.0	<1.0	<1.0	31	67
E-NUT-A2	G436-0.5	76	0.5	3 to 6	<2.0	7.1	150	<1.0	<1.0	24	9.8	26	7.6	<0.10	<1.0	27	<1.0	<1.0	<1.0	43	63
E-NUT-A2	G436-1.5	76	1.5	3 to 6	<2.0	4.8	140	<1.0	<1.0	20	8.1	20	6.5	<0.10	<1.0	18	<1.0	<1.0	<1.0	36	44
E-NUT-A2	G436-2.5	76	2.5	3 to 6	<2.0	3.2	180	<1.0	<1.0	17	9.4	15	5.9	<0.10	<1.0	15	<1.0	<1.0	<1.0	36	29
E-NUT-A3	G437-0	76	0	6 to 9	<2.0	6.0	140	<1.0	<1.0	21	6.6	21	16	<0.10	<1.0	21	<1.0	<1.0	<1.0	36	57
E-NUT-A3	G437-0.5	76	0.5	6 to 9	<2.0	5.4	140	<1.0	<1.0	20	13	19	6.8	<0.10	<1.0	21	<1.0	<1.0	<1.0	38	43
E-NUT-A3	G437-1.5	76	1.5	6 to 9	<2.0	4.3	130	<1.0	<1.0	19	8.9	18	5.9	<0.10	<1.0	17	<1.0	<1.0	<1.0	39	38
E-NUT-A3	G437-2.5	76	2.5	6 to 9	<2.0	3.3	120	<1.0	<1.0	18	8.5	15	5.5	<0.10	<1.0	15	<1.0	<1.0	<1.0	37	30
E-NUT-A4	G438-0	76	0	>9	<2.0	7.5	180	<1.0	<1.0	23	11	24	9.2	<0.10	<1.0	25	<1.0	<1.0	<1.0	43	61
E-NUT-A4	G438-0.5	76	0.5	>9	<2.0	4.7	120	<1.0	<1.0	18	7.7	17	5.7	<0.10	<1.0	16	<1.0	<1.0	<1.0	35	38
E-NUT-A4	G438-1.5	76	1.5	>9	<2.0	4.1	130	<1.0	<1.0	20	8.7	18	6.1	<0.10	<1.0	17	<1.0	<1.0	<1.0	39	38
E-NUT-A4	G438-2.5	76	2.5	>9	<2.0	3.1	150	<1.0	<1.0	16	8.9	13	5.6	<0.10	<1.0	13	<1.0	<1.0	<1.0	33	25
E-NUT-B1	G439-0	76	0	0 to 3	<2.0	6.7	130	<1.0	<1.0	23	8.3	22	13	<0.10	<1.0	28	<1.0	<1.0	<1.0	42	57
E-NUT-B1	G439-0.5	76	0.5	0 to 3	<2.0	4.8	130	<1.0	<1.0	21	6.8	19	6.1	<0.10	<1.0	18	<1.0	<1.0	<1.0	39	43
E-NUT-B1	G439-1.5	76	1.5	0 to 3	<2.0	4.9	130	<1.0	<1.0	20	14	18	8.8	<0.10	<1.0	22	<1.0	<1.0	<1.0	43	39
E-NUT-B1	G439-2.5	76	2.5	0 to 3	<2.0	3.3	100	<1.0	<1.0	17	7.7	14	5.2	<0.10	<1.0	13	<1.0	<1.0	<1.0	37	31
E-NUT-B2	G440-0	76	0	3 to 6	<2.0	6.5	160	<1.0	<1.0	24	8.7	24	8.5	<0.10	<1.0	24	<1.0	<1.0	<1.0	42	58
E-NUT-B2	G440-0.5	76	0.5	3 to 6	<2.0	6.6	130	<1.0	<1.0	24	8.0	21	20	<0.10	<1.0	20	<1.0	<1.0	<1.0	42	51
E-NUT-B2	G440-1.5	76	1.5	3 to 6	<2.0	4.9	110	<1.0	<1.0	21	11	19	8.3	<0.10	<1.0	18	<1.0	<1.0	<1.0	42	42
E-NUT-B2	G440-2.5	76	2.5	3 to 6	<2.0	2.9	150	<1.0	<1.0	17	7.1	14	4.9	<0.10	<1.0	15	<1.0	<1.0	<1.0	36	32
E-NUT-B3	G441-0	76	0	6 to 9	<2.0	7.0	200	<1.0	<1.0	21	8.1	21	10	<0.10	<1.0	21	<1.0	<1.0	<1.0	40	47
E-NUT-B3	G441-0.5	76	0.5	6 to 9	<2.0	4.3	110	<1.0	<1.0	18	4.9	15	5.6	<0.10	<1.0	13	<1.0	<1.0	<1.0	36	34
E-NUT-B3	G441-1.5	76	1.5	6 to 9	<2.0	3.6	97	<1.0	<1.0	19	9.3	16	5.7	<0.10	<1.0	17	<1.0	<1.0	<1.0	39	35
E-NUT-B3	G441-2.5	76	2.5	6 to 9	<2.0	3.4	230	<1.0	<1.0	18	11	15	6.1	<0.10	<1.0	17	<1.0	<1.0	<1.0	39	33

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
E-NUT-B4	G442-0	76	0	>9	<2.0	5.0	120	<1.0	<1.0	21	7.8	16	10	<0.10	<1.0	28	<1.0	<1.0	<1.0	30	49
E-NUT-B4	G442-0.5	76	0.5	>9	<2.0	2.8	99	<1.0	<1.0	16	3.6	13	4.1	<0.10	<1.0	10	<1.0	<1.0	<1.0	31	27
E-NUT-B4	G442-1.5	76	1.5	>9	<2.0	3.0	100	<1.0	<1.0	17	8.8	14	5.3	<0.10	<1.0	15	<1.0	<1.0	<1.0	34	28
E-NUT-B4	G442-2.5	76	2.5	>9	<2.0	2.9	110	<1.0	<1.0	16	6.4	13	4.7	<0.10	<1.0	13	<1.0	<1.0	<1.0	33	28
E-NUT-C1	G443-0	76	0	0 to 3	<2.0	3.3	93	<1.0	<1.0	35	8.0	22	11	<0.10	<1.0	50	<1.0	<1.0	<1.0	31	92
E-NUT-C1	G443-0.5	76	0.5	0 to 3	<10	<5.0	16	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<0.10	<5.0	<5.0	<5.0	<5.0	<5.0	9.9	33
E-NUT-C1	G443-1.5	76	1.5	0 to 3	<2.0	3.1	130	<1.0	<1.0	16	8.9	15	5.4	<0.10	<1.0	15	<1.0	<1.0	<1.0	34	28
E-NUT-C1	G443-2.5	76	2.5	0 to 3	<2.0	2.6	160	<1.0	<1.0	16	8.5	15	5.3	<0.10	<1.0	14	<1.0	<1.0	<1.0	34	28
E-NUT-C2	G444-0	76	0	3 to 6	<2.0	4.2	110	<1.0	<1.0	27	7.9	17	12	<0.10	<1.0	35	<1.0	<1.0	<1.0	31	58
E-NUT-C2	G444-0.5	76	0.5	3 to 6	<2.0	5.1	110	<1.0	<1.0	19	6.2	18	7.5	<0.10	<1.0	18	<1.0	<1.0	<1.0	34	42
E-NUT-C2	G444-1.5	76	1.5	3 to 6	<2.0	8.0	290	<1.0	<1.0	23	9.0	22	15	<0.10	<1.0	23	<1.0	<1.0	<1.0	38	54
E-NUT-C2	G444-2.5	76	2.5	3 to 6	<2.0	2.8	140	<1.0	<1.0	14	8.7	15	5.7	<0.10	<1.0	14	<1.0	<1.0	<1.0	29	26
E-NUT-D1	G445-0	76	0	0 to 3	<2.0	1.7	60	<1.0	<1.0	17	4.4	12	2.7	<0.10	<1.0	29	<1.0	<1.0	<1.0	18	22
E-NUT-D1	G445-0.5	76	0.5	0 to 3	<2.0	4.5	94	<1.0	<1.0	21	6.8	17	5.5	<0.10	<1.0	20	<1.0	<1.0	<1.0	33	40
E-NUT-D1	G445-1.5	76	1.5	0 to 3	<2.0	2.9	270	<1.0	<1.0	13	8.3	14	5.4	<0.10	<1.0	13	<1.0	<1.0	<1.0	28	25
E-NUT-D1	G445-2.5	76	2.5	0 to 3	<2.0	3.2	190	<1.0	<1.0	15	9.6	15	5.9	<0.10	<1.0	14	<1.0	<1.0	<1.0	30	28
E-NUT-E1	G446-0	76	0	0 to 3	<2.0	2.8	68	<1.0	<1.0	35	7.0	16	3.4	0.12	<1.0	52	<1.0	<1.0	<1.0	25	35
E-NUT-E1	G446-0.5	76	0.5	0 to 3	<2.0	4.4	99	<1.0	<1.0	52	10	17	5.8	<0.10	<1.0	89	<1.0	<1.0	<1.0	29	34
E-NUT-E1	G446-1.5	76	1.5	0 to 3	<2.0	2.7	120	<1.0	<1.0	13	8.7	14	5.6	<0.10	<1.0	15	<1.0	<1.0	<1.0	28	24
E-NUT-E1	G446-2.5	76	2.5	0 to 3	<2.0	2.8	120	<1.0	<1.0	13	10	15	5.8	<0.10	<1.0	17	<1.0	<1.0	<1.0	28	25
E-NUT-F1	G447-0	76	0	0 to 3	<2.0	2.9	67	<1.0	<1.0	57	9.0	15	2.8	<0.10	<1.0	85	<1.0	<1.0	<1.0	27	37
E-NUT-F1	G447-0.5	76	0.5	0 to 3	<2.0	8.4	140	<1.0	<1.0	22	6.0	21	9.7	<0.10	<1.0	22	<1.0	<1.0	<1.0	38	55
E-NUT-F1	G447-1.5	76	1.5	0 to 3	<2.0	3.0	150	<1.0	<1.0	15	8.3	16	5.8	<0.10	<1.0	15	<1.0	<1.0	<1.0	31	28
E-NUT-F1	G447-2.5	76	2.5	0 to 3	<2.0	4.0	190	<1.0	<1.0	16	11	16	6.2	<0.10	<1.0	17	<1.0	<1.0	<1.0	34	32
E-NUT-G1	G448-0	76	0	0 to 3	<2.0	2.7	93	<1.0	<1.0	37	6.5	16	23	<0.10	<1.0	47	<1.0	<1.0	<1.0	37	53
E-NUT-G1	G448-0.5	76	0.5	0 to 3	<2.0	2.4	58	<1.0	<1.0	52	7.1	12	1.9	0.13	1.2	66	<1.0	<1.0	<1.0	22	25
E-NUT-G1	G448-1.5	76	1.5	0 to 3	<2.0	6.9	190	<1.0	<1.0	22	11	21	6.9	<0.10	<1.0	26	<1.0	<1.0	<1.0	38	53
E-NUT-G1	G448-2.5	76	2.5	0 to 3	<2.0	3.3	150	<1.0	<1.0	15	9.3	15	6.0	<0.10	<1.0	15	<1.0	<1.0	<1.0	31	29
E-NUT-H1	G449-0	76	0	0 to 3	<2.0	2.1	82	<1.0	<1.0	39	6.7	14	4.7	<0.10	<1.0	47	<1.0	<1.0	<1.0	37	33
E-NUT-H1	G449-0.5	76	0.5	0 to 3	<2.0	2.7	65	<1.0	<1.0	52	8.8	16	3.2	0.22	<1.0	73	<1.0	<1.0	<1.0	26	29
E-NUT-H1	G449-1.5	76	1.5	0 to 3	<2.0	2.6	68	<1.0	<1.0	47	7.7	14	2.1	0.15	<1.0	70	<1.0	<1.0	<1.0	27	31
E-NUT-H1	G449-2.5	76	2.5	0 to 3	<2.0	7.2	190	<1.0	<1.0	23	13	23	6.9	<0.10	<1.0	24	<1.0	<1.0	<1.0	41	54

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
E-NUT-H2	G450-0	76	0	3 to 6	<2.0	3.2	100	<1.0	<1.0	43	7.0	23	13	<0.10	<1.0	47	<1.0	<1.0	<1.0	31	100
E-NUT-H2	G450-0.5	76	0.5	3 to 6	<2.0	2.6	26	<1.0	<1.0	9.6	3.9	4.7	2.1	<0.10	<1.0	11	<1.0	<1.0	<1.0	17	20
E-NUT-H2	G450-1.5	76	1.5	3 to 6	<2.0	5.6	190	<1.0	<1.0	16	5.6	18	5.5	<0.10	<1.0	17	<1.0	<1.0	<1.0	31	39
E-NUT-H2	G450-2.5	76	2.5	3 to 6	<2.0	3.0	130	<1.0	<1.0	16	8.4	17	6.0	<0.10	<1.0	16	<1.0	<1.0	<1.0	31	31
E-NUT-I1	G451-0	76	0	0 to 3	<2.0	4.0	96	<1.0	<1.0	41	8.2	21	9.8	<0.10	<1.0	55	<1.0	<1.0	<1.0	44	86
E-NUT-I1	G451-0.5	76	0.5	0 to 3	<2.0	2.1	71	<1.0	<1.0	41	6.3	11	1.8	<0.10	<1.0	56	<1.0	<1.0	<1.0	23	27
E-NUT-I1	G451-1.5	76	1.5	0 to 3	<2.0	3.2	51	<1.0	<1.0	260	16	12	68	<0.10	<1.0	170	<1.0	<1.0	<1.0	23	59
E-NUT-I1	G451-2.5	76	2.5	0 to 3	<2.0	2.6	19	<1.0	<1.0	8.8	3.8	3.5	1.7	<0.10	<1.0	8.5	<1.0	<1.0	<1.0	14	18
E-NUT-I2	G452-0	76	0	3 to 6	<2.0	3.2	98	<1.0	<1.0	55	8.3	22	10	<0.10	<1.0	55	<1.0	<1.0	<1.0	42	57
E-NUT-I2	G452-0.5	76	0.5	3 to 6	<2.0	5.3	84	<1.0	<1.0	89	11	15	6.2	0.23	<1.0	140	<1.0	<1.0	<1.0	31	39
E-NUT-I2	G452-1.5	76	1.5	3 to 6	<2.0	3.4	98	<1.0	<1.0	110	14	15	3.1	0.13	<1.0	200	<1.0	<1.0	<1.0	35	33
E-NUT-I2	G452-2.5	76	2.5	3 to 6	<2.0	2.4	15	<1.0	<1.0	7.7	3.0	2.8	1.5	<0.10	<1.0	7.5	<1.0	<1.0	<1.0	14	18
E-NUT-I3	G453-0	76	0	6 to 9	<2.0	5.8	130	<1.0	<1.0	24	9.8	20	7.0	<0.10	<1.0	32	<1.0	<1.0	<1.0	34	53
E-NUT-I3	G453-0.5	76	0.5	6 to 9	<2.0	5.6	180	<1.0	<1.0	19	8.3	20	9.0	<0.10	<1.0	19	<1.0	<1.0	<1.0	34	47
E-NUT-I3	G453-1.5	76	1.5	6 to 9	<2.0	6.3	140	<1.0	<1.0	13	25	20	5.8	<0.10	<1.0	17	<1.0	<1.0	<1.0	24	39
E-NUT-I3	G453-2.5	76	2.5	6 to 9	<2.0	6.0	200	<1.0	<1.0	20	8.1	23	7.1	<0.10	<1.0	21	<1.0	<1.0	<1.0	36	49
E-NUT-I4	G454-0	76	0	>9	<2.0	6.8	140	<1.0	<1.0	21	8.9	20	7.7	<0.10	<1.0	24	<1.0	<1.0	<1.0	34	48
E-NUT-I4	G454-0.5	76	0.5	>9	<2.0	6.2	160	<1.0	<1.0	16	8.8	19	30	<0.10	<1.0	21	<1.0	<1.0	<1.0	31	45
E-NUT-I4	G454-1.5	76	1.5	>9	<2.0	4.0	140	<1.0	<1.0	16	7.7	17	18	<0.10	<1.0	18	<1.0	<1.0	<1.0	30	36
E-NUT-I4	G454-2.5	76	2.5	>9	<2.0	4.7	130	<1.0	<1.0	19	11	19	9.6	<0.10	<1.0	22	<1.0	<1.0	<1.0	35	40
E-NUT-I5	G455-0	76	0	>9	<2.0	5.0	120	<1.0	<1.0	43	9.8	19	18	<0.10	<1.0	55	<1.0	<1.0	<1.0	31	75
E-NUT-I5	G455-0.5	76	0.5	>9	<2.0	6.4	180	<1.0	<1.0	16	10	19	8.9	<0.10	<1.0	20	<1.0	<1.0	<1.0	31	43
E-NUT-I5	G455-1.5	76	1.5	>9	<2.0	4.4	170	<1.0	<1.0	18	11	19	7.2	<0.10	<1.0	20	<1.0	<1.0	<1.0	35	40
E-NUT-I5	G455-2.5	76	2.5	>9	<2.0	3.9	130	<1.0	<1.0	17	8.3	18	6.6	<0.10	<1.0	16	<1.0	<1.0	<1.0	33	36
E-NUT-I6	G456-0	76	0	>9	<2.0	8.2	170	<1.0	<1.0	20	9.9	21	19	<0.10	<1.0	21	<1.0	<1.0	<1.0	36	54
E-NUT-I6	G456-0.5	76	0.5	>9	<2.0	11	160	<1.0	<1.0	23	8.7	22	13	<0.10	<1.0	21	<1.0	<1.0	<1.0	42	54
E-NUT-I6	G456-1.5	76	1.5	>9	<2.0	3.8	160	<1.0	<1.0	19	10	19	11	<0.10	<1.0	20	<1.0	<1.0	<1.0	36	39
E-NUT-I6	G456-2.5	76	2.5	>9	<2.0	4.3	130	<1.0	<1.0	22	8.6	20	7.8	<0.10	<1.0	19	<1.0	<1.0	<1.0	42	43
E-NUT-J1	G457-0	76	0	0 to 3	<2.0	2.9	91	<1.0	<1.0	53	7.1	17	9.1	<0.10	<1.0	50	<1.0	<1.0	<1.0	34	57
E-NUT-J1	G457-0.5	76	0.5	0 to 3	<2.0	2.6	63	<1.0	<1.0	54	8.4	14	3.0	<0.10	<1.0	89	<1.0	<1.0	<1.0	25	31
E-NUT-J1	G457-1.5	76	1.5	0 to 3	<2.0	3.0	75	<1.0	<1.0	60	9.4	16	1.9	<0.10	<1.0	78	<1.0	<1.0	<1.0	31	31
E-NUT-J1	G457-2.5	76	2.5	0 to 3	<2.0	15	170	<1.0	<1.0	23	8.8	21	9.5	<0.10	<1.0	21	<1.0	<1.0	<1.0	42	51

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
E-NUT-J2	G458-0	76	0	3 to 6	<2.0	4.0	110	<1.0	<1.0	84	9.5	26	15	<0.10	<1.0	76	<1.0	<1.0	<1.0	39	94
E-NUT-J2	G458-0.5	76	0.5	3 to 6	<2.0	7.2	170	<1.0	<1.0	26	8.9	22	15	<0.10	<1.0	29	<1.0	<1.0	<1.0	40	54
E-NUT-J2	G458-1.5	76	1.5	3 to 6	<2.0	6.5	180	<1.0	<1.0	32	9.3	21	5.8	<0.10	<1.0	24	<1.0	<1.0	<1.0	35	46
E-NUT-J2	G458-2.5	76	2.5	3 to 6	<2.0	15	230	<1.0	<1.0	22	9.3	21	11	<0.10	<1.0	21	<1.0	<1.0	<1.0	41	51
E-NUT-J3	G459-0	76	0	6 to 9	<2.0	3.7	93	<1.0	<1.0	42	7.2	25	25	<0.10	<1.0	51	<1.0	<1.0	<1.0	28	120
E-NUT-J3	G459-0.5	76	0.5	6 to 9	<2.0	6.5	190	<1.0	<1.0	24	8.6	23	11	<0.10	<1.0	26	<1.0	<1.0	<1.0	40	59
E-NUT-J3	G459-1.5	76	1.5	6 to 9	<2.0	14	190	<1.0	<1.0	23	8.1	21	17	<0.10	<1.0	20	<1.0	<1.0	<1.0	43	52
E-NUT-J3	G459-2.5	76	2.5	6 to 9	<2.0	4.6	180	<1.0	<1.0	20	9.4	19	6.9	<0.10	<1.0	18	<1.0	<1.0	<1.0	40	39
E-NUT-J4	G460-0	76	0	>9	<2.0	9.8	160	<1.0	<1.0	23	9.4	21	54	<0.10	<1.0	23	<1.0	<1.0	<1.0	39	61
E-NUT-J4	G460-0.5	76	0.5	>9	<2.0	13	160	<1.0	<1.0	22	9.7	20	13	<0.10	<1.0	21	<1.0	<1.0	<1.0	41	51
E-NUT-J4	G460-1.5	76	1.5	>9	<2.0	8.6	170	<1.0	<1.0	24	8.7	23	13	<0.10	<1.0	22	<1.0	<1.0	<1.0	43	54
E-NUT-J4	G460-2.5	76	2.5	>9	<2.0	2.7	150	<1.0	<1.0	17	7.0	15	5.8	<0.10	<1.0	14	<1.0	<1.0	<1.0	33	29
E-NUT-J5	G461-0	76	0	>9	<2.0	8.5	140	<1.0	<1.0	26	9.1	19	52	<0.10	<1.0	34	<1.0	<1.0	<1.0	37	57
E-NUT-J5	G461-0.5	76	0.5	>9	<2.0	12	170	<1.0	<1.0	24	9.3	23	13	<0.10	<1.0	22	<1.0	<1.0	<1.0	44	55
E-NUT-J5	G461-1.5	76	1.5	>9	<2.0	6.3	200	<1.0	<1.0	29	8.9	21	8.3	<0.10	<1.0	22	<1.0	<1.0	<1.0	51	47
E-NUT-J5	G461-2.5	76	2.5	>9	<2.0	3.6	140	<1.0	<1.0	18	9.9	16	6.3	<0.10	<1.0	17	<1.0	<1.0	<1.0	38	31
E-NUT-J6	G462-0	76	0	>9	<2.0	3.5	110	<1.0	<1.0	35	6.7	19	44	<0.10	<1.0	46	<1.0	<1.0	<1.0	30	110
E-NUT-J6	G462-0.5	76	0.5	>9	<2.0	4.5	140	<1.0	<1.0	20	6.9	18	38	<0.10	<1.0	16	<1.0	<1.0	<1.0	37	41
E-NUT-J6	G462-1.5	76	1.5	>9	<2.0	2.5	250	<1.0	<1.0	16	10	16	13	<0.10	<1.0	18	<1.0	<1.0	<1.0	30	29
E-NUT-J6	G462-2.5	76	2.5	>9	<2.0	3.6	130	<1.0	<1.0	16	9.5	14	47	<0.10	<1.0	15	<1.0	<1.0	<1.0	34	30
E-NUT-K1	G463-0	76	0	0 to 3	<2.0	3.0	110	<1.0	<1.0	51	5.5	16	3.7	<0.10	<1.0	53	<1.0	<1.0	<1.0	31	32
E-NUT-K1	G463-0.5	76	0.5	0 to 3	<2.0	2.6	420	<1.0	<1.0	45	7.0	63	17	<0.10	1.1	50	<1.0	<1.0	<1.0	26	170
E-NUT-K1	G463-1.5	76	1.5	0 to 3	<2.0	7.2	110	<1.0	<1.0	19	8.8	21	110	<0.10	<1.0	22	<1.0	<1.0	<1.0	30	56
E-NUT-K1	G463-2.5	76	2.5	0 to 3	<2.0	8.6	160	<1.0	<1.0	18	9.6	21	84	<0.10	<1.0	19	<1.0	<1.0	<1.0	31	50
E-NUT-K2	G464-0	76	0	3 to 6	<2.0	3.1	110	<1.0	<1.0	38	5.3	17	4.0	<0.10	<1.0	38	<1.0	<1.0	<1.0	33	45
E-NUT-K2	G464-0.5	76	0.5	3 to 6	<2.0	2.0	81	<1.0	<1.0	42	6.9	21	9.7	<0.10	<1.0	50	<1.0	<1.0	<1.0	31	45
E-NUT-K2	G464-1.5	76	1.5	3 to 6	<2.0	6.5	160	<1.0	<1.0	19	9.6	19	92	<0.10	<1.0	25	<1.0	<1.0	<1.0	30	58
E-NUT-K2	G464-2.5	76	2.5	3 to 6	<2.0	5.3	130	<1.0	<1.0	13	8.2	16	29	<0.10	<1.0	21	<1.0	<1.0	<1.0	24	40
E-NUT-K3	G465-0	76	0	6 to 9	<2.0	3.9	97	<1.0	<1.0	34	7.1	35	22	<0.10	<1.0	40	<1.0	<1.0	<1.0	28	130
E-NUT-K3	G465-0.5	76	0.5	6 to 9	<2.0	12	160	<1.0	<1.0	19	8.7	21	37	<0.10	<1.0	20	<1.0	<1.0	<1.0	34	49
E-NUT-K3	G465-1.5	76	1.5	6 to 9	<2.0	13	160	<1.0	<1.0	17	6.9	20	10	<0.10	<1.0	18	<1.0	<1.0	<1.0	33	45
E-NUT-K3	G465-2.5	76	2.5	6 to 9	<2.0	2.9	120	<1.0	<1.0	12	6.2	14	7.5	<0.10	<1.0	12	<1.0	<1.0	<1.0	23	27

