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GEOTECHNICAL DATA REPORT

ALAMEDA COUNTY PUBLIC WORKS AGENCY
EAST 14TH STREET IMPROVEMENTS
BETWEEN 162ND AVENUE AND 172ND AVENUE
UNINCORPORATED SAN LEANDRO, CALIFORNIA

CE&G PROJECT NO. 180240.001
13 FEBRUARY 2019

Prepared for:
Daniel Leary, P.E.
Bellecci and Associates, Inc.
4695 Chabot Drive, Suite 112
Pleasanton, California 94588

Reviewed by:

Dave Buscheck, P.E.
Principal Engineer

Phillip Gregory, P.E., G.E.
Senior Principal Engineer

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13 February 2019

Daniel Leary, P.E.
Bellecci and Associates, Inc.
4695 Chabot Drive, Suite 112
Pleasanton, California 94588

RE: **GEOTECHNICAL DATA REPORT**
Alameda County Public Works Agency – East 14th Street Improvements
Between 162nd Avenue and 172nd Avenue
Unincorporated San Leandro, California

Dear Mr. Leary:

In accordance with our subcontract agreement dated 4 August 2017, we have completed our field explorations and testing for the proposed roadway improvements along East 14th Street in unincorporated San Leandro, California, between 162nd Avenue and 172nd Avenue. The Alameda County Public Works Agency is planning to rehabilitate the pavement along this segment of East 14th Street. The purposes of this project were to complete pavement deflection testing, perform soil sampling for environmental specifications along a stormdrain replacement, and prepare this geotechnical data report.

1.0 SCOPE OF WORK

The scope of our services included the following tasks:

- coordination with Bellecci and Alameda County;
- review of published geologic maps and reports of the area;
- review of public records available online for soil and groundwater data;
- marking and clearing the site for utilities (USA);
- encroachment permit coordination and acquisition with Caltrans;
- coring and pavement deflection testing and findings and recommendations from that testing at 16 locations along East 14th Street by our subconsultant, Pavement Engineering Inc. (PEI);
- determination of R-values at four of the 16 coring locations by PEI;

- sampling for environmental specifications at 8 locations along the East 14th Street stormdrain alignment as directed by Bellecci and Associates (10 locations were requested but 8 were completed);
- environmental testing of the direct push samples by others; and
- preparation of this summary report.

This report presents the results of the office research, field explorations and coring, laboratory testing, engineering analysis of the collected data, and conclusions and recommendations which pertain to the pavement design aspects of the proposed improvements. Our work has been specifically limited to evaluation of the pavement and soil conditions within this segment of East 14th Street. An evaluation of the soil and pavement conditions of other areas outside this segment is beyond the authorized scope of our work.

2.0 EXISTING FACILITY

2.1 Site Description

The project is located in a relatively flat area of southern unincorporated San Leandro Hayward near the Interstate 580/238 interchange (see Plate 1). The project limits are East 14th Street between 162nd Avenue to the north and 172nd Avenue to the south. East 14th Street is oriented northwest-southeast and consists of two lanes of traffic with parallel parking in both directions. For the purposes of the following descriptions, assume that East 14th Street trends north-south. The area consists of mixed-used residential/retail, with residences on side streets and retail/light industrial along East 14th Street.

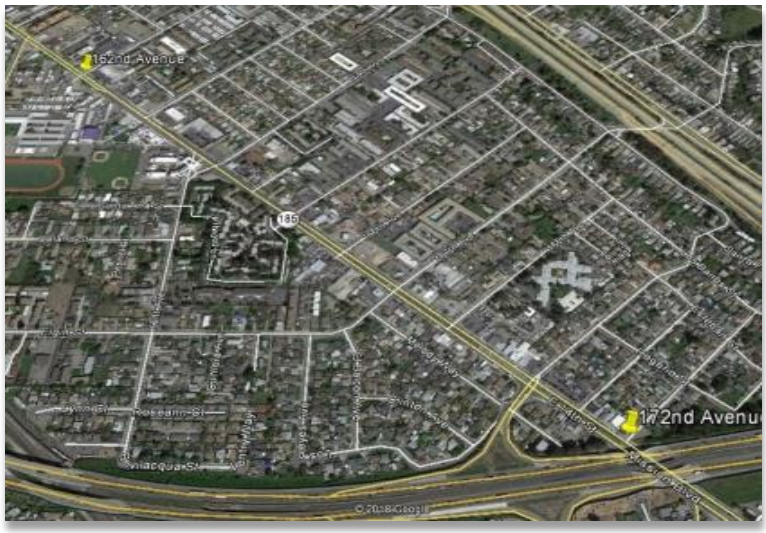

Figure 1 – Project Limits

2.2 Proposed Improvements

Alameda County plans to rehabilitate the distressed pavement and replace the stormdrain along the northbound segment of East 14th Street. In addition to field explorations and testing for the pavement rehabilitation, Bellecci and Associates requested that CE&G perform supplemental soil sampling at 10 locations for the purpose of environmental testing down to the depth of a stormdrain that is part of the street rehabilitation project.

3.0 GEOLOGY AND SOIL CONDITIONS

According to geologic mapping by Dibblee (2005), the project site is underlain by alluvial soils consisting of gravel, sand, and clay from valleys and stream channels (see Plate 2).

According to soils mapping by the USDA Soil Conservation Service (SCS, 1981), two soil units are shown underling the project site (see Plate