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
E-NUT-K4	G466-0	76	0	>9	<2.0	4.5	100	<1.0	<1.0	28	7.8	18	13	<0.10	<1.0	44	<1.0	<1.0	<1.0	28	63
E-NUT-K4	G466-0.5	76	0.5	>9	<2.0	4.5	110	<1.0	<1.0	34	6.8	15	88	<0.10	<1.0	51	<1.0	<1.0	<1.0	29	53
E-NUT-K4	G466-1.5	76	1.5	>9	<2.0	3.7	170	<1.0	<1.0	14	8.2	17	7.9	<0.10	<1.0	14	<1.0	<1.0	<1.0	30	32
E-NUT-K4	G466-2.5	76	2.5	>9	<2.0	4.0	150	<1.0	<1.0	15	9.1	18	8.6	<0.10	<1.0	18	<1.0	<1.0	<1.0	30	36
E-NUT-K5	G467-0	76	0	>9	<2.0	2.4	100	<1.0	<1.0	21	6.2	19	19	<0.10	<1.0	38	<1.0	<1.0	<1.0	18	100
E-NUT-K5	G467-0.5	76	0.5	>9	<2.0	3.0	110	<1.0	<1.0	16	5.1	17	80	<0.10	<1.0	14	<1.0	<1.0	<1.0	27	42
E-NUT-K5	G467-1.5	76	1.5	>9	<2.0	4.2	150	<1.0	<1.0	15	8.4	17	18	<0.10	<1.0	15	<1.0	<1.0	<1.0	29	37
E-NUT-K5	G467-2.5	76	2.5	>9	<2.0	2.3	160	<1.0	<1.0	9.2	9.5	12	6.2	<0.10	<1.0	14	<1.0	<1.0	<1.0	19	19
E-NUT-K6	G468-0	76	0	>9	<2.0	6.2	130	<1.0	<1.0	15	7.8	21	13	<0.10	<1.0	17	<1.0	<1.0	<1.0	29	29
E-NUT-K6	G468-0.5	76	0.5	>9	<2.0	5.7	130	<1.0	<1.0	15	4.7	17	13	<0.10	<1.0	14	<1.0	<1.0	<1.0	30	36
E-NUT-K6	G468-1.5	76	1.5	>9	<2.0	2.4	110	<1.0	<1.0	11	7.8	13	5.9	<0.10	<1.0	12	<1.0	<1.0	<1.0	20	23
E-NUT-K6	G468-2.5	76	2.5	>9	<2.0	2.0	91	<1.0	<1.0	8.5	11	11	11	<0.10	<1.0	13	<1.0	<1.0	<1.0	17	19
E-NUT-L1	G510-0	76	0	0 to 3	<2.0	3.7	94	<1.0	<1.0	46	6.8	15	4.3	<0.10	<1.0	49	<1.0	<1.0	<1.0	31	44
E-NUT-L1	G510-0.5	76	0.5	0 to 3	<2.0	2.6	110	<1.0	<1.0	36	8.6	41	33	<0.10	1.8	62	<1.0	<1.0	<1.0	24	240
E-NUT-L1	G510-1.5	76	1.5	0 to 3	<2.0	5.7	140	<1.0	<1.0	21	8.3	18	130	<0.10	<1.0	33	<1.0	<1.0	<1.0	27	48
E-NUT-L1	G510-2.5	76	2.5	0 to 3	<2.0	6.7	160	<1.0	<1.0	18	9.4	22	10	<0.10	<1.0	19	<1.0	<1.0	<1.0	33	47
E-NUT-L2	G511-0	76	0	3 to 6	<2.0	2.7	84	<1.0	<1.0	39	5.0	13	3.6	0.17	<1.0	37	<1.0	<1.0	<1.0	27	38
E-NUT-L2	G511-0.5	76	0.5	3 to 6	<2.0	2.3	72	<1.0	<1.0	31	6.1	21	19	<0.10	<1.0	40	<1.0	<1.0	<1.0	20	95
E-NUT-L2	G511-1.5	76	1.5	3 to 6	<2.0	4.8	51	<1.0	<1.0	37	7.3	9.1	21	<0.10	<1.0	61	<1.0	<1.0	<1.0	22	27
E-NUT-L2	G511-2.5	76	2.5	3 to 6	<2.0	6.8	130	<1.0	<1.0	14	5.8	20	9.7	<0.10	<1.0	16	<1.0	<1.0	<1.0	28	38
E-NUT-L3	G512-0	76	0	6 to 9	<2.0	2.0	76	<1.0	<1.0	36	7.4	17	15	<0.10	<1.0	48	<1.0	<1.0	<1.0	33	50
E-NUT-L3	G512-0.5	76	0.5	6 to 9	<2.0	3.2	41	<1.0	<1.0	13	5.0	7.1	6.3	<0.10	<1.0	19	<1.0	<1.0	<1.0	17	27
E-NUT-L3	G512-1.5	76	1.5	6 to 9	<2.0	8.2	170	<1.0	<1.0	17	8.6	21	60	<0.10	<1.0	20	<1.0	<1.0	<1.0	32	48
E-NUT-L3	G512-2.5	76	2.5	6 to 9	<2.0	4.9	180	<1.0	<1.0	18	8.7	21	8.2	<0.10	<1.0	20	<1.0	<1.0	<1.0	33	44
E-NUT-L4	G513-0	76	0	>9	<2.0	5.0	110	<1.0	<1.0	27	7.4	24	18	<0.10	<1.0	37	<1.0	<1.0	<1.0	27	80
E-NUT-L4	G513-0.5	76	0.5	>9	<2.0	4.3	160	<1.0	<1.0	19	7.2	22	14	<0.10	<1.0	20	<1.0	<1.0	<1.0	35	47
E-NUT-L4	G513-1.5	76	1.5	>9	<2.0	2.7	110	<1.0	<1.0	8.0	20	9.6	7.2	<0.10	<1.0	18	<1.0	<1.0	<1.0	23	17
E-NUT-L4	G513-2.5	76	2.5	>9	<2.0	2.2	120	<1.0	<1.0	8.8	9.8	11	5.9	<0.10	<1.0	13	<1.0	<1.0	<1.0	20	16

TABLE 4
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SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
E-NUT-M1	G514-0	76	0	0 to 3	<2.0	2.1	70	<1.0	<1.0	26	5.1	11	3.0	<0.10	<1.0	36	<1.0	<1.0	<1.0	25	47
E-NUT-M1	G514-0.5	76	0.5	0 to 3	<2.0	4.0	63	<1.0	<1.0	18	6.7	10	11	<0.10	<1.0	29	<1.0	<1.0	<1.0	22	28
E-NUT-M1	G514-1.5	76	1.5	0 to 3	<2.0	2.9	20	<1.0	<1.0	15	4.1	3.9	3.2	<0.10	<1.0	12	<1.0	<1.0	<1.0	15	18
E-NUT-M1	G514-2.5	76	2.5	0 to 3	<2.0	5.7	140	<1.0	<1.0	14	7.6	16	10	<0.10	<1.0	15	<1.0	<1.0	<1.0	28	35
E-NUT-M2	G515-0	76	0	3 to 6	<2.0	2.7	96	<1.0	<1.0	41	7.5	19	10	0.87	<1.0	51	<1.0	<1.0	<1.0	37	46
E-NUT-M2	G515-0.5	76	0.5	3 to 6	<2.0	3.2	43	<1.0	<1.0	24	5.5	8.9	17	0.89	<1.0	31	<1.0	<1.0	<1.0	20	29
E-NUT-M2	G515-1.5	76	1.5	3 to 6	<2.0	5.0	98	<1.0	<1.0	40	10	16	70	<0.10	<1.0	67	<1.0	<1.0	<1.0	27	45
E-NUT-M2	G515-2.5	76	2.5	3 to 6	<2.0	5.7	150	<1.0	<1.0	14	9.2	17	11	0.12	<1.0	16	<1.0	<1.0	<1.0	29	36
E-NUT-M3	G516-0	76	0	6 to 9	<2.0	3.4	48	<1.0	<1.0	15	4.8	8.2	7.1	<0.10	<1.0	20	<1.0	<1.0	<1.0	19	25
E-NUT-M3	G516-0.5	76	0.5	6 to 9	<2.0	4.5	110	<1.0	<1.0	20	7.2	16	95	<0.10	<1.0	30	<1.0	<1.0	<1.0	25	46
E-NUT-M3	G516-1.5	76	1.5	6 to 9	<2.0	4.6	190	<1.0	<1.0	15	11	18	21	<0.10	<1.0	18	<1.0	<1.0	<1.0	31	39
E-NUT-M3	G516-2.5	76	2.5	6 to 9	<2.0	2.7	96	<1.0	<1.0	9.1	8.3	10	6.4	<0.10	<1.0	10	<1.0	<1.0	<1.0	23	17
E-NUT-M4	G517-0	76	0	>9	<2.0	4.6	76	<1.0	<1.0	19	6.0	17	33	<0.10	<1.0	24	<1.0	<1.0	<1.0	22	84
E-NUT-M4	G517-0.5	76	0.5	>9	<2.0	5.0	110	<1.0	<1.0	26	9.2	16	99	<0.10	<1.0	38	<1.0	<1.0	<1.0	25	47
E-NUT-M4	G517-1.5	76	1.5	>9	<2.0	6.4	140	<1.0	<1.0	19	6.9	19	150	<0.10	<1.0	22	<1.0	<1.0	<1.0	27	67
E-NUT-M4	G517-2.5	76	2.5	>9	<2.0	4.7	140	<1.0	<1.0	13	15	16	85	<0.10	<1.0	19	<1.0	<1.0	<1.0	27	40
E-NUT-N1	G518-0	76	0	0 to 3	<2.0	2.5	88	<1.0	<1.0	43	7.7	15	4.7	<0.10	<1.0	69	<1.0	<1.0	<1.0	32	35
E-NUT-N1	G518-0.5	76	0.5	0 to 3	<2.0	3.0	24	<1.0	<1.0	9.6	5.2	4.2	2.5	<0.10	<1.0	15	<1.0	<1.0	<1.0	15	20
E-NUT-N1	G518-1.5	76	1.5	0 to 3	<2.0	4.8	170	<1.0	<1.0	32	12	18	120	<0.10	<1.0	62	<1.0	<1.0	<1.0	33	55
E-NUT-N1	G518-2.5	76	2.5	0 to 3	<2.0	6.3	180	<1.0	<1.0	13	6.3	19	30	<0.10	<1.0	16	<1.0	<1.0	<1.0	29	40
E-NUT-N2	G519-0	76	0	6 to 9	<2.0	2.7	67	<1.0	<1.0	28	6.2	24	16	<0.10	<1.0	42	<1.0	<1.0	<1.0	26	110
E-NUT-N2	G519-0.5	76	0.5	6 to 9	<2.0	3.2	47	<1.0	<1.0	23	6.6	9.1	33	<0.10	<1.0	44	<1.0	<1.0	<1.0	20	27
E-NUT-N2	G519-1.5	76	1.5	6 to 9	<2.0	3.6	100	<1.0	<1.0	51	9.4	15	130	<0.10	<1.0	66	<1.0	<1.0	<1.0	20	54
E-NUT-N2	G519-2.5	76	2.5	6 to 9	<2.0	2.2	110	<1.0	<1.0	10	6.1	12	13	<0.10	<1.0	12	<1.0	<1.0	<1.0	23	21

TABLE 4
Summary of CAM 17 Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
E-NUT-O1	G520-0	76	0	0 to 3	<2.0	3.0	76	<1.0	<1.0	41	7.4	21	9.8	<0.10	<1.0	51	<1.0	<1.0	<1.0	32	49
E-NUT-O1	G520-0.5	76	0.5	0 to 3	<2.0	2.9	23	<1.0	<1.0	9.1	4.3	4.2	3.5	<0.10	<1.0	11	<1.0	<1.0	<1.0	15	19
E-NUT-O1	G520-1.5	76	1.5	0 to 3	<2.0	4.4	130	<1.0	<1.0	18	7.9	21	430	<0.10	<1.0	22	<1.0	<1.0	<1.0	25	100
E-NUT-O1	G520-2.5	76	2.5	0 to 3	<2.0	4.6	140	<1.0	<1.0	12	8.0	15	20	<0.10	<1.0	16	<1.0	<1.0	<1.0	26	37
E-NUT-P1	G521-0	76	0	0 to 3	<2.0	1.3	39	<1.0	<1.0	19	5.4	8.4	2.7	<0.10	<1.0	40	<1.0	<1.0	<1.0	29	150
E-NUT-P1	G521-0.5	76	0.5	0 to 3	<2.0	3.4	31	<1.0	<1.0	14	9.7	6.1	5.5	<0.10	<1.0	25	<1.0	<1.0	<1.0	18	22
E-NUT-P1	G521-1.5	76	1.5	0 to 3	<2.0	2.4	33	<1.0	<1.0	14	4.1	5.0	9.7	<0.10	<1.0	33	<1.0	<1.0	<1.0	14	20
E-NUT-P1	G521-2.5	76	2.5	0 to 3	<2.0	5.5	130	<1.0	<1.0	15	6.7	17	250	<0.10	<1.0	16	<1.0	<1.0	<1.0	23	57
				ESLs																	
				Residential Land Use	6.3	0.39	750	4.0	1.7	750	40	230	200	1.3	40	150	10	20	1.3	16	600
				Comm/Ind Land Use	40	1.6	1,500	8.0	7.4	750	80	230	750	10	40	150	10	40	16	200	600
				Construction Exposure	310	15	2,600	98	39	1,200,000	94	310,000	750	58	78	260	3,900	3,900	62	770	230,000
				Hazardous Waste Criteria																	
				TTLC	500	500	10,000	75	100	2,500	8,000	2,500	1,000	20	3,500	2,000	100	500	700	2,400	5,000
				STLC	15	5.0	100	0.75	1.0	5.0	80	25	5.0	0.2	350	20	1.0	5.0	7.0	24	250
				TCLP	---	5.0	100	---	1.0	6.0	---	---	5.0	0.2	---	---	1.0	5.0	---	---	---

Notes:

Results are shown in milligrams per kilogram (mg/kg).
ESL Values listed for chromium are for Chromium III, as there is no standard for total chromium
< = Analyte was not detected above the laboratory reporting limit.
ESLs = Environmental Screening Levels, Tables A and K-3, SFRWQCB, Revised May 2008.
TTLC = total threshold limit concentration
STLC = soluble threshold limit concentration
TCLP = toxicity characteristic leaching procedure
--- = not analyzed or no standard exists for this compound
EOP = Edge of pavement

TABLE 5
Summary of Other Soluble Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Barium (mg/kg)	WET Barium (mg/l)	Total Chromium (mg/kg)	WET Chromium (mg/l)	Total Mercury (mg/kg)	WET Mercury (mg/l)	TCLP Mercury (mg/l)	Total Nickel (mg/kg)	WET Nickel (mg/l)
W-R37-A1	G15-0	5	0	0 to 3	48	---	22	---	2.0	<1.0	---	26	---
W-R37-A1	G15-2.5	5	2.5	0 to 3	42	---	29	---	2.0	<1.0	---	30	---
W-R37-C1	G17-0	5	0	0 to 3	23	---	14	---	28	<1.0	---	26	---
W-R37-C2	G18-0	5	0	3 to 6	40	---	18	---	2.3	<1.0	---	22	---
W-R37-C2	G18-2.5	5	2.5	3 to 6	48	---	17	---	2.1	<1.0	---	19	---
W-R37-D1	G19-0	5	0	0 to 3	25	---	12	---	3.5	<1.0	---	22	---
W-R37-D1	G19-0.5	5	0.5	0 to 3	48	---	12	---	7.8	<1.0	---	14	---
W-R37-D2	G20-1.5	5	1.5	3 to 6	47	---	19	---	4.8	<1.0	---	24	---
W-R37-E2	G22-0.5	5	0.5	3 to 6	43	---	23	---	2.7	<1.0	---	28	---
W-R37-F1	G23-0.5	5	0.5	0 to 3	73	---	13	---	6.3	<1.0	---	15	---
W-R37-F2	G24-2.5	5	2.5	6 to 9	27	---	11	---	2.3	<1.0	---	13	---
W-R37-G1	G33-0.5	5	0.5	0 to 3	27	---	14	---	2.9	<1.0	---	11	---
W-R37-G1	G33-1.5	5	1.5	0 to 3	20	---	9.7	---	7.8	<1.0	---	13	---
W-R37-I1	G40-0.5	5	0.5	0 to 3	88	---	11	---	4.2	<1.0	---	15	---
W-R37-J1	G47-0	5	0	0 to 3	25	---	13	---	2.8	<1.0	---	15	---
W-R37-J1	G47-0.5	5	0.5	0 to 3	26	---	14	---	5.3	<1.0	---	12	---
W-R37-J2	G48-0.5	5	0.5	3 to 6	98	---	13	---	5.3	<1.0	---	16	---
W-R37-J3	G49-0.5	5	0.5	6 to 9	1,000	13	40	---	<0.10	---	---	58	---
W-R37-O4	G71-1.5	5	1.5	>9	16	---	54	<1.0	0.30	---	---	55	---
W-R37-P1	G72-0.5	5	0.5	0 to 3	25	---	21	---	8.4	<1.0	---	16	---
W-R37-P1	G72-1.5	5	1.5	0 to 3	45	---	11	---	2.0	<1.0	---	13	---
W-R37-P2	G73-1.5	5	1.5	3 to 6	330	---	34	---	15	<1.0	---	56	---
W-R37-R1	G80-0.5	5	0.5	0 to 3	9.0	---	12	---	35	<1.0	1.2	9.3	---
W-R37-S1	G84-2.5	5	2.5	0 to 3	8.6	---	8.2	---	4.7	<1.0	<0.20	10	---
W-R37-T2	G89-0	5	0	3 to 6	25	---	16	---	3.4	<1.0	---	14	---
W-R37-T2	G89-0.5	5	0.5	3 to 6	21	---	8.8	---	4.6	<1.0	<0.20	11	---

TABLE 5
Summary of Other Soluble Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Barium (mg/kg)	WET Barium (mg/l)	Total Chromium (mg/kg)	WET Chromium (mg/l)	Total Mercury (mg/kg)	WET Mercury (mg/l)	TCLP Mercury (mg/l)	Total Nickel (mg/kg)	WET Nickel (mg/l)
W-R37-U1	G92-0	5	0	0 to 3	32	---	13	---	2.1	<1.0	---	20	---
W-R37-U1	G92-2.5	5	2.5	0 to 3	7.1	---	6.9	---	2.5	<1.0	---	9.4	---
W-R37-FL1	G25-0	8	0	0 to 3	25	---	11	---	5.3	<1.0	<0.20	12	---
W-R37-FL1	G25-0.5	8	0.5	0 to 3	18	---	12	---	4.1	<1.0	<0.20	9.8	---
W-R37-GL1	G34-0	8	0	0 to 3	51	---	25	---	13	<1.0	<0.20	20	---
W-R37-GL1	G34-0.5	8	0.5	0 to 3	12	---	9.3	---	3.2	<1.0	---	14	---
W-R37-GL1	G34-1.5	8	1.5	0 to 3	18	---	13	---	3.4	<1.0	---	9.6	---
W-R37-HL1	G38-0.5	8	0.5	0 to 3	18	---	15	---	6.7	<1.0	<0.20	13	---
W-R37-HL1	G38-1.5	8	1.5	0 to 3	16	---	13	---	6.5	<1.0	<0.20	9.5	---
W-R37-HL2	G39-1.5	8	1.5	3 to 6	35	---	74	<1.0	0.11	---	---	51	---
W-R37-IL1	G45-0	8	0	0 to 3	24	---	22	---	2.3	<1.0	---	12	---
W-R37-IL1	G45-0.5	8	0.5	0 to 3	24	---	17	---	2.5	<1.0	---	23	---
W-R37-JL1	G50-0.5	8	0.5	0 to 3	25	---	13	---	5.2	<1.0	<0.20	13	---
W-505-SL1	G420-0	72	0	0 to 3	100	---	60	<1.0	<0.10	---	---	61	---
W-505-SL1	G420-0.5	72	0.5	0 to 3	72	---	81	<1.0	0.28	---	---	87	---
W-505-SL1	G420-1.5	72	1.5	0 to 3	80	---	90	<1.0	0.22	---	---	150	---
W-505-TL1	G422-0	72	0	0 to 3	91	---	64	<1.0	<0.10	---	---	81	---
W-505-TL1	G422-0.5	72	0.5	0 to 3	78	---	72	<1.0	0.11	---	---	120	---
W-505-UL1	G424-0.5	72	0.5	0 to 3	81	---	60	<1.0	0.14	---	---	84	---
W-505-UL1	G424-2.5	72	2.5	0 to 3	74	---	150	<1.0	0.26	---	---	280	1.8
W-505-VL1	G426-0	72	0	0 to 3	110	---	57	<1.0	<0.10	---	---	64	---
W-505-VL1	G426-1.5	72	1.5	0 to 3	75	---	180	<1.0	<0.10	---	---	250	1.2
W-505-R1	G417-0	73	0	3 to 6	110	---	69	<1.0	<0.10	---	---	130	---
E-NUT-E1	G446-0.5	76	0.5	0 to 3	99	---	52	<1.0	<0.10	---	---	89	---
E-NUT-F1	G447-0	76	0	0 to 3	67	---	57	<1.0	<0.10	---	---	85	---
E-NUT-G1	G448-0.5	76	0.5	0 to 3	58	---	52	<1.0	0.13	---	---	66	---
E-NUT-H1	G449-0.5	76	0.5	0 to 3	65	---	52	<1.0	0.22	---	---	73	---

TABLE 5
Summary of Other Soluble Metals Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Total Barium (mg/kg)	WET Barium (mg/l)	Total Chromium (mg/kg)	WET Chromium (mg/l)	Total Mercury (mg/kg)	WET Mercury (mg/l)	TCLP Mercury (mg/l)	Total Nickel (mg/kg)	WET Nickel (mg/l)
E-NUT-I1	G451-1.5	76	1.5	0 to 3	51	---	260	<1.0	<0.10	---	---	170	---
E-NUT-I2	G452-0	76	0	3 to 6	98	---	55	<1.0	<0.10	---	---	55	---
E-NUT-I2	G452-0.5	76	0.5	3 to 6	84	---	89	<1.0	0.23	---	---	140	---
E-NUT-I2	G452-1.5	76	1.5	3 to 6	98	---	110	<1.0	0.13	---	---	200	2.5
E-NUT-J1	G457-0	76	0	0 to 3	91	---	53	<1.0	<0.10	---	---	50	---
E-NUT-J1	G457-0.5	76	0.5	0 to 3	63	---	54	<1.0	<0.10	---	---	89	---
E-NUT-J1	G457-1.5	76	1.5	0 to 3	75	---	60	<1.0	<0.10	---	---	78	---
E-NUT-J2	G458-0	76	0	3 to 6	110	---	84	<1.0	<0.10	---	---	76	---
E-NUT-K1	G463-0	76	0	0 to 3	110	---	51	<1.0	<0.10	---	---	53	---
E-NUT-N2	G519-1.5	76	1.5	6 to 9	100	---	51	<1.0	<0.10	---	---	66	---
Hazardous Waste Criteria													
TTLC (mg/kg)					10,000	---	2,500*	---	20	---	---	2,000	---
STLC (mg/l)					---	100	---	5.0**	---	0.2	---	---	20
TCLP (mg/l)					---	---	---	---	---	---	0.2	---	---

Notes:
EOP = Edge of pavement
mg/kg = Milligrams per kilogram
mg/l = Milligrams per liter
--- = Not analyzed or no standard
<5.0 = Not detected above the laboratory reporting limit
WET = Waste Extraction Test using citric acid as the extraction fluid
DI-WET = Waste Extraction Test using deionized water as the extraction fluid
TCLP = Toxicity Characteristic Leaching Procedure
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
* = Values listed for chromium are for Chromium III, as there is no standard for total chromium
STLC = Soluble Threshold Limit Concentration
EOP = Edge of pavement

TABLE 6
Summary of Hexavalent Chromium Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Hexavalent Chromium (mg/kg)
E-MV1-TEN-01	G1-0	1	0	0 to 3	<1.0
E-CC2	G8-0	3	0	>9	<1.0
W-MV2-RED-01	G9-0	4	0	0 to 3	<1.0
W-R37-A1	G15-0	5	0	0 to 3	<1.0
E-MV3-01	G27-0	6	0	0 to 3	<1.0
W-MV3C-LOOP-01	G108-0	9	0	0 to 3	<1.0
E-MV3B-01	G102-0	10	0	0 to 3	<1.0
E-MV3A-01	G96-0	11	0	0 to 3	<1.0
W-MV4-01	G115-0	13	0	0 to 3	<1.0
E-MV5-AME-01	G122-0	17	0	0 to 3	<1.0
W-MV7A-01	G135-0	18	0	0 to 3	<1.0
E-CC9-01	G143-0	21	0	>9	<1.0
W-MV9-01	G145-0	24	0	0 to 3	<1.0
E-MV11-01	G153-0	26	0	0 to 3	<1.0
W-MV12-01	G160-0	28	0	0 to 3	<1.0
E-MV13-01	G167-0	30	0	0 to 3	<1.0
E-MV14-01	G174-0	33	0	0 to 3	<1.0
E-MV15-01	G181-0	34	0	0 to 3	<1.0
E-MV16-01	G189-0	38	0	0 to 3	<1.0
E-MV17-01	G196-0	39	0	0 to 3	<1.0
W-MV19A-TEX-01	G204-0	43	0	0 to 3	<1.0
W-MV20-01	G211-0	45	0	0 to 3	<1.0
E-MV21-01	G218-0	48	0	0 to 3	<1.0
W-MV23-01	G237-0	51	0	0 to 3	1.1
E-MV22-01	G231-0	52	0	0 to 3	<1.0
W-MV25-01	G250-0	54	0	0 to 3	1.0
W-MV26A-01	G258-0	56	0	0 to 3	<25
E-MV26B-01	G316-0	58	0	0 to 3	<1.0
E-MV27A-01	G322-0	60	0	0 to 3	<1.0
E-MV28-01	G329-0	61	0	0 to 3	<1.0
W-MV28A-01	G335-0	64	0	0 to 3	<1.0
W-MV29-01	G404-0	68	0	0 to 3	<1.0

TABLE 6
Summary of Hexavalent Chromium Results
SOL-80 Freeway Performance Initiative Project
Solano County, California

Boring ID	Sample ID	Dataset	Sample Depth (ft)	Distance from EOP (ft)	Hexavalent Chromium (mg/kg)
E-MV31-01	G398-0	69	0	0 to 3	<1.0
W-MV-MONTE-01	G411-0	70	0	0 to 3	<1.0
E-MV32-01	G429-0	74	0	0 to 3	<1.0
			ESLs		
			Residential Land Use		8.0
			Comm/Ind Land Use		8.0
			Construction Exposure		5.30E-01
			Hazardous Waste Criteria		
			TTLC		500
			STLC		5.0
			TCLP		---

Notes:

Results are shown in milligrams per kilogram (mg/kg).
< = Analyte was not detected above the laboratory reporting limit.
ESLs = Environmental Screening Levels, Tables A and K-3, SFRWQCB, Revised May 2008.
TTLC = total threshold limit concentration
STLC = soluble threshold limit concentration
TCLP = toxicity characteristic leaching procedure
--- = not analyzed or no standard exists for this compound
EOP = Edge of pavement

TABLE 7
Summary of Soil/Groundwater Interface and Groundwater Sample Results, Boring E-CM3
SOL-80 Freeway Performance Initiative Project
Solano County, California

Sample ID	Sample Depth (ft)	TPHd	TPHmo	TPHg	BTEX	MTBE	Total Lead
Interface Soil Sample							
E-CM3-Interface	11.5	<1.0 mg/kg	<1.0 mg/kg	<1.0 mg/kg	ND	<5.0 µg/kg	6.8 mg/kg
	ESLs for Soil	mg/kg	mg/kg	mg/kg	---	µg/kg	mg/kg
	Residential	83	370	83	---	23	200
	Commercial/Industrial	83	2,500	83	---	23	750
	Construction Exposure	4,200	12,000	4,200	---	5,000	750
Grab-Groundwater Sample							
E-CM3-GW	GW	<0.05 mg/l	<0.05 mg/l	0.06 mg/l	ND	<0.50 µg/l	0.82 mg/l
	ESLs for Groundwater	mg/l	mg/l	mg/l	---	µg/l	mg/l
	GW is current/potential source	0.10	0.10	0.10	---	5.0	0.0025
	GW not current/potential source	0.21	0.21	0.21	---	1,800	0.0025
	Surface Water - Freshwater	0.10	0.10	0.10	---	5.0	0.0025
	Surface Water - Marine	0.21	0.21	0.21	---	180	0.0056
	Surface Water - Estuarine	0.21	0.21	0.21	---	180	0.0025

Notes:
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
mg/l = milligrams per liter
µg/l = micrograms per liter
TPHg = Total petroleum hydrocarbons as gasoline
TPHd = Total petroleum hydrocarbons as diesel
TPHmo = Total petroleum hydrocarbons as motor oil
BTEX = Benzene, toluene, ethylbenzene, and xylenes
MTBE = Methyl tert-butyl ether
--- = Not Analyzed or no standard for this compound
< = Not detected above the stated laboratory reporting limit
ND = None detected
ESLs = Environmental Screening Levels

TABLE 8
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

MVP, CCTV, and CMS Locations

Location	Dataset	90% UCL Total Lead (mg/kg)	Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
E-MV1-TEN	1	965.3	**52.3**	1073	**Hazardous 0 to 1 ft**
E-CC1-TEN	2	190.9	**10.3**	199	**Hazardous 0 to 4 ft**
E-CC2	3	250 (1)	**13.6**	---	**Hazardous 0 to 0.5 ft**
W-MV2-RED	4	95.51	**5.2**	101	**Hazardous 0 to 1 ft**
E-MV3	6	236.2	**12.8**	248	**Hazardous 0 to 1 ft**
E-CC4	7	15.6	0.8	16.9	Non-hazardous
W-MV3C-LOOP	9	38.09	2.1	40.5	Non-hazardous
E-MV3B	10	42.36	2.3	44.8	Non-hazardous
E-MV3A	11	256.4	**13.9**	273	**Hazardous 0 to 1 ft**
W-CC5	12	11.62	0.6	11.9	Non-hazardous
W-MV4	13	200.7	**10.9**	211.4	**Hazardous 0 to 1 ft**
W-CC6	14	69 (1)	3.7	---	Non-hazardous
W-MV6-AME	15	220.6	**12.0**	236	**Hazardous 0 to 1 ft**
W-CM1	16	47	2.5	51.3	Non-hazardous
E-MV5-AME	17	74.06	4.0	80.3	Non-hazardous
W-MV7A	18	230.2	**12.5**	251	**Hazardous 0 to 1 ft**
W-CC7	19	27.37	1.5	30	Non-hazardous
W-CC8	20	47 (1)	2.5	---	Non-hazardous
E-CC9	21	38.03	2.1	42.29	Non-hazardous
E-CM2	22	76.71	4.2	84.17	Non-hazardous
W-CC10	23	60.7	3.3	67.6	Non-hazardous
W-MV9	24	118	**6.4**	128	**Hazardous 0 to 1 ft**
E-CC11	25	52.34	2.8	57.3	Non-hazardous
E-MV11	26	63.03	3.4	65.83	Non-hazardous
E-CM3	27	110	**6.0**	123.6	**Hazardous 0 to 1.5 ft**
W-CC12	28	15	0.8	16.1	Non-hazardous
W-MV12	29	17.1	0.9	18.1	Non-hazardous
E-MV13	30	49.48	2.7	52.72	Non-hazardous
E-CC13	31	12.13	0.7	12.7	Non-hazardous
E-CC14	32	8.6 (1)	0.5	---	Non-hazardous
E-MV14	33	36.88	2.0	39.31	Non-hazardous
E-MV15	34	166.1	**9.0**	184.1	**Hazardous 0 to 1 ft**
E-CC15	35	35.82	1.9	36.96	Non-hazardous
W-CC16	36	22.23	1.2	24	Non-hazardous
E-CC17	37	51.66	2.8	56.7	Non-hazardous
E-MV16	38	441	**23.9**	490	**Hazardous 0 to 1 ft**
E-MV17	39	110	**6.0**	116.9	**Hazardous 0 to 1 ft**
E-CC18	40	15.52	0.8	16.25	Non-hazardous
E-CC19	41	79.84	4.3	88.8	Non-hazardous
E-CC20-TEX	42	30 (1)	1.6	---	Non-hazardous
W-MV19A-TEX	43	103.9	**5.6**	111	**Hazardous 0 to 1 ft**

TABLE 8
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

MVP, CCTV, and CMS Locations

Location	Dataset	90% UCL Total Lead (mg/kg)	Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
W-CC21	44	110 (1)	**6.0**	---	**Hazardous 0 to 0.5 ft**
W-MV20	45	183.8	**10.0**	190.8	**Hazardous 0 to 1 ft**
W-MV21	46	270.8	**14.7**	296	**Hazardous 0 to 1 ft**
E-CC22	47	50 (1)	2.7	---	Non-hazardous
E-MV21	48	39.04	2.1	41.17	Non-hazardous
W-MV24	49	61.53	3.3	65.2	Non-hazardous
W-CC23	50	36.41	2.0	40.02	Non-hazardous
W-MV23	51	166.3	**9.0**	178.1	**Hazardous 0 to 1 ft**
E-MV22	52	155	**8.4**	169	**Hazardous 0 to 1 ft**
W-CC24	53	22.47	1.2	23.77	Non-hazardous
W-MV25	54	289.3	**15.7**	321.4	**Hazardous 0 to 1 ft**
W-MV26A	56	345.7	**18.7**	369.6	**Hazardous 0 to 1 ft**
W-CC25	57	67.61	3.7	74.53	Non-hazardous
E-MV26B	58	92.51	**5.0**	97.9	**Hazardous 0 to 1 ft**
E-CC26	59	67.28	3.6	76.43	Non-hazardous
E-MV27A	60	135.3	**7.3**	149.6	**Hazardous 0 to 1 ft**
E-MV28	61	28.4	1.5	30.1	Non-hazardous
E-CC27	62	12.05	0.7	13.2	Non-hazardous
E-CM4-CLIF	63	18.12	1.0	20.04	Non-hazardous
W-MV28A	64	91.81	**5.0**	97.5	**Hazardous 0 to 1 ft**
E-MV30-LOOP	66	7.53	0.4	7.66	Non-hazardous
W-CC28	67	7.2 (1)	0.4	---	Non-hazardous
W-MV29	68	21.37	1.2	22.55	Non-hazardous
E-MV31	69	14.54	0.8	15.43	Non-hazardous
W-MV-MONTE	70	13.25	0.7	13.9	Non-hazardous
W-CC29	71	18.54	1.0	19	Non-hazardous
E-MV32	74	33.2	1.8	35.2	Non-hazardous
E-CC30	75	26.7	1.4	30.3	Non-hazardous

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
(1) = UCLs not calculated due to insufficient data set. Maximum lead concentration used.
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
WET lead concentrations are predicted using slope of regression line y = 0.0542x.

TABLE 9a
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-R37 (Dataset 5) - 0 to 3 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	158.1	170
0.5 ft	4.184	4.665
1.5 ft	3.993	4.4
2.5 ft	3.482	3.76

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	158.1	7.1	170.0
Underlying Soil (0.5 to 3 ft)	*4.0*	*0.2*	*4.4*
0 to 1.5 ft	55.5	2.5	59.8
Underlying Soil (1.5 to 3 ft)	*3.8*	*0.2*	*4.2*
0 to 2.5 ft	34.9	1.6	37.6
Underlying Soil (2.5 to 3 ft)	*3.5*	*0.2*	*3.8*
0 to 3 ft	29.7	1.3	32.0

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement

Regression Line Slope: $y = 0.0451\ x$

TABLE 9b
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-R37 (Dataset 5) - 3 to 6 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	211.8	233
0.5 ft	28.21	30.5
1.5 ft	45.91	50
2.5 ft	112.3	126

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	211.8	9.6	233.0
Underlying Soil (0.5 to 3 ft)	*52.1*	*2.4*	*57.4*
0 to 1.5 ft	89.4	4.0	98.0
Underlying Soil (1.5 to 3 ft)	*68.0*	*3.1*	*75.3*
0 to 2.5 ft	72.0	3.2	78.8
Underlying Soil (2.5 to 3 ft)	*112.3*	*5.1*	*126.0*
0 to 3 ft	78.7	3.6	86.7

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0451\ x$

TABLE 9c
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-R37 (Dataset 5) - 6 to 9 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	48.18	52.4
0.5 ft	21.91	22.9
1.5 ft	56.29	61.5
2.5 ft	60.32	66.9

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	48.2	2.2	52.4
Underlying Soil (0.5 to 3 ft)	*43.3*	*2.0*	*47.1*
0 to 1.5 ft	30.7	1.4	32.7
Underlying Soil (1.5 to 3 ft)	*57.6*	*2.6*	*63.3*
0 to 2.5 ft	40.9	1.8	44.2
Underlying Soil (2.5 to 3 ft)	*60.3*	*2.7*	*66.9*
0 to 3 ft	44.2	2.0	48.0

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0451\ x$

TABLE 9d
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-R37 (Dataset 5) - >9 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	55.36	58.5
0.5 ft	68	72.3
1.5 ft	53.82	57.2
2.5 ft	60.21	65.2

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	55.4	2.5	58.5
Underlying Soil (0.5 to 3 ft)	*60.8*	*2.7*	*64.8*
0 to 1.5 ft	63.8	2.9	67.7
Underlying Soil (1.5 to 3 ft)	*56.0*	*2.5*	*59.9*
0 to 2.5 ft	59.8	2.7	63.5
Underlying Soil (2.5 to 3 ft)	*60.2*	*2.7*	*65.2*
0 to 3 ft	59.9	2.7	63.8

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0451\ x$

TABLE 10
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-R37-L (Dataset 8)

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	184.3	203
0.5 ft	15.6	17
1.5 ft	13.01	14
2.5 ft	34.55	38.5

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	184.3	8.3	203.0
Underlying Soil (0.5 to 3 ft)	*18.4*	*0.8*	*20.1*
0 to 1.5 ft	71.8	3.2	79.0
Underlying Soil (1.5 to 3 ft)	*20.2*	*0.9*	*22.2*
0 to 2.5 ft	48.3	2.2	53.0
Underlying Soil (2.5 to 3 ft)	*34.6*	*1.6*	*38.5*
0 to 3 ft	46.0	2.1	50.6

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line,
where y = predicted WET lead and x = total lead.

Regression Line Slope: $y = 0.0451 \quad x$

TABLE 11a
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-ALAM (Dataset 55) - 0 to 3 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	317.6	348
0.5 ft	288.9	317
1.5 ft	45.16	48.8
2.5 ft	20.91	22

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	317.6	23.5	348.0
Underlying Soil (0.5 to 3 ft)	*137.8*	*10.2*	*150.7*
0 to 1.5 ft	298.5	22.1	327.3
Underlying Soil (1.5 to 3 ft)	*37.1*	*2.7*	*39.9*
0 to 2.5 ft	197.1	14.6	215.9
Underlying Soil (2.5 to 3 ft)	*20.9*	*1.5*	*22.0*
0 to 3 ft	167.8	12.4	183.6

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0741\ x$

TABLE 11b
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-ALAM (Dataset 55) - 3 to 6 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	608.2	653
0.5 ft	90.22	93.4
1.5 ft	51	53.7
2.5 ft	23.22	24.1

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	608.2	45.1	653.0
Underlying Soil (0.5 to 3 ft)	*61.1*	*4.5*	*63.7*
0 to 1.5 ft	262.9	19.5	279.9
Underlying Soil (1.5 to 3 ft)	*41.7*	*3.1*	*43.8*
0 to 2.5 ft	178.1	13.2	189.4
Underlying Soil (2.5 to 3 ft)	*23.2*	*1.7*	*24.1*
0 to 3 ft	152.3	11.3	161.9

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0741 \quad x$

TABLE 11c
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-ALAM (Dataset 55) - 6 to 9 ft from EOP

TOTAL LEAD

	Maximum
0.0 ft	670
0.5 ft	63
1.5 ft	31
2.5 ft	24

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages Maximum Total Lead (mg/kg)	90% UCL WET Lead* (mg/l)
0 to 0.5 ft	670.0	49.6
Underlying Soil (0.5 to 3 ft)	*42.4*	*3.1*
0 to 1.5 ft	265.3	19.7
Underlying Soil (1.5 to 3 ft)	*28.7*	*2.1*
0 to 2.5 ft	171.6	12.7
Underlying Soil (2.5 to 3 ft)	*24.0*	*1.8*
0 to 3 ft	147.0	10.9

Notes:
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0741\ x$

TABLE 11d
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-ALAM (Dataset 55) - >9 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	444.7	465
0.5 ft	62.64	65
1.5 ft	26.88	27.8
2.5 ft	18.3	18.8

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	444.7	33.0	465.0
Underlying Soil (0.5 to 3 ft)	*39.5*	*2.9*	*40.9*
0 to 1.5 ft	190.0	14.1	198.3
Underlying Soil (1.5 to 3 ft)	*24.0*	*1.8*	*24.8*
0 to 2.5 ft	124.7	9.2	130.1
Underlying Soil (2.5 to 3 ft)	*18.3*	*1.4*	*18.8*
0 to 3 ft	107.0	7.9	111.6

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0741\ x$

TABLE 12a
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

E-CLIF (Dataset 65) - 0 to 3 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	829.7	890.3
0.5 ft	178	197
1.5 ft	136.2	154
2.5 ft	41.64	45.3

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	829.7	63.8	890.3
Underlying Soil (0.5 to 3 ft)	*134.0*	*10.3*	*149.5*
0 to 1.5 ft	395.2	30.4	428.1
Underlying Soil (1.5 to 3 ft)	*104.7*	*8.0*	*117.8*
0 to 2.5 ft	291.6	22.4	318.5
Underlying Soil (2.5 to 3 ft)	*41.6*	*3.2*	*45.3*
0 to 3 ft	250.0	19.2	272.9

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0769\ x$

TABLE 12b
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

E-CLIF (Dataset 65) - 3 to 6 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	42.03	45.3
0.5 ft	52.07	57.4
1.5 ft	23.96	26.5
2.5 ft	6.455	6.6

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	42.0	3.2	45.3
Underlying Soil (0.5 to 3 ft)	*31.7*	*2.4*	*34.9*
0 to 1.5 ft	48.7	3.7	53.4
Underlying Soil (1.5 to 3 ft)	*18.1*	*1.4*	*19.9*
0 to 2.5 ft	38.8	3.0	42.6
Underlying Soil (2.5 to 3 ft)	*6.5*	*0.5*	*6.6*
0 to 3 ft	33.4	2.6	36.6

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0769\ x$

TABLE 12c
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

E-CLIF (Dataset 65) - 6 to 9 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	93.44	101
0.5 ft	73.61	82.3
1.5 ft	12.83	13.7
2.5 ft	5.369	5.5

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	93.4	7.2	101.0
Underlying Soil (0.5 to 3 ft)	*35.6*	*2.7*	*39.5*
0 to 1.5 ft	80.2	6.2	88.5
Underlying Soil (1.5 to 3 ft)	*10.3*	*0.8*	*11.0*
0 to 2.5 ft	53.3	4.1	58.6
Underlying Soil (2.5 to 3 ft)	*5.4*	*0.4*	*5.5*
0 to 3 ft	45.3	3.5	49.8

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0769\ x$

TABLE 12d
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

E-CLIF (Dataset 65) - >9 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	19.39	21.1
0.5 ft	55.54	60.9
1.5 ft	14.81	16
2.5 ft	13.64	14.7

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	19.4	1.5	21.1
Underlying Soil (0.5 to 3 ft)	*30.9*	*2.4*	*33.7*
0 to 1.5 ft	43.5	3.3	47.6
Underlying Soil (1.5 to 3 ft)	*14.4*	*1.1*	*15.6*
0 to 2.5 ft	32.0	2.5	35.0
Underlying Soil (2.5 to 3 ft)	*13.6*	*1.0*	*14.7*
0 to 3 ft	29.0	2.2	31.6

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0769\ x$

TABLE 13
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-505-L (Dataset 72)

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	78.2	83.9
0.5 ft	63.7	69.9
1.5 ft	24.47	27.6
2.5 ft	42.33	46.83

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	78.2	3.1	83.9
Underlying Soil (0.5 to 3 ft)	*43.7*	*1.7*	*48.4*
0 to 1.5 ft	68.5	2.7	74.6
Underlying Soil (1.5 to 3 ft)	*30.4*	*1.2*	*34.0*
0 to 2.5 ft	50.9	2.0	55.8
Underlying Soil (2.5 to 3 ft)	*42.3*	*1.7*	*46.8*
0 to 3 ft	49.5	1.9	54.3

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line,
where y = predicted WET lead and x = total lead.

Regression Line Slope: $y = 0.0393 \quad x$

TABLE 14a
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-505 (Dataset 73) - 0 to 3 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	167.2	186
0.5 ft	54.47	60.5
1.5 ft	41.75	48.3
2.5 ft	42	47

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	167.2	6.6	186.0
Underlying Soil (0.5 to 3 ft)	*46.9*	*1.8*	*52.9*
0 to 1.5 ft	92.0	3.6	102.3
Underlying Soil (1.5 to 3 ft)	*41.8*	*1.6*	*47.9*
0 to 2.5 ft	71.9	2.8	80.7
Underlying Soil (2.5 to 3 ft)	*42.0*	*1.7*	*47.0*
0 to 3 ft	66.9	2.6	75.1

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0393\ x$

TABLE 14b
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

W-505 (Dataset 73) - 3 to 6 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	106.1	115
0.5 ft	70.69	78.5
1.5 ft	36.94	39.9
2.5 ft	78.51	87.3

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	106.1	4.2	115.0
Underlying Soil (0.5 to 3 ft)	*58.8*	*2.3*	*64.8*
0 to 1.5 ft	82.5	3.2	90.7
Underlying Soil (1.5 to 3 ft)	*50.8*	*2.0*	*55.7*
0 to 2.5 ft	64.3	2.5	70.4
Underlying Soil (2.5 to 3 ft)	*78.5*	*3.1*	*87.3*
0 to 3 ft	66.6	2.6	73.2

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0393\ x$

TABLE 15a
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

E-NUT (Dataset 76) - 0 to 3 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	9.384	9.86
0.5 ft	10.28	11
1.5 ft	91.92	99.8
2.5 ft	48.91	53.4

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	9.4	0.3	9.9
Underlying Soil (0.5 to 3 ft)	*50.7*	*1.8*	*55.0*
0 to 1.5 ft	10.0	0.4	10.6
Underlying Soil (1.5 to 3 ft)	*77.6*	*2.8*	*84.3*
0 to 2.5 ft	42.8	1.5	46.3
Underlying Soil (2.5 to 3 ft)	*48.9*	*1.8*	*53.4*
0 to 3 ft	43.8	1.6	47.5

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0362\ x$

TABLE 15b
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

E-NUT (Dataset 76) - 3 to 6 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	11.2	11.62
0.5 ft	14.07	14.86
1.5 ft	38.47	42
2.5 ft	12.7	13.5

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	11.2	0.4	11.6
Underlying Soil (0.5 to 3 ft)	*23.6*	*0.9*	*25.4*
0 to 1.5 ft	13.1	0.5	13.8
Underlying Soil (1.5 to 3 ft)	*29.9*	*1.1*	*32.5*
0 to 2.5 ft	23.3	0.8	25.1
Underlying Soil (2.5 to 3 ft)	*12.7*	*0.5*	*13.5*
0 to 3 ft	21.5	0.8	23.1

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0362\ x$

TABLE 15c
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

E-NUT (Dataset 76) - 6 to 9 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	17.6	18.4
0.5 ft	38.31	42.9
1.5 ft	49.84	56.2
2.5 ft	8.592	8.8

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	17.6	0.6	18.4
Underlying Soil (0.5 to 3 ft)	*37.0*	*1.3*	*41.4*
0 to 1.5 ft	31.4	1.1	34.7
Underlying Soil (1.5 to 3 ft)	*36.1*	*1.3*	*40.4*
0 to 2.5 ft	38.8	1.4	43.3
Underlying Soil (2.5 to 3 ft)	*8.6*	*0.3*	*8.8*
0 to 3 ft	33.7	1.2	37.6

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0362\ x$

TABLE 15d
Summary of Lead Statistical Analysis
SOL-80 Freeway Performance Initiative Project
Solano County, California

E-NUT (Dataset 76) - >9 ft from EOP

TOTAL LEAD

	90% UCL	95% UCL
0.0 ft	29.37	31
0.5 ft	43.94	46.9
1.5 ft	33.84	37.6
2.5 ft	24.23	26.2

EXCAVATION SCENARIOS

	Weighted Averages		
Excavation Depth	**90% UCL Total Lead (mg/kg)**	**90% UCL WET Lead* (mg/l)**	**95% UCL Total Lead (mg/kg)**
0 to 0.5 ft	29.4	1.1	31.0
Underlying Soil (0.5 to 3 ft)	*36.0*	*1.3*	*39.0*
0 to 1.5 ft	39.1	1.4	41.6
Underlying Soil (1.5 to 3 ft)	*30.6*	*1.1*	*33.8*
0 to 2.5 ft	37.0	1.3	40.0
Underlying Soil (2.5 to 3 ft)	*24.2*	*0.9*	*26.2*
0 to 3 ft	34.9	1.3	37.7

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
EOP = Edge of pavement
Regression Line Slope: $y = 0.0362\ x$

Dataset 1

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	11
Maximum	3100
Mean	612.5
Median	182
SD	995.1
Variance	990126
Coefficient of Variation	1.625
Skewness	2.016
Mean of log data	5.051
SD of log data	1.886
90% Standard Bootstrap UCL	**965.3**
95% Standard Bootstrap UCL	**1073**

Dataset 2

Number of Valid Observations	5
Number of Distinct Observations	4
Minimum	110
Maximum	250
Mean	164
Median	160
SD	52.25
Variance	2730
Coefficient of Variation	0.319
Skewness	1.357
Mean of log data	5.063
SD of log data	0.299
90% Standard Bootstrap UCL	**190.9**
95% Standard Bootstrap UCL	**199**

Dataset 3

Number of Valid Observations	2
Number of Distinct Observations	2
Minimum	20
Maximum	250

Dataset 4

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	38
Maximum	260
Mean	74
Median	58.5
SD	59.53
Variance	3544
Coefficient of Variation	0.804
Skewness	3.269
Mean of log data	4.155
SD of log data	0.482
90% Standard Bootstrap UCL	**95.51**
95% Standard Bootstrap UCL	**101**

Dataset 5-0 (0 to 3)

Number of Valid Observations	21
Number of Distinct Observations	18
Minimum	0.5
Maximum	710
Mean	109.1
Median	31
SD	176.6
Variance	31200
Coefficient of Variation	1.62
Skewness	2.48
Mean of log data	3.377
SD of log data	1.98
90% Standard Bootstrap UCL	**158.1**
95% Standard Bootstrap UCL	**170**

Dataset 5-0.5 (0 to 3)

Number of Valid Observations	21
Number of Distinct Observations	9
Minimum	0.5
Maximum	26
Mean	2.652
Median	0.5
SD	5.685
Variance	32.32
Coefficient of Variation	2.143
Skewness	3.844
Mean of log data	0.0532
SD of log data	1.15
90% Standard Bootstrap UCL	**4.184**
95% Standard Bootstrap UCL	**4.665**

Dataset 5-1.5 (0 to 3)

Number of Valid Observations	21
Number of Distinct Observations	7
Minimum	0.5
Maximum	25
Mean	2.452
Median	0.5
SD	5.66
Variance	32.03
Coefficient of Variation	2.308
Skewness	3.65
Mean of log data	-0.103
SD of log data	1.121
90% Standard Bootstrap UCL	**3.993**
95% Standard Bootstrap UCL	**4.4**

Dataset 5-2.5 (0 to 3)

Number of Valid Observations	21
Number of Distinct Observations	9
Minimum	0.5
Maximum	15
Mean	2.419
Median	0.5
SD	3.927
Variance	15.42
Coefficient of Variation	1.623
Skewness	2.299
Mean of log data	0.0532
SD of log data	1.156
90% Standard Bootstrap UCL	**3.482**
95% Standard Bootstrap UCL	**3.76**

Dataset 5-0 (3 to 6)

Number of Valid Observations	16
Number of Distinct Observations	14
Minimum	0.5
Maximum	690
Mean	138.2
Median	26.5
SD	234.6
Variance	55023
Coefficient of Variation	1.697
Skewness	1.866
Mean of log data	3.253
SD of log data	2.227
90% Standard Bootstrap UCL	**211.8**
95% Standard Bootstrap UCL	**233**

Dataset 5-0.5 (3 to 6)

Number of Valid Observations	16
Number of Distinct Observations	15
Minimum	0.5
Maximum	86
Mean	20.09
Median	8.65
SD	26.15
Variance	683.6
Coefficient of Variation	1.301
Skewness	1.89
Mean of log data	2.13
SD of log data	1.544
90% Standard Bootstrap UCL	**28.21**
95% Standard Bootstrap UCL	**30.5**

Dataset 5-1.5 (3 to 6)

Number of Valid Observations	16
Number of Distinct Observations	15
Minimum	2.5
Maximum	120
Mean	34.99
Median	20
SD	36.11
Variance	1304
Coefficient of Variation	1.032
Skewness	1.401
Mean of log data	3.054
SD of log data	1.072
90% Standard Bootstrap UCL	**45.91**
95% Standard Bootstrap UCL	**50**

Dataset 5-2.5 (3 to 6)

Number of Valid Observations	16
Number of Distinct Observations	16
Minimum	1.6
Maximum	540
Mean	68.34
Median	23.5
SD	142.2
Variance	20219
Coefficient of Variation	2.081
Skewness	2.979
Mean of log data	3.013
SD of log data	1.524
90% Standard Bootstrap UCL	**112.3**
95% Standard Bootstrap UCL	**126**

Dataset 5-0 (6 to 9)

Number of Valid Observations	13
Number of Distinct Observations	13
Minimum	3.5
Maximum	190
Mean	31.42
Median	18
SD	48.63
Variance	2365
Coefficient of Variation	1.548
Skewness	3.355
Mean of log data	2.919
SD of log data	0.951
90% Standard Bootstrap UCL	**48.18**
95% Standard Bootstrap UCL	**52.4**

Dataset 5-0.5 (6 to 9)

Number of Valid Observations	13
Number of Distinct Observations	12
Minimum	8.5
Maximum	38
Mean	18.46
Median	14
SD	10.16
Variance	103.3
Coefficient of Variation	0.551
Skewness	0.851
Mean of log data	2.783
SD of log data	0.528
90% Standard Bootstrap UCL	**21.91**
95% Standard Bootstrap UCL	**22.9**

Dataset 5-1.5 (6 to 9)

Number of Valid Observations	13
Number of Distinct Observations	12
Minimum	5.9
Maximum	150
Mean	38.9
Median	11
SD	52.1
Variance	2714
Coefficient of Variation	1.339
Skewness	1.593
Mean of log data	2.941
SD of log data	1.174
90% Standard Bootstrap UCL	**56.29**
95% Standard Bootstrap UCL	**61.5**

Dataset 5-2.5 (6 to 9)

Number of Valid Observations	13
Number of Distinct Observations	13
Minimum	6.3
Maximum	210
Mean	41.19
Median	18
SD	56.94
Variance	3242
Coefficient of Variation	1.382
Skewness	2.554
Mean of log data	3.109
SD of log data	1.085
90% Standard Bootstrap UCL	**60.32**
95% Standard Bootstrap UCL	**66.9**

Dataset 5-0 (>9)

Number of Valid Observations	14
Number of Distinct Observations	14
Minimum	7.3
Maximum	100
Mean	44.21
Median	32
SD	33.57
Variance	1127
Coefficient of Variation	0.759
Skewness	0.68
Mean of log data	3.466
SD of log data	0.891
90% Standard Bootstrap UCL	**55.36**
95% Standard Bootstrap UCL	**58.5**

Dataset 5-0.5 (>9)

Number of Valid Observations	14
Number of Distinct Observations	13
Minimum	7.5
Maximum	140
Mean	54.16
Median	49.5
SD	43.24
Variance	1869
Coefficient of Variation	0.798
Skewness	0.646
Mean of log data	3.579
SD of log data	1.045
90% Standard Bootstrap UCL	**68**
95% Standard Bootstrap UCL	**72.3**

Dataset 5-1.5 (>9)

Number of Valid Observations	14
Number of Distinct Observations	14
Minimum	6.3
Maximum	130
Mean	41.24
Median	30.5
SD	37.84
Variance	1432
Coefficient of Variation	0.918
Skewness	1.493
Mean of log data	3.344
SD of log data	0.921
90% Standard Bootstrap UCL	**53.82**
95% Standard Bootstrap UCL	**57.2**

Dataset 5-2.5 (>9)

Number of Valid Observations	14
Number of Distinct Observations	14
Minimum	0.5
Maximum	170
Mean	41.47
Median	17
SD	56.5
Variance	3192
Coefficient of Variation	1.362
Skewness	1.759
Mean of log data	2.76
SD of log data	1.641
90% Standard Bootstrap UCL	**60.21**
95% Standard Bootstrap UCL	**65.2**

Dataset 6

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	18
Maximum	430
Mean	196.6
Median	205
SD	113
Variance	12770
Coefficient of Variation	0.575
Skewness	0.382
Mean of log data	5.03
SD of log data	0.889
90% Standard Bootstrap UCL	**236.2**
95% Standard Bootstrap UCL	**248**

Dataset 7

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	1.4
Maximum	34
Mean	11.54
Median	9.3
SD	9.653
Variance	93.18
Coefficient of Variation	0.837
Skewness	2.149
Mean of log data	2.157
SD of log data	0.88
90% Standard Bootstrap UCL	**15.6**
95% Standard Bootstrap UCL	**16.9**

Dataset 8-0

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	4.4
Maximum	560
Mean	117.7
Median	55
SD	174.1
Variance	30320
Coefficient of Variation	1.48
Skewness	2.197
Mean of log data	3.732
SD of log data	1.632
90% Standard Bootstrap UCL	**184.3**
95% Standard Bootstrap UCL	**203**

Dataset 8-0.5

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	1.1
Maximum	39
Mean	11.04
Median	7.1
SD	11.85
Variance	140.3
Coefficient of Variation	1.073
Skewness	1.743
Mean of log data	1.896
SD of log data	1.1
90% Standard Bootstrap UCL	**15.6**
95% Standard Bootstrap UCL	**17**

Dataset 8-1.5

Number of Valid Observations	10
Number of Distinct Observations	7
Minimum	0.5
Maximum	29
Mean	9.02
Median	3.75
SD	10.33
Variance	106.7
Coefficient of Variation	1.145
Skewness	0.92
Mean of log data	1.202
SD of log data	1.69
90% Standard Bootstrap UCL	**13.01**
95% Standard Bootstrap UCL	**14**

Dataset 8-2.5

Number of Valid Observations	10
Number of Distinct Observations	7
Minimum	0.5
Maximum	130
Mean	19.46
Median	8.55
SD	39.2
Variance	1537
Coefficient of Variation	2.014
Skewness	3.054
Mean of log data	1.669
SD of log data	1.822
90% Standard Bootstrap UCL	**34.55**
95% Standard Bootstrap UCL	**38.5**

Dataset 9

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	7.1
Maximum	95
Mean	29.59
Median	20.5
SD	24.58
Variance	604.4
Coefficient of Variation	0.831
Skewness	2.07
Mean of log data	3.153
SD of log data	0.683
90% Standard Bootstrap UCL	**38.09**
95% Standard Bootstrap UCL	**40.5**

Dataset 10

Number of Valid Observations	12
Number of Distinct Observations	10
Minimum	8.7
Maximum	81
Mean	34.39
Median	26.5
SD	22.06
Variance	486.6
Coefficient of Variation	0.641
Skewness	1.122
Mean of log data	3.352
SD of log data	0.65
90% Standard Bootstrap UCL	**42.36**
95% Standard Bootstrap UCL	**44.8**

Dataset 11

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	32
Maximum	670
Mean	190.6
Median	140
SD	182.8
Variance	33410
Coefficient of Variation	0.959
Skewness	1.844
Mean of log data	4.868
SD of log data	0.923
90% Standard Bootstrap UCL	**256.4**
95% Standard Bootstrap UCL	**273**

Dataset 12

Number of Valid Observations	6
Number of Distinct Observations	6
Minimum	7.8
Maximum	15
Mean	10.43
Median	9.85
SD	2.474
Variance	6.123
Coefficient of Variation	0.237
Skewness	1.471
Mean of log data	2.324
SD of log data	0.22
90% Standard Bootstrap UCL	**11.62**
95% Standard Bootstrap UCL	**11.9**

Dataset 13

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	18
Maximum	290
Mean	165.2
Median	150
SD	100.2
Variance	10031
Coefficient of Variation	0.606
Skewness	-0.118
Mean of log data	4.822
SD of log data	0.925
90% Standard Bootstrap UCL	**200.7**
95% Standard Bootstrap UCL	**211.4**

Dataset 14

Number of Valid Observations	3
Number of Distinct Observations	3
Minimum	7.3
Maximum	69

Dataset 15

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	8.5
Maximum	460
Mean	164.8
Median	120
SD	156.3
Variance	24440
Coefficient of Variation	0.949
Skewness	0.917
Mean of log data	4.539
SD of log data	1.257
90% Standard Bootstrap UCL	**220.6**
95% Standard Bootstrap UCL	**236**

Dataset 16

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.5
Maximum	84
Mean	34
Median	19.5
SD	32.05
Variance	1028
Coefficient of Variation	0.943
Skewness	0.605
Mean of log data	2.801
SD of log data	1.669
90% Standard Bootstrap UCL	**47**
95% Standard Bootstrap UCL	**51.3**

Dataset 17

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	1.8
Maximum	220
Mean	53.68
Median	39
SD	58.28
Variance	3397
Coefficient of Variation	1.086
Skewness	2.383
Mean of log data	3.381
SD of log data	1.389
90% Standard Bootstrap UCL	**74.06**
95% Standard Bootstrap UCL	**80.3**

Dataset 18

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	2.6
Maximum	680
Mean	155.9
Median	58.5
SD	210.2
Variance	44189
Coefficient of Variation	1.348
Skewness	1.713
Mean of log data	3.941
SD of log data	1.807
90% Standard Bootstrap UCL	**230.2**
95% Standard Bootstrap UCL	**251**

Dataset 19

Number of Valid Observations	5
Number of Distinct Observations	5
Minimum	5.6
Maximum	52
Mean	17.34
Median	9.2
SD	19.51
Variance	380.8
Coefficient of Variation	1.125
Skewness	2.158
Mean of log data	2.489
SD of log data	0.863
90% Standard Bootstrap UCL	**27.37**
95% Standard Bootstrap UCL	**30**

Dataset 20

Number of Valid Observations	2
Number of Distinct Observations	2
Minimum	4.4
Maximum	47

Dataset 21

Number of Valid Observations	7
Number of Distinct Observations	7
Minimum	7.3
Maximum	100
Mean	22.49
Median	8.9
SD	34.35
Variance	1180
Coefficient of Variation	1.528
Skewness	2.594
Mean of log data	2.552
SD of log data	0.952
90% Standard Bootstrap UCL	**38.03**
95% Standard Bootstrap UCL	**42.29**

Dataset 22

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	6.4
Maximum	160
Mean	47.48
Median	13.2
SD	66.71
Variance	4450
Coefficient of Variation	1.405
Skewness	1.41
Mean of log data	2.989
SD of log data	1.357
90% Standard Bootstrap UCL	**76.71**
95% Standard Bootstrap UCL	**84.17**

Dataset 23

Number of Valid Observations	6
Number of Distinct Observations	6
Minimum	4.6
Maximum	120
Mean	37.6
Median	8.8
SD	49.13
Variance	2414
Coefficient of Variation	1.307
Skewness	1.282
Mean of log data	2.807
SD of log data	1.391
90% Standard Bootstrap UCL	**60.7**
95% Standard Bootstrap UCL	**67.6**

Dataset 24

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	3
Maximum	280
Mean	86.9
Median	65
SD	89.39
Variance	7990
Coefficient of Variation	1.029
Skewness	1.165
Mean of log data	3.787
SD of log data	1.401
90% Standard Bootstrap UCL	**118**
95% Standard Bootstrap UCL	**128**

Dataset 25

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	4.6
Maximum	140
Mean	32.11
Median	8.1
SD	47.04
Variance	2213
Coefficient of Variation	1.465
Skewness	2.162
Mean of log data	2.685
SD of log data	1.272
90% Standard Bootstrap UCL	**52.34**
95% Standard Bootstrap UCL	**57.3**

Dataset 26

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	7.1
Maximum	98
Mean	51.84
Median	51
SD	31.23
Variance	975.3
Coefficient of Variation	0.602
Skewness	0.0346
Mean of log data	3.697
SD of log data	0.84
90% Standard Bootstrap UCL	**63.03**
95% Standard Bootstrap UCL	**65.83**

Dataset 27

Number of Valid Observations	9
Number of Distinct Observations	9
Minimum	5.9
Maximum	380
Mean	58.56
Median	9.6
SD	123.1
Variance	15154
Coefficient of Variation	2.102
Skewness	2.788
Mean of log data	2.821
SD of log data	1.422
90% Standard Bootstrap UCL	**110**
95% Standard Bootstrap UCL	**123.6**

Dataset 28

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	5.2
Maximum	32
Mean	11.21
Median	7.85
SD	8.9
Variance	79.22
Coefficient of Variation	0.794
Skewness	2.305
Mean of log data	2.234
SD of log data	0.584
90% Standard Bootstrap UCL	**15**
95% Standard Bootstrap UCL	**16.1**

Dataset 29

Number of Valid Observations	12
Number of Distinct Observations	10
Minimum	4.2
Maximum	33
Mean	13.83
Median	11
SD	9.376
Variance	87.91
Coefficient of Variation	0.678
Skewness	1.168
Mean of log data	2.423
SD of log data	0.673
90% Standard Bootstrap UCL	**17.1**
95% Standard Bootstrap UCL	**18.1**

Dataset 30

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	6
Maximum	140
Mean	36.58
Median	25
SD	35.84
Variance	1284
Coefficient of Variation	0.98
Skewness	2.511
Mean of log data	3.292
SD of log data	0.79
90% Standard Bootstrap UCL	**49.48**
95% Standard Bootstrap UCL	**52.72**

Dataset 31

Number of Valid Observations	5
Number of Distinct Observations	4
Minimum	5.1
Maximum	16
Mean	9.82
Median	11
SD	4.412
Variance	19.46
Coefficient of Variation	0.449
Skewness	0.381
Mean of log data	2.198
SD of log data	0.474
90% Standard Bootstrap UCL	**12.13**
95% Standard Bootstrap UCL	**12.7**

Dataset 32

Number of Valid Observations	4
Number of Distinct Observations	4
Minimum	5
Maximum	8.6

Dataset 33

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	8.3
Maximum	79
Mean	28.83
Median	21.5
SD	23.1
Variance	533.6
Coefficient of Variation	0.801
Skewness	1.558
Mean of log data	3.113
SD of log data	0.716
90% Standard Bootstrap UCL	**36.88**
95% Standard Bootstrap UCL	**39.31**

Dataset 34

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	4.4
Maximum	590
Mean	106.1
Median	16.5
SD	172.7
Variance	29831
Coefficient of Variation	1.627
Skewness	2.342
Mean of log data	3.483
SD of log data	1.629
90% Standard Bootstrap UCL	**166.1**
95% Standard Bootstrap UCL	**184.1**

Dataset 35

Number of Valid Observations	5
Number of Distinct Observations	5
Minimum	19
Maximum	46
Mean	30.4
Median	27
SD	10.43
Variance	108.8
Coefficient of Variation	0.343
Skewness	0.813
Mean of log data	3.369
SD of log data	0.337
90% Standard Bootstrap UCL	**35.82**
95% Standard Bootstrap UCL	**36.96**

Dataset 36

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	5.4
Maximum	53
Mean	15.49
Median	11.3
SD	15.69
Variance	246.1
Coefficient of Variation	1.013
Skewness	2.465
Mean of log data	2.449
SD of log data	0.741
90% Standard Bootstrap UCL	**22.23**
95% Standard Bootstrap UCL	**24**

Dataset 37

Number of Valid Observations	7
Number of Distinct Observations	7
Minimum	7.4
Maximum	110
Mean	33.59
Median	11
SD	40.62
Variance	1650
Coefficient of Variation	1.21
Skewness	1.514
Mean of log data	2.944
SD of log data	1.095
90% Standard Bootstrap UCL	**51.66**
95% Standard Bootstrap UCL	**56.7**

Dataset 38

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	4.2
Maximum	1500
Mean	268.3
Median	53.5
SD	491.9
Variance	242003
Coefficient of Variation	1.834
Skewness	2.145
Mean of log data	4.284
SD of log data	1.666
90% Standard Bootstrap UCL	**441**
95% Standard Bootstrap UCL	**490**

Dataset 39

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	11
Maximum	220
Mean	85.75
Median	63.5
SD	67.72
Variance	4585
Coefficient of Variation	0.79
Skewness	1.189
Mean of log data	4.166
SD of log data	0.824
90% Standard Bootstrap UCL	**110**
95% Standard Bootstrap UCL	**116.9**

Dataset 40

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	5
Maximum	23
Mean	13.04
Median	12
SD	5.831
Variance	34.01
Coefficient of Variation	0.447
Skewness	0.45
Mean of log data	2.472
SD of log data	0.485
90% Standard Bootstrap UCL	**15.52**
95% Standard Bootstrap UCL	**16.25**

Dataset 41

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	7.8
Maximum	240
Mean	45.74
Median	13
SD	80.02
Variance	6403
Coefficient of Variation	1.75
Skewness	2.635
Mean of log data	3
SD of log data	1.182
90% Standard Bootstrap UCL	**79.84**
95% Standard Bootstrap UCL	**88.8**

Dataset 42

Number of Valid Observations	4
Number of Distinct Observations	4
Minimum	7.8
Maximum	30

Dataset 43

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	6.3
Maximum	210
Mean	80.61
Median	66.5
SD	65.88
Variance	4340
Coefficient of Variation	0.817
Skewness	0.851
Mean of log data	3.991
SD of log data	1.04
90% Standard Bootstrap UCL	**103.9**
95% Standard Bootstrap UCL	**111**

Dataset 44

Number of Valid Observations	4
Number of Distinct Observations	4
Minimum	11
Maximum	110

Dataset 45

Number of Valid Observations	12
Number of Distinct Observations	8
Minimum	67
Maximum	260
Mean	160.9
Median	140
SD	65.46
Variance	4285
Coefficient of Variation	0.407
Skewness	0.155
Mean of log data	4.996
SD of log data	0.447
90% Standard Bootstrap UCL	**183.8**
95% Standard Bootstrap UCL	**190.8**

Dataset 46

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	8.3
Maximum	890
Mean	171.1
Median	57.5
SD	277.4
Variance	76966
Coefficient of Variation	1.621
Skewness	2.163
Mean of log data	4.113
SD of log data	1.501
90% Standard Bootstrap UCL	**270.8**
95% Standard Bootstrap UCL	**296**

Dataset 47

Number of Valid Observations	4
Number of Distinct Observations	4
Minimum	6.3
Maximum	50

Dataset 48

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	2.7
Maximum	89
Mean	30.4
Median	28
SD	23.74
Variance	563.7
Coefficient of Variation	0.781
Skewness	1.309
Mean of log data	3.073
SD of log data	0.965
90% Standard Bootstrap UCL	**39.04**
95% Standard Bootstrap UCL	**41.17**

Dataset 49

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	6.6
Maximum	120
Mean	49.36
Median	40.5
SD	35
Variance	1225
Coefficient of Variation	0.709
Skewness	1.061
Mean of log data	3.624
SD of log data	0.855
90% Standard Bootstrap UCL	**61.53**
95% Standard Bootstrap UCL	**65.2**

Dataset 50

Number of Valid Observations	8
Number of Distinct Observations	6
Minimum	8.8
Maximum	100
Mean	22.9
Median	11.9
SD	31.31
Variance	980.2
Coefficient of Variation	1.367
Skewness	2.773
Mean of log data	2.712
SD of log data	0.806
90% Standard Bootstrap UCL	**36.41**
95% Standard Bootstrap UCL	**40.02**

Dataset 51

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	6.2
Maximum	410
Mean	123.3
Median	109.5
SD	120.9
Variance	14629
Coefficient of Variation	0.981
Skewness	1.172
Mean of log data	4.103
SD of log data	1.481
90% Standard Bootstrap UCL	**166.3**
95% Standard Bootstrap UCL	**178.1**

Dataset 52

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	5.4
Maximum	370
Mean	108.7
Median	38.5
SD	131.7
Variance	17353
Coefficient of Variation	1.212
Skewness	1.147
Mean of log data	3.782
SD of log data	1.528
90% Standard Bootstrap UCL	**155**
95% Standard Bootstrap UCL	**169**

Dataset 53

Number of Valid Observations	5
Number of Distinct Observations	4
Minimum	11
Maximum	34
Mean	17.6
Median	15
SD	9.317
Variance	86.8
Coefficient of Variation	0.529
Skewness	2.056
Mean of log data	2.781
SD of log data	0.436
90% Standard Bootstrap UCL	**22.47**
95% Standard Bootstrap UCL	**23.77**

Dataset 54

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	6.7
Maximum	990
Mean	189.4
Median	40
SD	290.4
Variance	84341
Coefficient of Variation	1.534
Skewness	2.219
Mean of log data	4
SD of log data	1.787
90% Standard Bootstrap UCL	**289.3**
95% Standard Bootstrap UCL	**321.4**

Dataset 55-0 (0 to 3)

Number of Valid Observations	20
Number of Distinct Observations	19
Minimum	6.5
Maximum	1700
Mean	212.8
Median	96.5
SD	374.5
Variance	140251
Coefficient of Variation	1.76
Skewness	3.609
Mean of log data	4.312
SD of log data	1.595
90% Standard Bootstrap UCL	**317.6**
95% Standard Bootstrap UCL	**348**

Dataset 55-0.5 (0 to 3)

Number of Valid Observations	20
Number of Distinct Observations	19
Minimum	9.3
Maximum	1300
Mean	201
Median	82
SD	322.2
Variance	103812
Coefficient of Variation	1.603
Skewness	2.594
Mean of log data	4.313
SD of log data	1.458
90% Standard Bootstrap UCL	**288.9**
95% Standard Bootstrap UCL	**317**

Dataset 55-1.5 (0 to 3)

Number of Valid Observations	20
Number of Distinct Observations	19
Minimum	4.2
Maximum	190
Mean	32.08
Median	15.5
SD	47.61
Variance	2267
Coefficient of Variation	1.484
Skewness	2.749
Mean of log data	2.901
SD of log data	0.957
90% Standard Bootstrap UCL	**45.16**
95% Standard Bootstrap UCL	**48.8**

Dataset 55-2.5 (0 to 3)

Number of Valid Observations	20
Number of Distinct Observations	14
Minimum	7.6
Maximum	59
Mean	17.25
Median	12
SD	13.26
Variance	176
Coefficient of Variation	0.769
Skewness	2.267
Mean of log data	2.665
SD of log data	0.562
90% Standard Bootstrap UCL	**20.91**
95% Standard Bootstrap UCL	**22**

Dataset 55-0 (3 to 6)

Number of Valid Observations	15
Number of Distinct Observations	14
Minimum	100
Maximum	2000
Mean	456
Median	340
SD	480.8
Variance	231126
Coefficient of Variation	1.054
Skewness	2.643
Mean of log data	5.77
SD of log data	0.826
90% Standard Bootstrap UCL	**608.2**
95% Standard Bootstrap UCL	**653**

Dataset 55-0.5 (3 to 6)

Number of Valid Observations	15
Number of Distinct Observations	14
Minimum	18
Maximum	150
Mean	77.2
Median	75
SD	39.87
Variance	1590
Coefficient of Variation	0.516
Skewness	0.281
Mean of log data	4.19
SD of log data	0.624
90% Standard Bootstrap UCL	**90.22**
95% Standard Bootstrap UCL	**93.4**

Dataset 55-1.5 (3 to 6)

Number of Valid Observations	15
Number of Distinct Observations	14
Minimum	6.7
Maximum	100
Mean	41.25
Median	34
SD	30.6
Variance	936.5
Coefficient of Variation	0.742
Skewness	0.806
Mean of log data	3.415
SD of log data	0.863
90% Standard Bootstrap UCL	**51**
95% Standard Bootstrap UCL	**53.7**

Dataset 55-2.5 (3 to 6)

Number of Valid Observations	15
Number of Distinct Observations	12
Minimum	7.9
Maximum	49
Mean	20.26
Median	19
SD	9.356
Variance	87.53
Coefficient of Variation	0.462
Skewness	2.073
Mean of log data	2.925
SD of log data	0.417
90% Standard Bootstrap UCL	**23.22**
95% Standard Bootstrap UCL	**24.1**

Dataset 55-0 (6 to 9)

Number of Valid Observations	4
Number of Distinct Observations	4
Minimum	140
Maximum	670

Dataset 55-0.5 (6 to 9)

Number of Valid Observations	4
Number of Distinct Observations	4
Minimum	9.2
Maximum	63

Dataset 55-1.5 (6 to 9)

Number of Valid Observations	4
Number of Distinct Observations	4
Minimum	9.7
Maximum	31

Dataset 55-2.5 (6 to 9)

Number of Valid Observations	4
Number of Distinct Observations	4
Minimum	8.9
Maximum	24

Dataset 55-0 (>9)

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	130
Maximum	760
Mean	364
Median	290
SD	211.9
Variance	44893
Coefficient of Variation	0.582
Skewness	1.025
Mean of log data	5.754
SD of log data	0.561
90% Standard Bootstrap UCL	**444.7**
95% Standard Bootstrap UCL	**465**

Dataset 55-0.5 (>9)

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	13
Maximum	91
Mean	53.1
Median	56
SD	24.33
Variance	592.1
Coefficient of Variation	0.458
Skewness	-0.0307
Mean of log data	3.845
SD of log data	0.585
90% Standard Bootstrap UCL	**62.64**
95% Standard Bootstrap UCL	**65**

Dataset 55-1.5 (>9)

Number of Valid Observations	10
Number of Distinct Observations	8
Minimum	8.5
Maximum	41
Mean	23.45
Median	24
SD	8.902
Variance	79.25
Coefficient of Variation	0.38
Skewness	0.324
Mean of log data	3.08
SD of log data	0.432
90% Standard Bootstrap UCL	**26.88**
95% Standard Bootstrap UCL	**27.8**

Dataset 55-2.5 (>9)

Number of Valid Observations	10
Number of Distinct Observations	8
Minimum	9.7
Maximum	26
Mean	16.27
Median	15.5
SD	5.249
Variance	27.55
Coefficient of Variation	0.323
Skewness	0.837
Mean of log data	2.745
SD of log data	0.313
90% Standard Bootstrap UCL	**18.3**
95% Standard Bootstrap UCL	**18.8**

Dataset 56

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	12
Maximum	870
Mean	265.2
Median	215
SD	233.6
Variance	54591
Coefficient of Variation	0.881
Skewness	1.703
Mean of log data	5.167
SD of log data	1.102
90% Standard Bootstrap UCL	**345.7**
95% Standard Bootstrap UCL	**369.6**

Dataset 57

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	9.6
Maximum	170
Mean	45.7
Median	30.5
SD	51.83
Variance	2686
Coefficient of Variation	1.134
Skewness	2.489
Mean of log data	3.434
SD of log data	0.893
90% Standard Bootstrap UCL	**67.61**
95% Standard Bootstrap UCL	**74.53**

Dataset 58

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	20
Maximum	200
Mean	72
Median	42.5
SD	56.91
Variance	3238
Coefficient of Variation	0.79
Skewness	1.147
Mean of log data	3.999
SD of log data	0.775
90% Standard Bootstrap UCL	**92.51**
95% Standard Bootstrap UCL	**97.9**

Dataset 59

Number of Valid Observations	5
Number of Distinct Observations	4
Minimum	10
Maximum	140
Mean	38.2
Median	14
SD	56.93
Variance	3241
Coefficient of Variation	1.49
Skewness	2.231
Mean of log data	3.017
SD of log data	1.085
90% Standard Bootstrap UCL	**67.28**
95% Standard Bootstrap UCL	**76.43**

Dataset 60

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	9
Maximum	540
Mean	82.68
Median	41
SD	147.4
Variance	21735
Coefficient of Variation	1.783
Skewness	3.188
Mean of log data	3.583
SD of log data	1.259
90% Standard Bootstrap UCL	**135.3**
95% Standard Bootstrap UCL	**149.6**

Dataset 61

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	7.1
Maximum	67
Mean	22.5
Median	17
SD	17.27
Variance	298.1
Coefficient of Variation	0.769
Skewness	1.735
Mean of log data	2.887
SD of log data	0.681
90% Standard Bootstrap UCL	**28.4**
95% Standard Bootstrap UCL	**30.1**

Dataset 62

Number of Valid Observations	6
Number of Distinct Observations	5
Minimum	3.2
Maximum	25
Mean	8.15
Median	4.95
SD	8.313
Variance	69.11
Coefficient of Variation	1.02
Skewness	2.372
Mean of log data	1.821
SD of log data	0.719
90% Standard Bootstrap UCL	**12.05**
95% Standard Bootstrap UCL	**13.2**

Dataset 63

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	5.1
Maximum	48
Mean	11.91
Median	6.45
SD	14.64
Variance	214.4
Coefficient of Variation	1.229
Skewness	2.783
Mean of log data	2.14
SD of log data	0.724
90% Standard Bootstrap UCL	**18.12**
95% Standard Bootstrap UCL	**20.04**

Dataset 64

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	3.1
Maximum	160
Mean	64.9
Median	9.8
SD	73.82
Variance	5450
Coefficient of Variation	1.137
Skewness	0.423
Mean of log data	3.006
SD of log data	1.795
90% Standard Bootstrap UCL	**91.81**
95% Standard Bootstrap UCL	**97.5**

Dataset 65-0 (0 to 3)

Number of Valid Observations	21
Number of Distinct Observations	20
Minimum	5.4
Maximum	3100
Mean	575.1
Median	15
SD	908.2
Variance	824885
Coefficient of Variation	1.579
Skewness	1.786
Mean of log data	4.274
SD of log data	2.45
90% Standard Bootstrap UCL	**829.7**
95% Standard Bootstrap UCL	**890.3**

Dataset 65-0.5 (0 to 3)

Number of Valid Observations	21
Number of Distinct Observations	17
Minimum	5.3
Maximum	910
Mean	120.2
Median	17
SD	214.9
Variance	46175
Coefficient of Variation	1.787
Skewness	2.817
Mean of log data	3.504
SD of log data	1.629
90% Standard Bootstrap UCL	**178**
95% Standard Bootstrap UCL	**197**

Dataset 65-1.5 (0 to 3)

Number of Valid Observations	21
Number of Distinct Observations	21
Minimum	2.6
Maximum	1000
Mean	76.37
Median	8.4
SD	219.5
Variance	48194
Coefficient of Variation	2.875
Skewness	4.118
Mean of log data	2.698
SD of log data	1.513
90% Standard Bootstrap UCL	**136.2**
95% Standard Bootstrap UCL	**154**

Dataset 65-2.5 (0 to 3)

Number of Valid Observations	21
Number of Distinct Observations	18
Minimum	2.9
Maximum	170
Mean	28.18
Median	6.3
SD	49.56
Variance	2456
Coefficient of Variation	1.759
Skewness	2.204
Mean of log data	2.377
SD of log data	1.225
90% Standard Bootstrap UCL	**41.64**
95% Standard Bootstrap UCL	**45.3**

Dataset 65-0 (3 to 6)

Number of Valid Observations	10
Number of Distinct Observations	9
Minimum	7
Maximum	110
Mean	28.8
Median	10.5
SD	34.69
Variance	1203
Coefficient of Variation	1.205
Skewness	1.767
Mean of log data	2.817
SD of log data	1.036
90% Standard Bootstrap UCL	**42.03**
95% Standard Bootstrap UCL	**45.3**

Dataset 65-0.5 (3 to 6)

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	4.2
Maximum	150
Mean	34.12
Median	11.35
SD	46.8
Variance	2190
Coefficient of Variation	1.372
Skewness	2.027
Mean of log data	2.799
SD of log data	1.23
90% Standard Bootstrap UCL	**52.07**
95% Standard Bootstrap UCL	**57.4**

Dataset 65-1.5 (3 to 6)

Number of Valid Observations	10
Number of Distinct Observations	8
Minimum	2.6
Maximum	76
Mean	15.25
Median	6
SD	22.59
Variance	510.5
Coefficient of Variation	1.482
Skewness	2.646
Mean of log data	2.157
SD of log data	0.97
90% Standard Bootstrap UCL	**23.96**
95% Standard Bootstrap UCL	**26.5**

Dataset 65-2.5 (3 to 6)

Number of Valid Observations	10
Number of Distinct Observations	8
Minimum	4.1
Maximum	9.1
Mean	5.93
Median	6.05
SD	1.37
Variance	1.876
Coefficient of Variation	0.231
Skewness	1.246
Mean of log data	1.758
SD of log data	0.219
90% Standard Bootstrap UCL	**6.455**
95% Standard Bootstrap UCL	**6.6**

Dataset 65-0 (6 to 9)

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	5.9
Maximum	210
Mean	57.55
Median	10.45
SD	85.58
Variance	7323
Coefficient of Variation	1.487
Skewness	1.443
Mean of log data	3.023
SD of log data	1.483
90% Standard Bootstrap UCL	**93.44**
95% Standard Bootstrap UCL	**101**

Dataset 65-0.5 (6 to 9)

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	2.8
Maximum	210
Mean	42.74
Median	8.5
SD	73.44
Variance	5394
Coefficient of Variation	1.719
Skewness	2.165
Mean of log data	2.639
SD of log data	1.484
90% Standard Bootstrap UCL	**73.61**
95% Standard Bootstrap UCL	**82.3**

Dataset 65-1.5 (6 to 9)

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	4.6
Maximum	25
Mean	9.85
Median	6.4
SD	7.039
Variance	49.54
Coefficient of Variation	0.715
Skewness	1.705
Mean of log data	2.108
SD of log data	0.607
90% Standard Bootstrap UCL	**12.83**
95% Standard Bootstrap UCL	**13.7**

Dataset 65-2.5 (6 to 9)

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	3.1
Maximum	6.2
Mean	4.85
Median	5
SD	1.236
Variance	1.529
Coefficient of Variation	0.255
Skewness	-0.426
Mean of log data	1.547
SD of log data	0.276
90% Standard Bootstrap UCL	**5.369**
95% Standard Bootstrap UCL	**5.5**

Dataset 65-0 (>9)

Number of Valid Observations	10
Number of Distinct Observations	9
Minimum	6.1
Maximum	49
Mean	14.07
Median	8.75
SD	14.03
Variance	196.8
Coefficient of Variation	0.997
Skewness	2.198
Mean of log data	2.359
SD of log data	0.704
90% Standard Bootstrap UCL	**19.39**
95% Standard Bootstrap UCL	**21.1**

Dataset 65-0.5 (>9)

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	4.6
Maximum	160
Mean	33.25
Median	6.25
SD	57.07
Variance	3257
Coefficient of Variation	1.716
Skewness	1.894
Mean of log data	2.463
SD of log data	1.325
90% Standard Bootstrap UCL	**55.54**
95% Standard Bootstrap UCL	**60.9**

Dataset 65-1.5 (>9)

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	4.8
Maximum	40
Mean	10.66
Median	6.15
SD	10.79
Variance	116.4
Coefficient of Variation	1.012
Skewness	2.705
Mean of log data	2.103
SD of log data	0.668
90% Standard Bootstrap UCL	**14.81**
95% Standard Bootstrap UCL	**16**

Dataset 65-2.5 (>9)

Number of Valid Observations	10
Number of Distinct Observations	9
Minimum	3.3
Maximum	41
Mean	9.15
Median	5.8
SD	11.37
Variance	129.3
Coefficient of Variation	1.243
Skewness	2.981
Mean of log data	1.866
SD of log data	0.741
90% Standard Bootstrap UCL	**13.64**
95% Standard Bootstrap UCL	**14.7**

Dataset 66

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	5.3
Maximum	8.9
Mean	7.125
Median	7.1
SD	1.151
Variance	1.324
Coefficient of Variation	0.161
Skewness	0.023
Mean of log data	1.951
SD of log data	0.165
90% Standard Bootstrap UCL	**7.53**
95% Standard Bootstrap UCL	**7.66**

Dataset 67

Number of Valid Observations	4
Number of Distinct Observations	4
Minimum	6.5
Maximum	7.2

Dataset 68

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	4.7
Maximum	48
Mean	17.03
Median	15
SD	12.25
Variance	150.1
Coefficient of Variation	0.719
Skewness	1.575
Mean of log data	2.616
SD of log data	0.697
90% Standard Bootstrap UCL	**21.37**
95% Standard Bootstrap UCL	**22.55**

Dataset 69

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	5.5
Maximum	37
Mean	11.42
Median	8.6
SD	8.715
Variance	75.94
Coefficient of Variation	0.763
Skewness	2.671
Mean of log data	2.27
SD of log data	0.538
90% Standard Bootstrap UCL	**14.54**
95% Standard Bootstrap UCL	**15.43**

Dataset 70

Number of Valid Observations	12
Number of Distinct Observations	9
Minimum	2.3
Maximum	19
Mean	11.05
Median	13.5
SD	6.228
Variance	38.79
Coefficient of Variation	0.564
Skewness	-0.477
Mean of log data	2.157
SD of log data	0.833
90% Standard Bootstrap UCL	**13.25**
95% Standard Bootstrap UCL	**13.9**

Dataset 71

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	12
Maximum	23
Mean	16.88
Median	16
SD	3.871
Variance	14.98
Coefficient of Variation	0.229
Skewness	0.402
Mean of log data	2.803
SD of log data	0.229
90% Standard Bootstrap UCL	**18.54**
95% Standard Bootstrap UCL	**19**

Dataset 72-0 (0 to 3)

Number of Valid Observations	22
Number of Distinct Observations	21
Minimum	5
Maximum	250
Mean	57.9
Median	26.5
SD	76.42
Variance	5840
Coefficient of Variation	1.32
Skewness	1.939
Mean of log data	3.428
SD of log data	1.102
90% Standard Bootstrap UCL	**78.22**
95% Standard Bootstrap UCL	**83.9**

Dataset 72-0.5 (0 to 3)

Number of Valid Observations	22
Number of Distinct Observations	20
Minimum	3
Maximum	290
Mean	43.72
Median	17.5
SD	75.93
Variance	5766
Coefficient of Variation	1.737
Skewness	2.771
Mean of log data	2.875
SD of log data	1.3
90% Standard Bootstrap UCL	**63.7**
95% Standard Bootstrap UCL	**69.9**

Dataset 72-1.5 (0 to 3)

Number of Valid Observations	20
Number of Distinct Observations	17
Minimum	1.9
Maximum	170
Mean	14.35
Median	5.2
SD	36.91
Variance	1362
Coefficient of Variation	2.572
Skewness	4.366
Mean of log data	1.729
SD of log data	1.089
90% Standard Bootstrap UCL	**24.47**
95% Standard Bootstrap UCL	**27.6**

Dataset 72-2.5 (0 to 3)

Number of Valid Observations	20
Number of Distinct Observations	18
Minimum	2
Maximum	230
Mean	26.35
Median	7.3
SD	57.76
Variance	3336
Coefficient of Variation	2.192
Skewness	3.094
Mean of log data	2.158
SD of log data	1.291
90% Standard Bootstrap UCL	**42.33**
95% Standard Bootstrap UCL	**46.83**

Dataset 73-0 (0 to 3)

Number of Valid Observations	16
Number of Distinct Observations	14
Minimum	4.7
Maximum	810
Mean	104.3
Median	32
SD	203.5
Variance	41429
Coefficient of Variation	1.951
Skewness	3.17
Mean of log data	3.592
SD of log data	1.383
90% Standard Bootstrap UCL	**167.2**
95% Standard Bootstrap UCL	**186**

Dataset 73-0.5 (0 to 3)

Number of Valid Observations	16
Number of Distinct Observations	16
Minimum	5.2
Maximum	240
Mean	36.66
Median	16.5
SD	59
Variance	3482
Coefficient of Variation	1.61
Skewness	3.138
Mean of log data	2.942
SD of log data	1.064
90% Standard Bootstrap UCL	**54.47**
95% Standard Bootstrap UCL	**60.5**

Dataset 73-1.5 (0 to 3)

Number of Valid Observations	16
Number of Distinct Observations	15
Minimum	4.4
Maximum	240
Mean	24.03
Median	7.1
SD	58.62
Variance	3436
Coefficient of Variation	2.439
Skewness	3.79
Mean of log data	2.232
SD of log data	1.031
90% Standard Bootstrap UCL	**41.75**
95% Standard Bootstrap UCL	**48.3**

Dataset 73-2.5 (0 to 3)

Number of Valid Observations	15
Number of Distinct Observations	15
Minimum	3.9
Maximum	230
Mean	23.85
Median	8
SD	57.23
Variance	3275
Coefficient of Variation	2.399
Skewness	3.828
Mean of log data	2.314
SD of log data	0.989
90% Standard Bootstrap UCL	**42**
95% Standard Bootstrap UCL	**47**

Dataset 73-0 (3 to 6)

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	5.7
Maximum	250
Mean	72.19
Median	32.5
SD	86.25
Variance	7439
Coefficient of Variation	1.195
Skewness	1.257
Mean of log data	3.445
SD of log data	1.462
90% Standard Bootstrap UCL	**106.1**
95% Standard Bootstrap UCL	**115**

Dataset 73-0.5 (3 to 6)

Number of Valid Observations	10
Number of Distinct Observations	9
Minimum	7
Maximum	250
Mean	42.27
Median	20.5
SD	73.99
Variance	5475
Coefficient of Variation	1.75
Skewness	3.006
Mean of log data	3.013
SD of log data	1.109
90% Standard Bootstrap UCL	**70.69**
95% Standard Bootstrap UCL	**78.5**

Dataset 73-1.5 (3 to 6)

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	8.7
Maximum	78
Mean	28.28
Median	18.5
SD	23.01
Variance	529.5
Coefficient of Variation	0.814
Skewness	1.349
Mean of log data	3.069
SD of log data	0.768
90% Standard Bootstrap UCL	**36.94**
95% Standard Bootstrap UCL	**39.9**

Dataset 73-2.5 (3 to 6)

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	5
Maximum	240
Mean	49.69
Median	21
SD	75.21
Variance	5657
Coefficient of Variation	1.514
Skewness	2.236
Mean of log data	3.069
SD of log data	1.315
90% Standard Bootstrap UCL	**78.51**
95% Standard Bootstrap UCL	**87.3**

Dataset 74

Number of Valid Observations	12
Number of Distinct Observations	10
Minimum	4.7
Maximum	71
Mean	25.5
Median	19
SD	21.37
Variance	456.5
Coefficient of Variation	0.839
Skewness	1.246
Mean of log data	2.914
SD of log data	0.86
90% Standard Bootstrap UCL	**33.2**
95% Standard Bootstrap UCL	**35.2**

Dataset 75

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	5.1
Maximum	79
Mean	16.08
Median	6.45
SD	25.52
Variance	651.4
Coefficient of Variation	1.588
Skewness	2.787
Mean of log data	2.224
SD of log data	0.909
90% Standard Bootstrap UCL	**26.7**
95% Standard Bootstrap UCL	**30.3**

Dataset 76-0 (0 to 3)

Number of Valid Observations	16
Number of Distinct Observations	13
Minimum	2.7
Maximum	23
Mean	7.606
Median	4.7
SD	5.678
Variance	32.24
Coefficient of Variation	0.746
Skewness	1.443
Mean of log data	1.794
SD of log data	0.696
90% Standard Bootstrap UCL	**9.384**
95% Standard Bootstrap UCL	**9.86**

Dataset 76-0.5 (0 to 3)

Number of Valid Observations	16
Number of Distinct Observations	14
Minimum	1.8
Maximum	33
Mean	7.813
Median	5.5
SD	8.032
Variance	64.51
Coefficient of Variation	1.028
Skewness	2.335
Mean of log data	1.695
SD of log data	0.838
90% Standard Bootstrap UCL	**10.28**
95% Standard Bootstrap UCL	**11**

Dataset 76-1.5 (0 to 3)

Number of Valid Observations	16
Number of Distinct Observations	15
Minimum	1.9
Maximum	430
Mean	57.54
Median	7.4
SD	109.7
Variance	12024
Coefficient of Variation	1.906
Skewness	2.941
Mean of log data	2.655
SD of log data	1.682
90% Standard Bootstrap UCL	**91.92**
95% Standard Bootstrap UCL	**99.8**

Dataset 76-2.5 (0 to 3)

Number of Valid Observations	16
Number of Distinct Observations	15
Minimum	1.7
Maximum	250
Mean	29.04
Median	7.5
SD	62.17
Variance	3865
Coefficient of Variation	2.141
Skewness	3.43
Mean of log data	2.389
SD of log data	1.202
90% Standard Bootstrap UCL	**48.91**
95% Standard Bootstrap UCL	**53.4**

Dataset 76-0 (3 to 6)

Number of Valid Observations	9
Number of Distinct Observations	8
Minimum	3.6
Maximum	15
Mean	9.678
Median	10
SD	3.829
Variance	14.66
Coefficient of Variation	0.396
Skewness	-0.592
Mean of log data	2.174
SD of log data	0.505
90% Standard Bootstrap UCL	**11.2**
95% Standard Bootstrap UCL	**11.62**

Dataset 76-0.5 (3 to 6)

Number of Valid Observations	9
Number of Distinct Observations	9
Minimum	2.1
Maximum	20
Mean	11.57
Median	9.7
SD	6.343
Variance	40.23
Coefficient of Variation	0.548
Skewness	0.0455
Mean of log data	2.263
SD of log data	0.72
90% Standard Bootstrap UCL	**14.09**
95% Standard Bootstrap UCL	**14.86**

Dataset 76-1.5 (3 to 6)

Number of Valid Observations	9
Number of Distinct Observations	9
Minimum	3.1
Maximum	92
Mean	25.24
Median	8.3
SD	32.56
Variance	1060
Coefficient of Variation	1.29
Skewness	1.624
Mean of log data	2.567
SD of log data	1.175
90% Standard Bootstrap UCL	**38.47**
95% Standard Bootstrap UCL	**42**

Dataset 76-2.5 (3 to 6)

Number of Valid Observations	9
Number of Distinct Observations	8
Minimum	1.5
Maximum	29
Mean	9.411
Median	6
SD	7.981
Variance	63.69
Coefficient of Variation	0.848
Skewness	2.151
Mean of log data	1.971
SD of log data	0.8
90% Standard Bootstrap UCL	**12.7**
95% Standard Bootstrap UCL	**13.5**

Dataset 76-0 (6 to 9)

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	7
Maximum	25
Mean	14.76
Median	15.5
SD	6.568
Variance	43.14
Coefficient of Variation	0.445
Skewness	0.289
Mean of log data	2.596
SD of log data	0.481
90% Standard Bootstrap UCL	**17.6**
95% Standard Bootstrap UCL	**18.4**

Dataset 76-0.5 (6 to 9)

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	5.6
Maximum	95
Mean	25.46
Median	10
SD	30.74
Variance	945.1
Coefficient of Variation	1.207
Skewness	2.028
Mean of log data	2.717
SD of log data	1.039
90% Standard Bootstrap UCL	**38.31**
95% Standard Bootstrap UCL	**42.9**

Dataset 76-1.5 (6 to 9)

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	5.7
Maximum	130
Mean	31.93
Median	13.5
SD	43.55
Variance	1897
Coefficient of Variation	1.364
Skewness	2.068
Mean of log data	2.802
SD of log data	1.166
90% Standard Bootstrap UCL	**49.84**
95% Standard Bootstrap UCL	**56.2**

Dataset 76-2.5 (6 to 9)

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	5.5
Maximum	13
Mean	7.588
Median	7
SD	2.341
Variance	5.481
Coefficient of Variation	0.309
Skewness	2.142
Mean of log data	1.993
SD of log data	0.262
90% Standard Bootstrap UCL	**8.592**
95% Standard Bootstrap UCL	**8.8**

Dataset 76-0 (>9)	
Number of Valid Observations	13
Number of Distinct Observations	10
Minimum	7.7
Maximum	54
Mean	23.84
Median	18
SD	16.35
Variance	267.4
Coefficient of Variation	0.686
Skewness	1.026
Mean of log data	2.968
SD of log data	0.655
90% Standard Bootstrap UCL	**29.37**
95% Standard Bootstrap UCL	**31**

Dataset 76-0.5 (>9)	
Number of Valid Observations	13
Number of Distinct Observations	10
Minimum	4.1
Maximum	99
Mean	32.28
Median	13
SD	33.84
Variance	1145
Coefficient of Variation	1.048
Skewness	1.245
Mean of log data	2.979
SD of log data	1.035
90% Standard Bootstrap UCL	**43.94**
95% Standard Bootstrap UCL	**46.9**

Dataset 76-1.5 (>9)	
Number of Valid Observations	13
Number of Distinct Observations	10
Minimum	5.3
Maximum	150
Mean	20.84
Median	8.3
SD	39.05
Variance	1525
Coefficient of Variation	1.874
Skewness	3.529
Mean of log data	2.439
SD of log data	0.874
90% Standard Bootstrap UCL	**33.84**
95% Standard Bootstrap UCL	**37.6**

Dataset 76-2.5 (>9)	
Number of Valid Observations	13
Number of Distinct Observations	13
Minimum	4.7
Maximum	85
Mean	16.16
Median	6.6
SD	23.51
Variance	552.5
Coefficient of Variation	1.454
Skewness	2.627
Mean of log data	2.27
SD of log data	0.873
90% Standard Bootstrap UCL	**24.23**
95% Standard Bootstrap UCL	**26.2**

Antimony	**NC**

Arsenic	
Number of Valid Observations	508
Number of Distinct Observations	94
Minimum	0.5
Maximum	20
Mean	4.319
Median	3.7
SD	3.186
Variance	10.15
Coefficient of Variation	0.738
Skewness	0.988
Mean of log data	1.092
SD of log data	0.985
95% Standard Bootstrap UCL	**4.552**

Barium	
Number of Valid Observations	508
Number of Distinct Observations	126
Minimum	5.9
Maximum	1000
Mean	111.1
Median	100
SD	90.45
Variance	8182
Coefficient of Variation	0.814
Skewness	3.622
Mean of log data	4.373
SD of log data	0.927
95% Standard Bootstrap UCL	**117.6**

Cadmium	
Number of Valid Observations	508
Number of Distinct Observations	12
Minimum	0.5
Maximum	5
Mean	0.619
Median	0.5
SD	0.459
Variance	0.211
Coefficient of Variation	0.743
Skewness	5.518
Mean of log data	-0.584
SD of log data	0.362
95% Standard Bootstrap UCL	**0.652**

Lead - Site	
Number of Valid Observations	1,693
Number of Distinct Observations	245
Minimum	0.5
Maximum	3100
Mean	71.31
Median	15
SD	200.8
Variance	40334
Coefficient of Variation	2.816
Skewness	8.456
Mean of log data	2.978
SD of log data	1.534
95% Standard Bootstrap UCL	**79.43**

Mercury	
Number of Valid Observations	508
Number of Distinct Observations	98
Minimum	0.05
Maximum	35
Mean	0.654
Median	0.05
SD	2.404
Variance	5.779
Coefficient of Variation	3.676
Skewness	9.746
Mean of log data	-1.989
SD of log data	1.45
95% Standard Bootstrap UCL	**0.826**

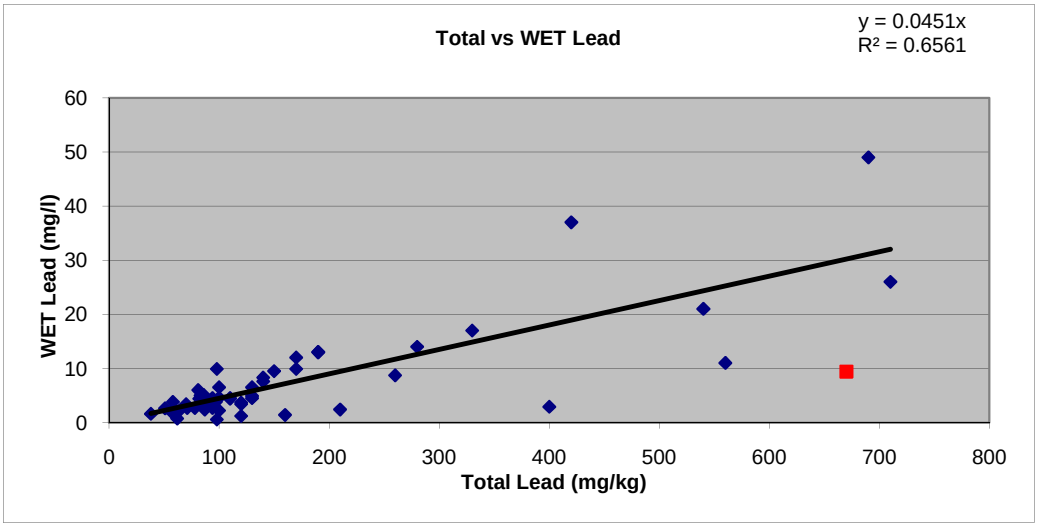
Nickel	
Number of Valid Observations	508
Number of Distinct Observations	93
Minimum	2.5
Maximum	280
Mean	33.76
Median	28
SD	26.59
Variance	707.2
Coefficient of Variation	0.788
Skewness	3.986
Mean of log data	3.307
SD of log data	0.645
95% Standard Bootstrap UCL	**35.65**

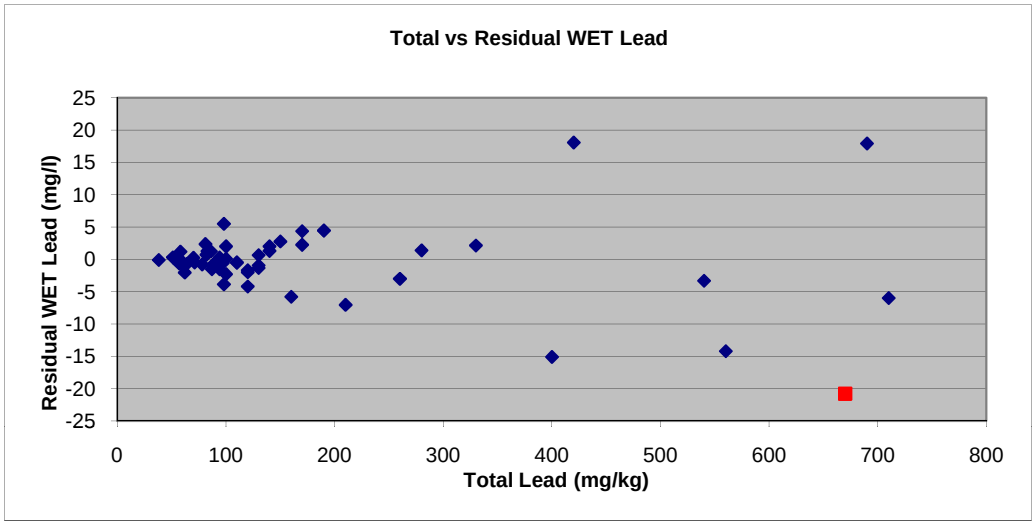
Thallium	**NC**

Vanadium	
Number of Valid Observations	508
Number of Distinct Observations	93
Minimum	4.8
Maximum	220
Mean	52.51
Median	38.5
SD	35.91
Variance	1289
Coefficient of Variation	0.684

Skewness	1.568
Mean of log data	3.775
SD of log data	0.587
95% Standard Bootstrap UCL	**55.2**

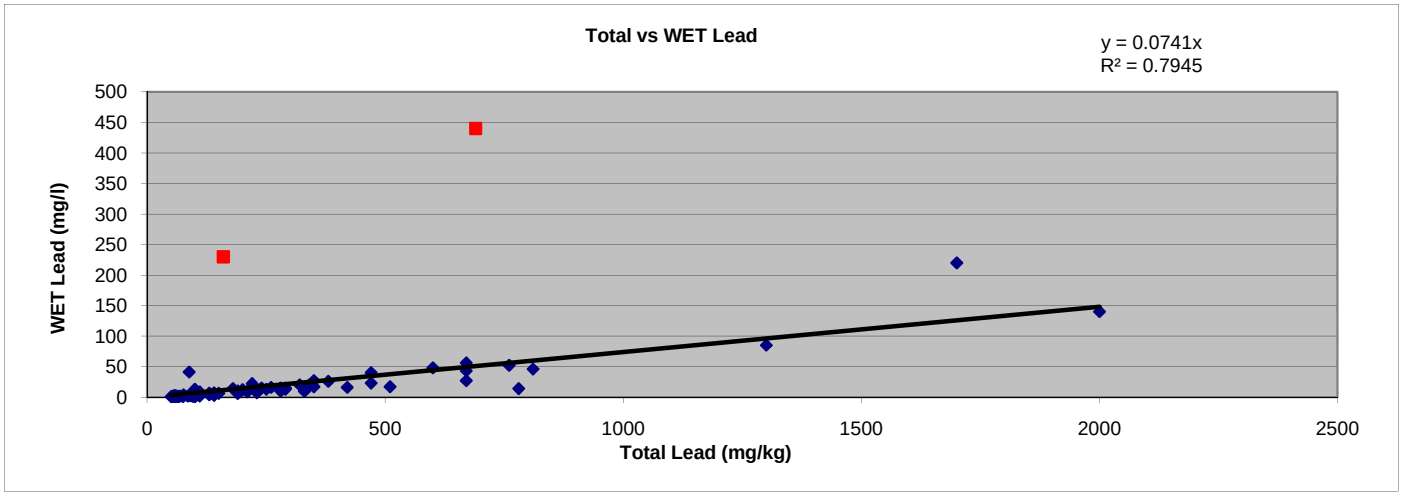
Group	Dataset	Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
W-R37	5	W-R37-P4	0	100	4.6	0.09	0.01
W-R37	5	W-R37-R4	2.5	38	1.6	-0.11	0.01
W-R37	5	W-R37-M4	1.5	70	3.4	0.25	0.06
W-R37	5	W-R37-N3	0.5	59	2.4	-0.26	0.07
W-R37	5	W-R37-L1	0	94	4.5	0.26	0.07
W-R37	5	W-R37-N3	1.5	51	2.6	0.30	0.09
W-R37	8	W-R37-GL2	0	110	4.5	-0.46	0.21
W-R37	5	W-R37-U4	0.5	59	2.2	-0.46	0.21
W-R37	5	W-R37-L4	0.5	71	2.7	-0.50	0.25
W-R37	5	W-R37-P4	1.5	110	4.4	-0.56	0.31
W-R37	5	W-R37-M4	0	97	3.8	-0.57	0.33
W-R37	8	W-R37-GL2	2.5	130	6.5	0.64	0.41
W-R37	5	W-R37-P3	2.5	57	1.9	-0.67	0.45
W-R37	5	W-R37-Q4	0	64	2.2	-0.68	0.47
W-R37	5	W-R37-M4	2.5	82	4.4	0.70	0.50
W-R37	5	W-R37-M4	0.5	89	3.3	-0.71	0.51
W-R37	5	W-R37-O2	1.5	60	1.9	-0.80	0.65
W-R37	5	W-R37-Q2	0.5	78	2.7	-0.81	0.66
W-R37	5	W-R37-K3	0.5	88	3.1	-0.87	0.75
W-R37	5	W-R37-P1	0	130	4.9	-0.96	0.92
W-R37	5	W-R37-R2	0	58	3.8	1.19	1.41
W-R37	5	W-R37-N2	0.5	86	5.1	1.22	1.50
W-R37	8	W-R37-HL2	0	83	5.0	1.26	1.59
W-R37	5	W-R37-O4	0.5	140	7.6	1.29	1.67
W-R37	5	W-R37-K4	1.5	130	4.5	-1.36	1.84
W-R37	5	W-R37-N2	2.5	280	14	1.38	1.91
W-R37	5	W-R37-M3	1.5	87	2.4	-1.52	2.31
W-R37	5	W-R37-N3	0	94	2.7	-1.54	2.36
W-R37	5	W-R37-O1	0	120	3.7	-1.71	2.92
W-R37	5	W-R37-L3	1.5	140	8.3	1.99	3.96
W-R37	8	W-R37-GL1	0	100	6.5	1.99	3.97
W-R37	5	W-R37-U2	1.5	120	3.4	-2.01	4.03
W-R37	5	W-R37-O4	0	62	0.74	-2.05	4.22
W-R37	5	W-R37-S1	0	330	17	2.13	4.53
W-R37	5	W-R37-R1	0	170	9.9	2.24	5.01
W-R37	5	W-R37-M2	1.5	100	2.2	-2.31	5.32
W-R37	5	W-R37-L2	1.5	81	6.0	2.35	5.52
W-R37	5	W-R37-O3	1.5	150	9.5	2.74	7.51
W-R37	8	W-R37-JL1	0	260	8.7	-3.02	9.10
W-R37	5	W-R37-O2	2.5	540	21	-3.33	11.12
W-R37	5	W-R37-R3	2.5	98	0.54	-3.88	15.03
W-R37	5	W-R37-T4	0.5	120	1.2	-4.21	17.70
W-R37	5	W-R37-N3	2.5	170	12	4.34	18.83
W-R37	5	W-R37-O2	0	190	13	4.44	19.70
W-R37	5	W-R37-O3	0	190	13	4.44	19.70
W-R37	5	W-R37-T1	0	98	9.9	5.48	30.07
W-R37	5	W-R37-L4	2.5	160	1.4	-5.81	33.76
W-R37	5	W-R37-Q1	0	710	26	-6.00	35.94
W-R37	5	W-R37-L3	2.5	210	2.4	-7.06	49.89
W-R37	8	W-R37-IL2	0	560	11	-14.24	202.65
W-R37	5	W-R37-P2	0	400	2.9	-15.13	228.78
W-R37	5	W-R37-N2	0	690	49	17.91	320.63
W-R37	5	W-R37-N1	0	420	37	18.07	326.65
Not Used							
W-R37	5	W-R37-M2	0	670	9.4	-20.79	432.33

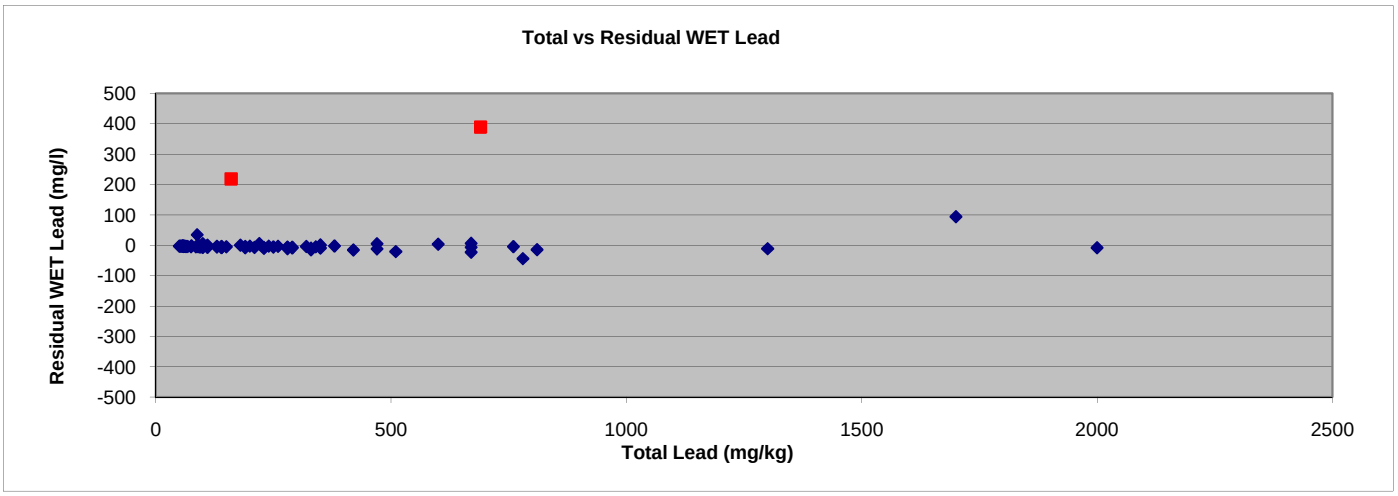

Total vs WET Lead
y = 0.0451x
R² = 0.6561
WET Lead (mg/l)
Total Lead (mg/kg)
0
10
20
30
40
50
60
0
100
200
300
400
500
600
700
800


Total vs Residual WET Lead
Residual WET Lead (mg/l)
Total Lead (mg/kg)
25
20
15
10
5
0
-5
-10
-15
-20
-25
0
100
200
300
400
500
600
700
800

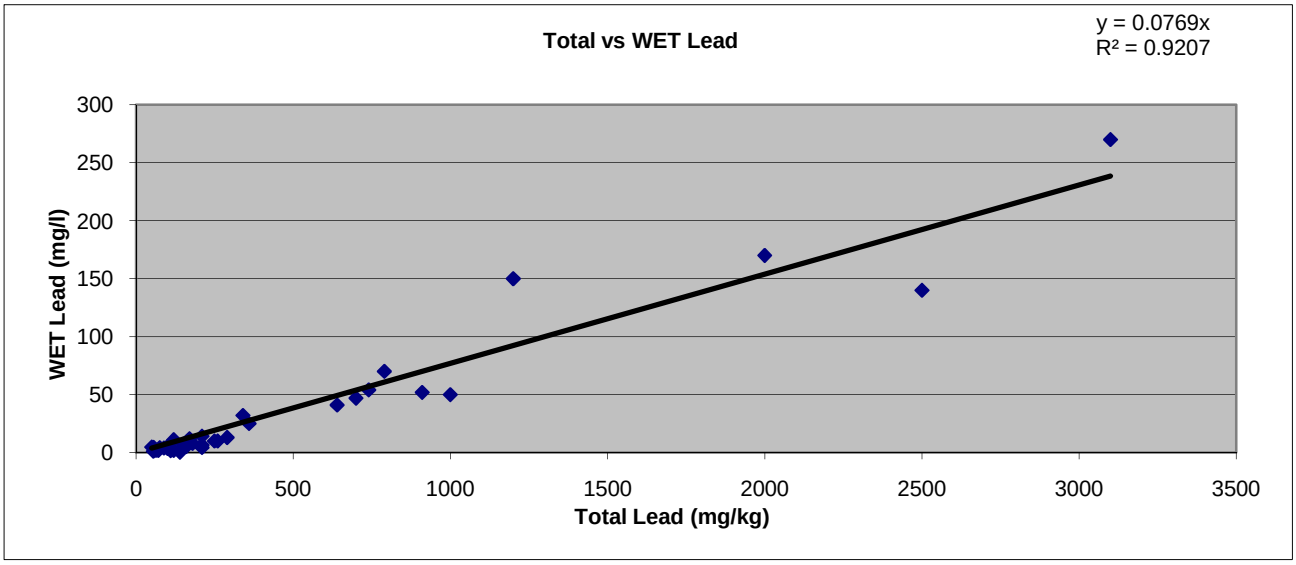
Group	Dataset	Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
W-ALAM	55	W-ALAM-S2	0	110	8.3	0.14	0.02
W-ALAM	55	W-ALAM-I2	0	180	14	0.65	0.43
W-ALAM	55	W-ALAM-K2	0	350	27	1.05	1.11
W-ALAM	55	W-ALAM-G1	0	93	5.5	-1.39	1.95
W-ALAM	55	W-ALAM-B1	0.5	76	4.0	-1.63	2.67
W-ALAM	55	W-ALAM-F1	0	100	5.4	-2.01	4.06
W-ALAM	55	W-ALAM-D2	1.5	57	2.1	-2.13	4.52
W-ALAM	55	W-ALAM-L3	0	380	26	-2.17	4.72
W-ALAM	55	W-ALAM-R1	2.5	59	2.2	-2.17	4.73
W-ALAM	55	W-ALAM-S3	0.5	54	1.5	-2.50	6.27
W-ALAM	55	W-ALAM-H3	0.5	58	1.7	-2.60	6.76
W-ALAM	55	W-ALAM-E2	0.5	52	1.2	-2.66	7.05
W-ALAM	55	W-ALAM-F3	0.5	62	1.9	-2.70	7.27
W-ALAM	55	W-ALAM-T3	0.5	91	4.0	-2.75	7.54
W-ALAM	55	W-ALAM-C3	0	240	15	-2.79	7.80
W-ALAM	55	W-ALAM-E1	0	200	12	-2.83	8.00
W-ALAM	55	W-ALAM-D3	0.5	50	0.76	-2.95	8.68
W-ALAM	55	W-ALAM-C2	0.5	56	1.1	-3.05	9.31
W-ALAM	55	W-ALAM-I2	0.5	110	4.9	-3.26	10.60
W-ALAM	55	W-ALAM-F2	1.5	98	4.0	-3.27	10.66
W-ALAM	55	W-ALAM-F3	0	260	16	-3.28	10.73
W-ALAM	55	W-ALAM-J2	0.5	60	1.1	-3.35	11.21
W-ALAM	55	W-ALAM-A1	0.5	130	6.2	-3.44	11.82
W-ALAM	55	W-ALAM-H2	0	140	6.9	-3.48	12.11
W-ALAM	55	W-ALAM-M3	0	600	48	3.52	12.37
W-ALAM	55	W-ALAM-G2	1.5	68	1.5	-3.54	12.54
W-ALAM	55	W-ALAM-M3	0.5	63	1.1	-3.57	12.75
W-ALAM	55	W-ALAM-C3	0.5	59	0.76	-3.61	13.06
W-ALAM	55	W-ALAM-H3	0	320	20	-3.72	13.87
W-ALAM	55	W-ALAM-C2	1.5	65	0.92	-3.90	15.20
W-ALAM	55	W-ALAM-G3	0	190	10	-4.09	16.70
W-ALAM	55	W-ALAM-T3	0	760	52	-4.35	18.89
W-ALAM	55	W-ALAM-F1	0.5	88	2.1	-4.42	19.57
W-ALAM	55	W-ALAM-M2	0.5	93	2.4	-4.49	20.20
W-ALAM	55	W-ALAM-G3	0.5	85	1.6	-4.70	22.11
W-ALAM	55	W-ALAM-G1	0.5	92	2.1	-4.72	22.29
W-ALAM	55	W-ALAM-H2	0.5	75	0.64	-4.92	24.21
W-ALAM	55	W-ALAM-T2	0.5	150	6.2	-4.92	24.22
W-ALAM	55	W-ALAM-H1	0	110	3.2	-4.96	24.56
W-ALAM	55	W-ALAM-R1	0.5	470	40	5.15	26.57
W-ALAM	55	W-ALAM-B2	0	340	20	-5.21	27.12
W-ALAM	55	W-ALAM-G2	0.5	100	2.2	-5.21	27.18
W-ALAM	55	W-ALAM-S2	0.5	140	5.1	-5.28	27.87
W-ALAM	55	W-ALAM-D1	0	250	13	-5.53	30.63
W-ALAM	55	W-ALAM-G2	0	100	13	5.59	31.20
W-ALAM	55	W-ALAM-B2	0.5	96	1.5	-5.62	31.55
W-ALAM	55	W-ALAM-L4	0	130	4.0	-5.64	31.79
W-ALAM	55	W-ALAM-T1	0.5	220	22	5.69	32.37
W-ALAM	55	W-ALAM-B1	0	280	15	-5.76	33.17
W-ALAM	55	W-ALAM-K3	0	140	4.5	-5.88	34.57
W-ALAM	55	W-ALAM-J2	1.5	100	1.4	-6.01	36.17
W-ALAM	55	W-ALAM-S3	0	670	56	6.33	40.03
W-ALAM	55	W-ALAM-I1	0	290	15	-6.50	42.25
W-ALAM	55	W-ALAM-O1	0.5	110	1.6	-6.56	42.97
W-ALAM	55	W-ALAM-N2	0	670	43	-6.67	44.53
W-ALAM	55	W-ALAM-L2	0.5	100	0.66	-6.75	45.62
W-ALAM	55	W-ALAM-N1	0	210	8.8	-6.77	45.82
W-ALAM	55	W-ALAM-E3	0	230	10	-7.05	49.73
W-ALAM	55	W-ALAM-C1	1.5	140	3.0	-7.38	54.46
W-ALAM	55	W-ALAM-I1	0.5	280	13	-7.76	60.20
W-ALAM	55	W-ALAM-B1	1.5	190	6.1	-7.99	63.78
W-ALAM	55	W-ALAM-T2	0	2,000	140	-8.28	68.53
W-ALAM	55	W-ALAM-D2	0	290	13	-8.50	72.26
W-ALAM	55	W-ALAM-C2	0	350	17	-8.95	80.08
W-ALAM	55	W-ALAM-D3	0	330	15	-9.47	89.60
W-ALAM	55	W-ALAM-L2	0	230	7.2	-9.85	97.06
W-ALAM	55	W-ALAM-E1	0.5	280	10	-10.76	115.76
W-ALAM	55	W-ALAM-P1	0.5	1,300	85	-11.38	129.53

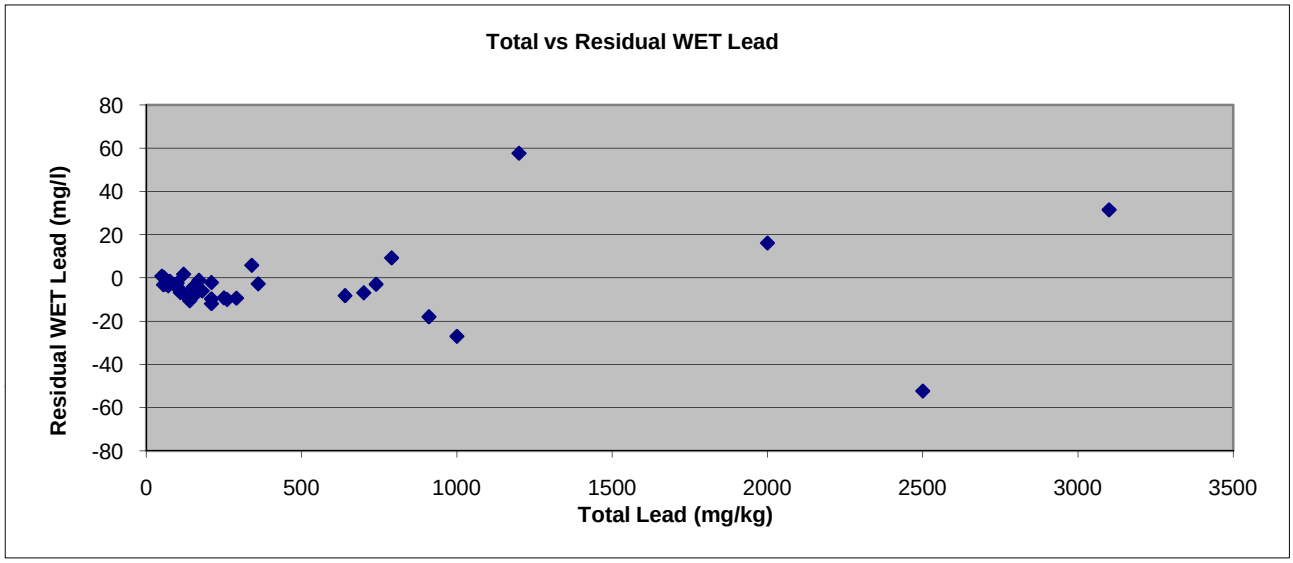
W-ALAM	55	W-ALAM-C1	0	470	23	-11.85	140.31
W-ALAM	55	W-ALAM-O2	0	810	46	-14.05	197.48
W-ALAM	55	W-ALAM-A1	0	330	9.7	-14.77	218.03
W-ALAM	55	W-ALAM-E2	0	420	16	-15.14	229.17
W-ALAM	55	W-ALAM-B3	0	510	17	-20.81	433.10
W-ALAM	55	W-ALAM-J2	0	670	27	-22.67	514.08
W-ALAM	55	W-ALAM-O1	0	88	41	34.48	1188.58
W-ALAM	55	W-ALAM-Q1	0.5	780	14	-43.83	1920.95
W-ALAM	55	W-ALAM-T1	0	1,700	220	93.96	8829.10
Not Used							
W-ALAM	55	W-ALAM-F2	0	160	230	218.14	47584.07
W-ALAM	55	W-ALAM-M2	0	690	440	388.84	151199.60



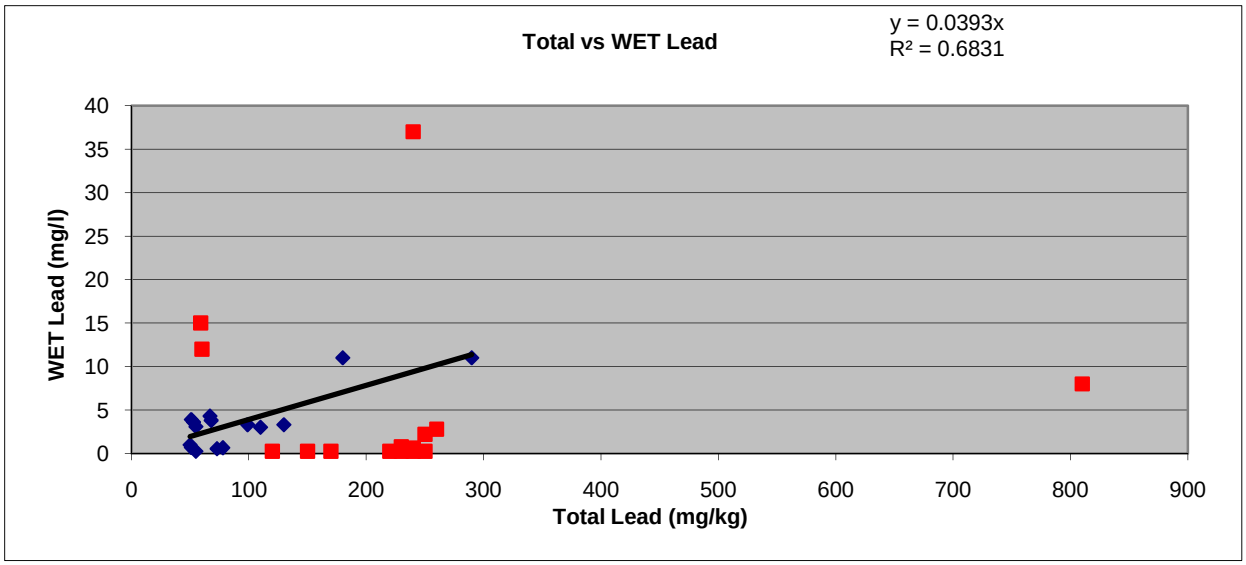


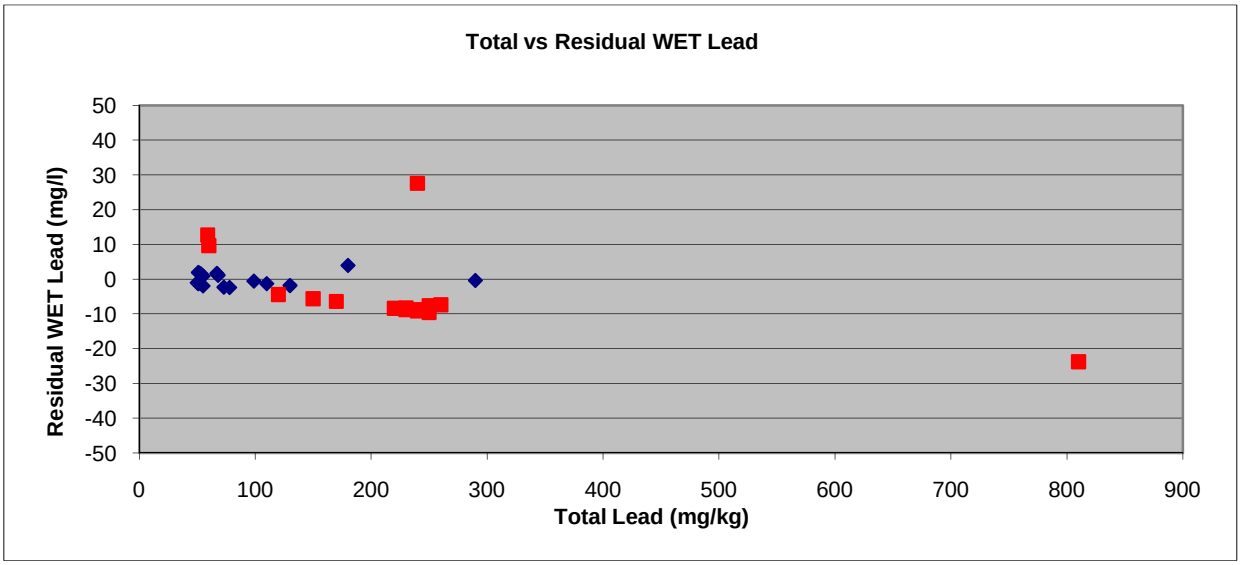
Group	Dataset	Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
E-CLIF	65	E-CLIF-H1	0.5	56	4.5	0.19	0.04
E-CLIF	65	E-CLIF-K2	0	50	4.7	0.85	0.73
E-CLIF	65	E-CLIF-T1	2.5	170	12	-1.08	1.16
E-CLIF	65	E-CLIF-J2	1.5	76	4.3	-1.55	2.39
E-CLIF	65	E-CLIF-S1	2.5	120	11	1.77	3.13
E-CLIF	65	E-CLIF-P1	0.5	210	14	-2.15	4.64
E-CLIF	65	E-CLIF-J1	0.5	100	5.3	-2.39	5.72
E-CLIF	65	E-CLIF-O1	0.5	360	25	-2.69	7.25
E-CLIF	65	E-CLIF-Q1	0	740	54	-2.92	8.54
E-CLIF	65	E-CLIF-G2	0	64	2.0	-2.92	8.54
E-CLIF	65	E-CLIF-G3	0.5	89	3.8	-3.05	9.28
E-CLIF	65	E-CLIF-I2	0.5	55	1.1	-3.13	9.80
E-CLIF	65	E-CLIF-H2	0.5	71	1.8	-3.66	13.41
E-CLIF	65	E-CLIF-S1	0.5	100	3.5	-4.19	17.57
E-CLIF	65	E-CLIF-J2	0.5	150	7.2	-4.34	18.82
E-CLIF	65	E-CLIF-T1	0.5	340	32	5.85	34.18
E-CLIF	65	E-CLIF-H3	0	180	7.9	-5.95	35.35
E-CLIF	65	E-CLIF-I2	0	110	1.7	-6.76	45.72
E-CLIF	65	E-CLIF-M1	0	700	47	-6.85	46.86
E-CLIF	65	E-CLIF-E5	0.5	160	5.2	-7.11	50.52
E-CLIF	65	E-CLIF-E4	0.5	120	1.9	-7.33	53.74
E-CLIF	65	E-CLIF-N1	0	640	41	-8.23	67.73
E-CLIF	65	E-CLIF-P1	1.5	140	1.9	-8.87	78.66
E-CLIF	65	E-CLIF-T1	1.5	250	10	-9.23	85.20
E-CLIF	65	E-CLIF-O1	0	790	70	9.23	85.23
E-CLIF	65	E-CLIF-R1	0.5	290	13	-9.31	86.63
E-CLIF	65	E-CLIF-H3	0.5	210	6.5	-9.65	93.19
E-CLIF	65	E-CLIF-L1	0	260	10	-10.00	99.99
E-CLIF	65	E-CLIF-Q1	2.5	140	0.25	-10.52	110.65
E-CLIF	65	E-CLIF-G3	0	210	4.3	-11.85	140.51
E-CLIF	65	E-CLIF-R1	0	2,000	170	16.16	261.03
E-CLIF	65	E-CLIF-Q1	0.5	910	52	-18.00	323.96
E-CLIF	65	E-CLIF-Q1	1.5	1,000	50	-26.92	724.78
E-CLIF	65	E-CLIF-T1	0	3,100	270	31.54	994.92
E-CLIF	65	E-CLIF-P1	0	2,500	140	-52.30	2735.77
E-CLIF	65	E-CLIF-S1	0	1,200	150	57.69	3328.58


Total vs WET Lead
y = 0.0769x
R² = 0.9207
WET Lead (mg/l)
300
250
200
150
100
50
0
0
500
1000
1500
2000
2500
3000
3500
Total Lead (mg/kg)

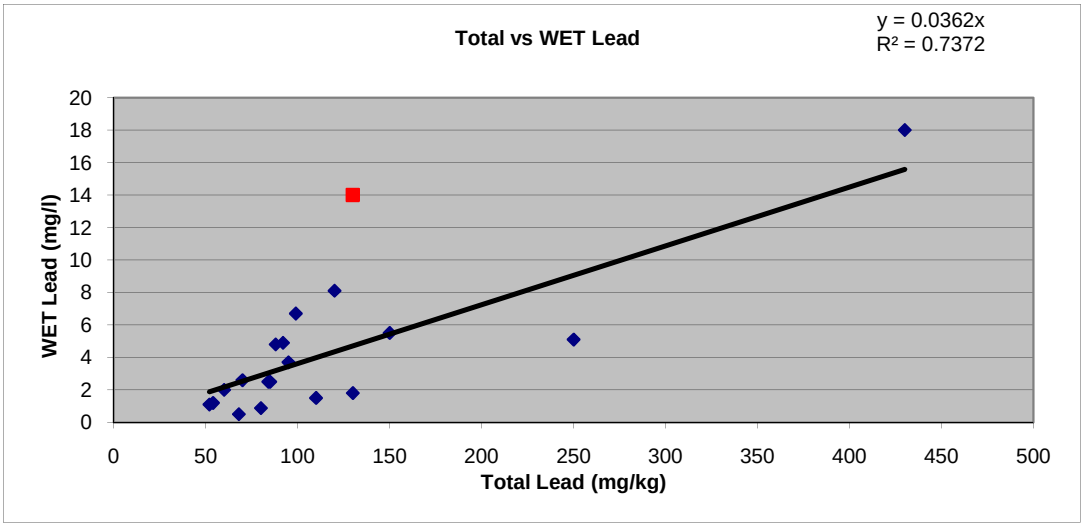

Total vs Residual WET Lead
Residual WET Lead (mg/l)
80
60
40
20
0
-20
-40
-60
-80
0
500
1000
1500
2000
2500
3000
3500
Total Lead (mg/kg)

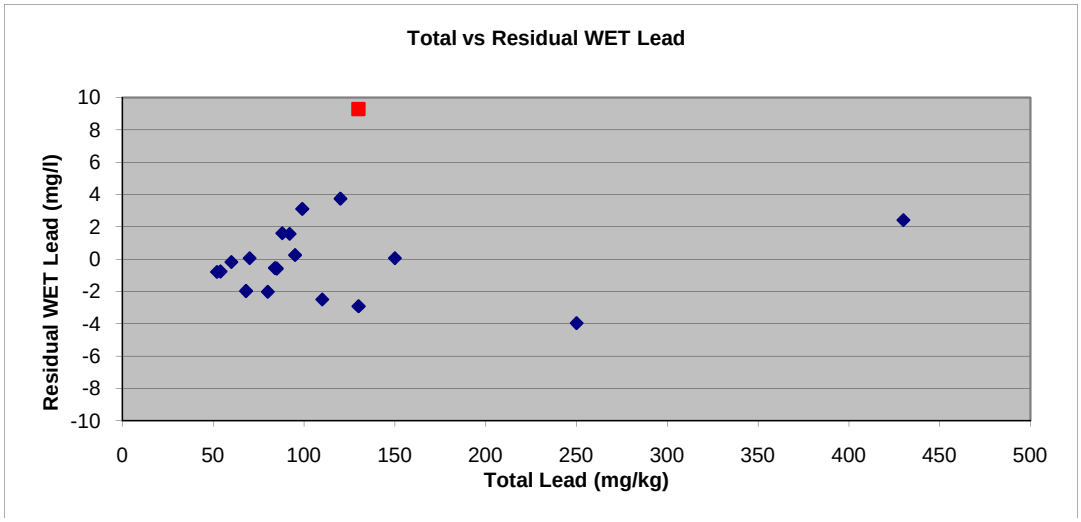
Group	Dataset	Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
W-505	72	W-505-TL1	0.5	290	11	-0.38	0.15
W-505	73	W-505-C1	0.5	99	3.3	-0.59	0.34
W-505	73	W-505-C1	0	55	3.1	0.94	0.89
W-505	73	W-505-Q1	1.5	50	0.98	-0.98	0.97
W-505	73	W-505-B2	0	68	3.8	1.13	1.28
W-505	72	W-505-WL1	0	51	0.69	-1.31	1.72
W-505	72	W-505-VL1	0	110	3.0	-1.32	1.74
W-505	72	W-505-SL1	0	53	3.6	1.52	2.31
W-505	73	W-505-D1	0	67	4.3	1.67	2.79
W-505	73	W-505-A1	0	130	3.3	-1.80	3.25
W-505	72	W-505-QL1	0.5	51	3.9	1.90	3.60
W-505	73	W-505-H2	1.5	55	0.25	-1.91	3.64
W-505	72	W-505-VL1	0.5	73	0.55	-2.32	5.36
W-505	73	W-505-D2	1.5	78	0.67	-2.39	5.72
W-505	73	W-505-C2	0	180	11	3.93	15.47
Not Used							
W-505	73	W-505-F2	2.5	120	0.25	-4.46	19.90
W-505	72	W-505-DL1	2.5	150	0.25	-5.64	31.79
W-505	72	W-505-GL1	1.5	170	0.25	-6.42	41.27
W-505	73	W-505-I1	0	260	2.8	-7.41	54.86
W-505	73	W-505-H2	0	250	2.2	-7.61	57.98
W-505	73	W-505-D1	2.5	230	0.79	-8.24	67.89
W-505	72	W-505-EL1	0	220	0.25	-8.39	70.34
W-505	72	W-505-EL1	2.5	230	0.25	-8.78	77.08
W-505	73	W-505-E1	0	240	0.63	-8.79	77.30
W-505	73	W-505-E1	0.5	240	0.54	-8.88	78.89
W-505	73	W-505-F1	1.5	240	0.25	-9.17	84.12
W-505	73	W-505-G2	2.5	240	0.25	-9.17	84.12
W-505	72	W-505-FL1	0	250	0.25	-9.56	91.48
W-505	72	W-505-FL1	0.5	250	0.25	-9.56	91.48
W-505	73	W-505-H2	0.5	250	0.25	-9.56	91.48
W-505	72	W-505-SL1	0.5	60	12	9.64	93.02
W-505	72	W-505-RL1	0	59	15	12.68	160.88
W-505	73	W-505-K1	0	810	8.0	-23.80	566.39
W-505	72	W-505-TL1	0	240	37	27.58	760.55




Total vs Residual WET Lead
Residual WET Lead (mg/l)
50
40
30
20
10
0
-10
-20
-30
-40
-50
0
100
200
300
400
500
600
700
800
900
Total Lead (mg/kg)

Group	Dataset	Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
E-NUT	76	E-NUT-M2	1.5	70	2.6	0.06	0.00
E-NUT	76	E-NUT-M4	1.5	150	5.5	0.06	0.00
E-NUT	76	E-NUT-L3	1.5	60	2.0	-0.17	0.03
E-NUT	76	E-NUT-M3	0.5	95	3.7	0.26	0.07
E-NUT	76	E-NUT-K1	2.5	84	2.5	-0.54	0.30
E-NUT	76	E-NUT-M4	2.5	85	2.5	-0.58	0.34
E-NUT	76	E-NUT-J4	0	54	1.2	-0.76	0.57
E-NUT	76	E-NUT-J5	0	52	1.1	-0.78	0.61
E-NUT	76	E-NUT-K2	1.5	92	4.9	1.57	2.45
E-NUT	76	E-NUT-K4	0.5	88	4.8	1.61	2.60
E-NUT	76	E-NUT-I1	1.5	68	0.50	-1.96	3.86
E-NUT	76	E-NUT-K5	0.5	80	0.88	-2.02	4.08
E-NUT	76	E-NUT-O1	1.5	430	18	2.42	5.85
E-NUT	76	E-NUT-K1	1.5	110	1.5	-2.49	6.18
E-NUT	76	E-NUT-L1	1.5	130	1.8	-2.91	8.47
E-NUT	76	E-NUT-M4	0.5	99	6.7	3.11	9.69
E-NUT	76	E-NUT-N1	1.5	120	8.1	3.75	14.08
E-NUT	76	E-NUT-P1	2.5	250	5.1	-3.96	15.67
Not Used							
E-NUT	76	E-NUT-N2	1.5	130	14	9.29	86.30



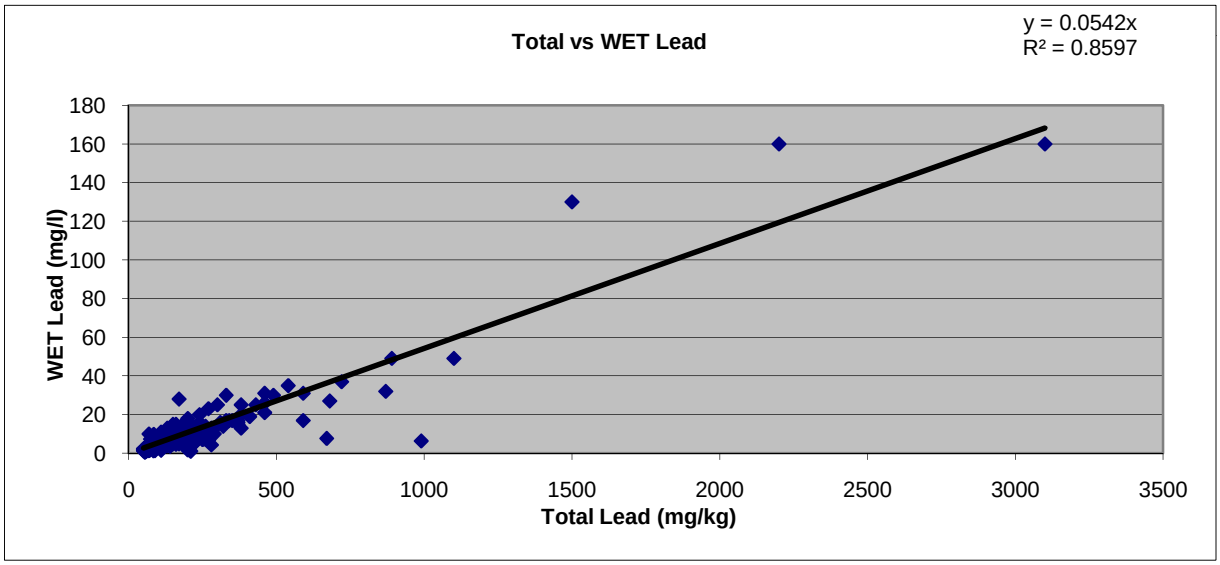


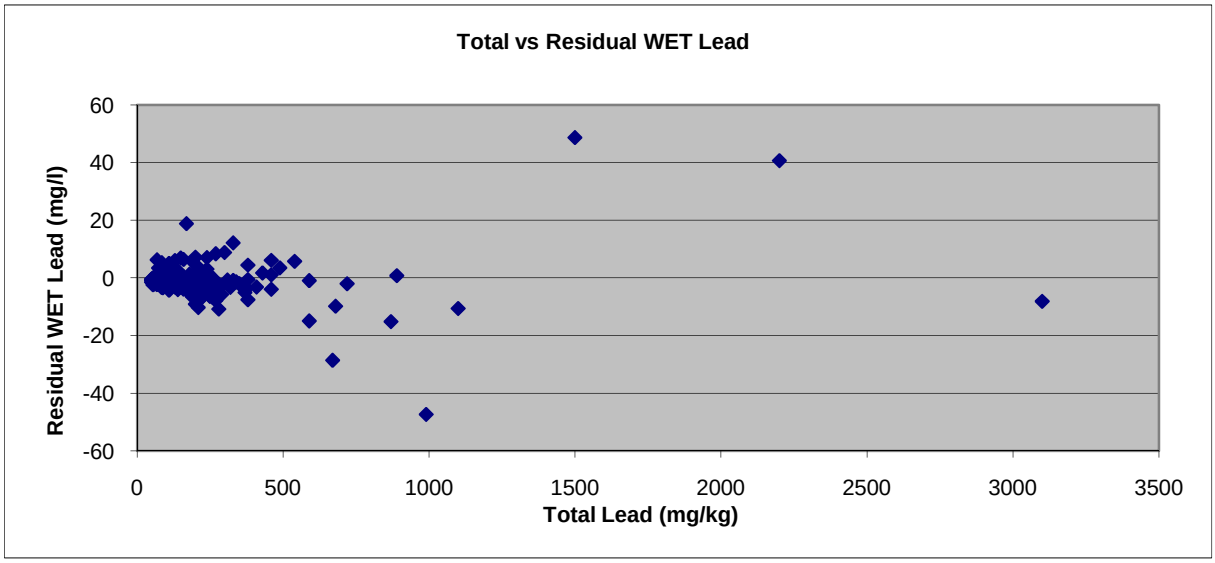
Group	Dataset	Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
E	60	E-MV27A-06	0	74	4.0	-0.01	0.00
E	38	E-MV16-02	0	63	3.4	-0.02	0.00
E	22	E-CM2	1.5	160	8.7	0.02	0.00
E	1	E-MV1-TEN-04	0.5	73	4.0	0.04	0.00
E	21	E-CC9-01	0	100	5.5	0.08	0.01
E	39	E-MV17-03	0.5	63	3.5	0.08	0.01
W	24	W-MV9-05	0	70	3.9	0.10	0.01
W	45	W-MV20-04	0	260	14	-0.10	0.01
W	13	W-MV4-01	0.5	140	7.7	0.11	0.01
W	45	W-MV20-03	0	200	11	0.15	0.02
W	4	W-MV2-RED-05	0.5	67	3.4	-0.23	0.06
E	27	E-CM3	0	84	4.3	-0.26	0.07
E	58	E-MV26B-06	0	110	5.7	-0.27	0.07
E	2	E-CC1-TEN	3.5	160	9.0	0.32	0.10
W	18	W-MV7A-05	0.5	100	5.1	-0.32	0.11
W	16	W-CM1-01	0.5	65	3.2	-0.33	0.11
W	16	W-CM1-01	0	64	3.8	0.33	0.11
E	47	E-CC22-01	0	50	2.3	-0.41	0.17
E	60	E-MV27A-04	0	100	5.0	-0.42	0.18
E	60	E-MV27A-04	0.5	64	3.9	0.43	0.18
E	2	E-CC1-TEN	0.5	250	14	0.44	0.19
W	44	W-CC21-01	2	71	3.4	-0.45	0.20
W	13	W-MV4-01	0	82	4.9	0.45	0.20
W	45	W-MV20-01	0.5	67	4.1	0.47	0.22
E	10	E-MV3B-04	0.5	51	2.3	-0.47	0.22
W	56	W-MV26A-02	0.5	89	5.3	0.47	0.22
W	4	W-MV2-RED-03	0.5	79	3.8	-0.49	0.24
W	45	W-MV20-02	0.5	120	7.0	0.49	0.24
E	17	E-MV5-AME-05	0.5	94	4.6	-0.50	0.25
W	15	W-MV6-AME-01	0	140	8.1	0.51	0.26
E	34	E-MV15-02	0	190	9.8	-0.51	0.26
W	49	W-MV24-05	0	63	2.9	-0.52	0.27
W	19	W-CC7-01	0	52	2.3	-0.52	0.27
W	15	W-MV6-AME-05	0.5	100	4.9	-0.52	0.28
W	4	W-MV2-RED-02	0	61	2.7	-0.61	0.37
W	15	W-MV6-AME-02	0	380	20	-0.61	0.38
E	37	E-CC17-01	0	110	6.6	0.63	0.40
W	4	W-MV2-RED-06	0.5	56	2.4	-0.64	0.41
W	56	W-MV26A-01	0.5	93	4.4	-0.65	0.42
E	33	E-MV14-05	0	71	3.2	-0.65	0.42
W	36	W-CC16-01	0	53	2.2	-0.68	0.46
W	51	W-MV23-06	0	190	11	0.69	0.48
E	75	E-CC30-01	0	79	5.0	0.71	0.51
W	46	W-MV21-03	0	890	49	0.72	0.52
E	39	E-MV17-03	0	65	2.8	-0.73	0.53
E	11	E-MV3A-04	0.5	54	2.2	-0.73	0.53
E	58	E-MV26B-05	0	84	5.3	0.74	0.55
E	58	E-MV26B-02	0	130	7.8	0.75	0.56
E	26	E-MV11-04	0	75	3.3	-0.77	0.59
E	17	E-MV5-AME-06	0	53	2.1	-0.78	0.60
E	52	E-MV22-02	0.5	310	16	-0.82	0.67
E	60	E-MV27A-05	0	76	3.3	-0.82	0.68
E	26	E-MV11-05	0	64	4.3	0.83	0.69
W	14	W-CC6-01	0	69	2.9	-0.84	0.71
W	45	W-MV20-06	0.5	130	6.2	-0.85	0.73
W	45	W-MV20-06	0	150	9.0	0.86	0.74
W	4	W-MV2-RED-05	0	51	1.9	-0.87	0.75
W	46	W-MV21-06	0.5	68	2.8	-0.89	0.79

W	56	W-MV26A-06	0	330	17	-0.90	0.81
W	4	W-MV2-RED-01	0	61	2.4	-0.91	0.83
W	4	W-MV2-RED-04	0	63	2.5	-0.92	0.84
E	58	E-MV26B-01	0	200	9.9	-0.95	0.90
E	17	E-MV5-AME-06	0.5	64	2.5	-0.97	0.94
W	23	W-CC10-01	0.5	77	3.2	-0.98	0.95
W	13	W-MV4-06	0	240	14	0.98	0.96
E	25	E-CC11-01	0	140	6.6	-0.99	0.99
E	34	E-MV15-05	0	590	31	-1.01	1.01
E	17	E-MV5-AME-03	0	50	1.7	-1.01	1.02
E	41	E-CC19-01	0	240	12	-1.02	1.04
E	11	E-MV3A-06	0.5	56	2.0	-1.04	1.08
E	52	E-MV22-05	0	93	4.0	-1.05	1.09
W	15	W-MV6-AME-02	0.5	460	26	1.05	1.09
W	4	W-MV2-RED-03	0	53	1.8	-1.08	1.16
W	51	W-MV23-05	0	79	3.2	-1.09	1.18
W	15	W-MV6-AME-04	0.5	57	2.0	-1.09	1.19
E	59	E-CC26-01	0	140	6.5	-1.09	1.20
W	43	W-MV19A-TEX-04	0.5	52	1.7	-1.12	1.26
W	13	W-MV4-02	0.5	130	5.9	-1.15	1.33
W	46	W-MV21-01	0	97	4.1	-1.16	1.35
W	14	W-CC6-01	0.5	55	1.8	-1.18	1.40
W	51	W-MV23-03	0.5	140	6.4	-1.19	1.43
W	15	W-MV6-AME-01	0.5	190	9.1	-1.21	1.46
W	50	W-CC23-01	0	100	4.2	-1.22	1.50
W	43	W-MV19A-TEX-05	0	180	11	1.24	1.53
W	4	W-MV2-RED-01	0.5	55	1.7	-1.28	1.65
E	1	E-MV1-TEN-03	0.5	74	5.3	1.29	1.65
W	9	W-MV3C-LOOP-03	0	95	3.8	-1.35	1.83
W	46	W-MV21-02	0	79	2.9	-1.39	1.92
W	24	W-MV9-02	0	210	10	-1.39	1.94
W	51	W-MV23-03	0	210	10	-1.39	1.94
W	9	W-MV3C-LOOP-04	0	59	1.8	-1.40	1.96
E	1	E-MV1-TEN-06	0	340	17	-1.44	2.09
E	37	E-CC17-01	0.5	71	2.4	-1.45	2.11
W	54	W-MV25-06	0	180	8.3	-1.46	2.15
E	39	E-MV17-02	0.5	64	2.0	-1.47	2.17
W	18	W-MV7A-06	0	79	2.8	-1.49	2.21
E	6	E-MV3-03	0.5	140	6.1	-1.49	2.23
E	26	E-MV11-03	0.5	50	1.2	-1.51	2.29
E	26	E-MV11-06	0	52	1.3	-1.52	2.31
W	49	W-MV24-02	0.5	52	1.3	-1.52	2.31
E	61	E-MV28-05	0	67	2.1	-1.53	2.36
E	34	E-MV15-03	0.5	60	1.7	-1.55	2.42
W	43	W-MV19A-TEX-04	0	81	6.0	1.61	2.58
W	24	W-MV9-06	0	61	1.7	-1.61	2.59
E	38	E-MV16-03	0.5	85	3.0	-1.61	2.60
W	57	W-CC25-01	0	170	7.6	-1.62	2.63
E	74	E-MV32-02	0	60	1.6	-1.65	2.74
W	46	W-MV21-06	0	180	8.1	-1.66	2.77
E	6	E-MV3-04	0	430	25	1.67	2.80
E	25	E-CC11-01	0.5	55	1.3	-1.68	2.83
E	10	E-MV3B-05	0	81	2.7	-1.69	2.87
W	49	W-MV24-05	0.5	120	4.8	-1.71	2.92
W	64	W-MV28A-05	0.5	150	6.4	-1.74	3.02
W	49	W-MV24-03	0.5	56	1.3	-1.74	3.02
W	51	W-MV23-06	0.5	150	6.3	-1.84	3.38
E	26	E-MV11-01	0.5	86	2.8	-1.87	3.48
W	44	W-CC21-01	0	110	4.1	-1.87	3.49
W	56	W-MV26A-05	0.5	88	2.9	-1.87	3.51
E	33	E-MV14-06	0	79	2.4	-1.89	3.56
E	58	E-MV26B-04	0	120	8.4	1.89	3.57
E	11	E-MV3A-03	0.5	86	2.7	-1.97	3.86
W	18	W-MV7A-02	0	350	17	-1.99	3.95

W	64	W-MV28A-03	0.5	140	5.6	-1.99	3.98
E	26	E-MV11-03	0	98	3.3	-2.02	4.07
W	64	W-MV28A-04	0.5	130	5.0	-2.05	4.21
E	1	E-MV1-TEN-05	0.5	720	37	-2.06	4.24
E	39	E-MV17-04	0	72	1.8	-2.11	4.43
W	23	W-CC10-01	0	120	4.4	-2.11	4.45
W	18	W-MV7A-04	0.5	170	7.1	-2.12	4.50
W	56	W-MV26A-03	0.5	150	6.0	-2.14	4.57
E	30	E-MV13-06	0.5	60	1.1	-2.15	4.64
W	13	W-MV4-02	0	280	13	-2.19	4.79
E	52	E-MV22-02	0	140	9.8	2.21	4.86
E	6	E-MV3-03	0	170	7.0	-2.22	4.94
E	74	E-MV32-06	0	71	1.6	-2.25	5.07
E	6	E-MV3-02	0.5	130	4.8	-2.25	5.07
W	45	W-MV20-05	0.5	120	4.2	-2.31	5.33
E	26	E-MV11-02	0.5	90	2.5	-2.38	5.68
E	10	E-MV3B-06	0	68	1.3	-2.39	5.71
E	2	E-CC1-TEN	0	140	10	2.41	5.79
W	24	W-MV9-06	0.5	170	6.8	-2.42	5.87
E	41	E-CC19-01	0.5	55	0.53	-2.45	6.02
W	43	W-MV19A-TEX-03	0	87	2.2	-2.52	6.35
E	11	E-MV3A-02	0.5	130	4.5	-2.55	6.51
E	34	E-MV15-03	0	250	11	-2.56	6.56
W	64	W-MV28A-01	0.5	160	6.1	-2.58	6.65
E	6	E-MV3-01	0	210	14	2.61	6.80
W	13	W-MV4-03	0	160	6.0	-2.68	7.18
E	1	E-MV1-TEN-02	0.5	290	13	-2.73	7.46
E	2	E-CC1-TEN	1.5	110	8.7	2.73	7.47
W	45	W-MV20-03	0.5	240	16	2.98	8.88
W	15	W-MV6-AME-03	0	370	17	-3.07	9.44
E	11	E-MV3A-03	0	150	4.9	-3.24	10.48
W	51	W-MV23-02	0	410	19	-3.24	10.51
W	43	W-MV19A-TEX-06	0	130	3.8	-3.25	10.58
W	49	W-MV24-06	0.5	110	2.7	-3.27	10.67
W	16	W-CM1-01	1.5	84	1.2	-3.36	11.27
E	6	E-MV3-01	0.5	320	14	-3.36	11.28
W	45	W-MV20-01	0	74	7.4	3.39	11.46
W	56	W-MV26A-05	0	490	30	3.42	11.69
E	48	E-MV21-03	0	89	1.4	-3.43	11.75
W	56	W-MV26A-02	0	210	15	3.61	13.02
W	43	W-MV19A-TEX-02	0	210	7.7	-3.69	13.63
E	6	E-MV3-02	0	220	8.0	-3.93	15.48
W	54	W-MV25-02	0	460	21	-3.95	15.63
E	38	E-MV16-06	0.5	110	2.0	-3.97	15.74
W	64	W-MV28A-02	0.5	160	4.7	-3.98	15.84
E	34	E-MV15-06	0	110	10	4.03	16.26
E	52	E-MV22-03	0	370	16	-4.07	16.58
E	30	E-MV13-06	0	140	3.5	-4.09	16.77
W	13	W-MV4-04	0.5	260	10	-4.10	16.85
W	54	W-MV25-03	0	260	10	-4.10	16.85
E	11	E-MV3A-06	0	200	6.7	-4.15	17.22
E	39	E-MV17-02	0	170	4.9	-4.32	18.68
W	43	W-MV19A-TEX-02	0.5	110	1.6	-4.37	19.07
E	27	E-CM3	0.5	380	25	4.39	19.24
E	6	E-MV3-06	0	270	10	-4.65	21.59
W	51	W-MV23-05	0.5	210	6.5	-4.89	23.93
W	24	W-MV9-01	0.5	110	11	5.03	25.33
E	11	E-MV3A-04	0	370	15	-5.07	25.72
E	17	E-MV5-AME-03	0.5	220	6.8	-5.13	26.36
W	13	W-MV4-03	0.5	85	9.8	5.19	26.93
E	38	E-MV16-03	0	190	16	5.69	32.41
E	60	E-MV27A-03	0	540	35	5.71	32.56
W	13	W-MV4-05	0	290	10	-5.73	32.85
W	4	W-MV2-RED-04	0.5	260	8.3	-5.80	33.69

W	45	W-MV20-02	0	130	13	5.95	35.38
E	1	E-MV1-TEN-05	0	460	31	6.05	36.55
W	24	W-MV9-04	0.5	69	10	6.26	39.15
E	2	E-CC1-TEN	2.5	160	15	6.32	39.95
W	54	W-MV25-02	0.5	250	7.2	-6.36	40.47
E	3	E-CC2	0	250	7.1	-6.46	41.76
E	39	E-MV17-01	0.5	190	3.7	-6.61	43.65
E	11	E-MV3A-02	0	220	5.2	-6.73	45.35
E	22	E-CM2	0.5	150	15	6.86	47.10
E	52	E-MV22-06	0	260	7.2	-6.90	47.67
W	56	W-MV26A-06	0.5	220	5.0	-6.93	48.09
W	45	W-MV20-04	0.5	240	20	6.98	48.73
E	39	E-MV17-04	0.5	220	4.8	-7.13	50.90
W	45	W-MV20-05	0	200	18	7.15	51.13
W	18	W-MV7A-01	0	380	13	-7.61	57.98
E	11	E-MV3A-01	0	270	6.8	-7.85	61.57
E	1	E-MV1-TEN-03	0	3,100	160	-8.17	66.72
W	13	W-MV4-05	0.5	270	23	8.35	69.77
W	56	W-MV26A-01	0	300	25	8.73	76.14
E	6	E-MV3-04	0.5	200	1.7	-9.15	83.71
W	18	W-MV7A-05	0	680	27	-9.89	97.78
E	6	E-MV3-05	0.5	210	1.1	-10.29	105.93
E	38	E-MV16-06	0	1,100	49	-10.67	113.90
W	24	W-MV9-05	0.5	280	4.3	-10.89	118.58
W	56	W-MV26A-03	0	330	30	12.10	146.37
W	46	W-MV21-03	0.5	590	17	-15.01	225.19
W	56	W-MV26A-04	0	870	32	-15.20	230.91
W	15	W-MV6-AME-05	0	170	28	18.78	352.61
E	11	E-MV3A-01	0.5	670	7.7	-28.65	820.60
E	1	E-MV1-TEN-02	0	2,200	160	40.65	1652.81
W	54	W-MV25-05	0	990	6.3	-47.41	2247.27
E	38	E-MV16-01	0.5	1,500	130	48.63	2364.71




Total vs Residual WET Lead
Residual WET Lead (mg/l)
60
40
20
0
-20
-40
-60
0
500
1000
1500
2000
2500
3000
3500
Total Lead (mg/kg)

Soil Excavation Profile
W-R37 (Dataset 5)

90% UCL Total Lead (mg/kg)

Excavation Depth (ft)	Distance from EOP (ft)			
	0 to 3	**3 to 6**	**6 to 9**	**>9**
0				
	158.1	211.8	48.2	55.4
0.5				
	4.2	28.2	21.9	68.0
1				
	4.2	*28.2*	*21.9*	*68.0*
1.5				
	4.0	45.9	56.3	53.8
2				
	4.0	*45.9*	*56.3*	*53.8*
2.5				
	3.5	112.3	60.3	60.2
3				

Predicted WET Lead (mg/l)

Excavation Depth (ft)	Distance from EOP (ft)			
	0 to 3	**3 to 6**	**6 to 9**	**>9**
0				
	7.1	9.6	2.2	2.5
0.5				
	0.2	1.3	1.0	3.1
1				
	0.2	*1.3*	*1.0*	*3.1*
1.5				
	0.2	2.1	2.5	2.4
2				
	0.2	*2.1*	*2.5*	*2.4*
2.5				
	0.2	5.1	2.7	2.7
3				

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
Shaded areas indicate profile intervals classified as California hazardous waste based on predicted WET lead concentrations ≥5.0 mg/l
Italics indicate no unique sample for this interval.
Data carried down from previous upper level depth interval.

Regression Line Slope: $y = 0.0451$

Soil Excavation Profile
W-ALAM (Dataset 55)

90% UCL Total Lead (mg/kg)

Excavation Depth (ft)	Distance from EOP (ft)			
	0 to 3	**3 to 6**	**6 to 9**	**>9**
0				
	317.6	608.2	670.0	444.7
0.5				
	288.9	90.2	63.0	62.6
1				
	288.9	*90.2*	*63.0*	*62.6*
1.5				
	45.2	51.0	31.0	26.9
2				
	45.2	*51.0*	*31.0*	*26.9*
2.5				
	20.9	23.2	24.0	18.3
3				

Predicted WET Lead (mg/l)

Excavation Depth (ft)	Distance from EOP (ft)			
	0 to 3	**3 to 6**	**6 to 9**	**>9**
0				
	23.5	45.1	49.6	33.0
0.5				
	21.4	6.7	4.7	4.6
1				
	21.4	*6.7*	*4.7*	*4.6*
1.5				
	3.3	3.8	2.3	2.0
2				
	3.3	*3.8*	*2.3*	*2.0*
2.5				
	1.5	1.7	1.8	1.4
3				

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
Shaded areas indicate profile intervals classified as California hazardous waste based on predicted WET lead concentrations ≥5.0 mg/l
Italics indicate no unique sample for this interval.
Data carried down from previous upper level depth interval.

Regression Line Slope: y = 0.0741

Soil Excavation Profile
E-CLIF (Dataset 65)

90% UCL Total Lead (mg/kg)

Excavation Depth (ft)	Distance from EOP (ft)			
	0 to 3	**3 to 6**	**6 to 9**	**>9**
0				
	829.7	42.0	93.4	19.4
0.5				
	178.0	52.1	73.6	55.5
1				
	178.0	*52.1*	*73.6*	*55.5*
1.5				
	136.2	24.0	12.8	14.8
2				
	136.2	*24.0*	*12.8*	*14.8*
2.5				
	41.6	6.5	5.4	13.6
3				

Predicted WET Lead (mg/l)

Excavation Depth (ft)	Distance from EOP (ft)			
	0 to 3	**3 to 6**	**6 to 9**	**>9**
0				
	63.8	3.2	7.2	1.5
0.5				
	13.7	4.0	5.7	4.3
1				
	13.7	*4.0*	*5.7*	*4.3*
1.5				
	10.5	1.8	1.0	1.1
2				
	10.5	*1.8*	*1.0*	*1.1*
2.5				
	3.2	0.5	0.4	1.0
3				

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
Shaded areas indicate profile intervals classified as California hazardous waste based on predicted WET lead concentrations ≥5.0 mg/l
Italics indicate no unique sample for this interval.
Data carried down from previous upper level depth interval.

Regression Line Slope: $y = 0.0769$

Soil Excavation Profile
W-505 (Dataset 73)

90% UCL Total Lead (mg/kg)

Excavation Depth (ft)	Distance from EOP (ft)	
	0 to 3	**3 to 6**
0		
	167.2	106.1
0.5		
	54.5	70.7
1		
	54.5	*70.7*
1.5		
	41.8	36.9
2		
	41.8	*36.9*
2.5		
	42.0	78.5
3		

Predicted WET Lead (mg/l)

Excavation Depth (ft)	Distance from EOP (ft)	
	0 to 3	**3 to 6**
0		
	6.6	4.2
0.5		
	2.1	2.8
1		
	2.1	*2.8*
1.5		
	1.6	1.5
2		
	1.6	*1.5*
2.5		
	1.7	3.1
3		

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
Shaded areas indicate profile intervals classified as California hazardous waste based on predicted WET lead concentrations ≥5.0 mg/l
Italics indicate no unique sample for this interval. Data carried down from previous upper level depth interval.

Regression Line Slope: $y = 0.0393$

Soil Excavation Profile
E-NUT (Dataset 76)

90% UCL Total Lead (mg/kg)

Excavation Depth (ft)	Distance from EOP (ft)			
	0 to 3	**3 to 6**	**6 to 9**	**>9**
0				
	9.4	11.2	17.6	29.4
0.5				
	10.3	14.1	38.3	43.9
1				
	10.3	*14.1*	*38.3*	*43.9*
1.5				
	91.9	38.5	49.8	33.8
2				
	91.9	*38.5*	*49.8*	*33.8*
2.5				
	48.9	12.0	8.6	24.2
3				

Predicted WET Lead (mg/l)

Excavation Depth (ft)	Distance from EOP (ft)			
	0 to 3	**3 to 6**	**6 to 9**	**>9**
0				
	0.3	0.4	0.6	1.1
0.5				
	0.4	0.5	1.4	1.6
1				
	0.4	*0.5*	*1.4*	*1.6*
1.5				
	3.3	1.4	1.8	1.2
2				
	3.3	*1.4*	*1.8*	*1.2*
2.5				
	1.8	0.4	0.3	0.9
3				

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.
Shaded areas indicate profile intervals classified as California hazardous waste based on predicted WET lead concentrations ≥5.0 mg/l
Italics indicate no unique sample for this interval. Data carried down from previous upper level depth interval.

Regression Line Slope: $y = 0.0362$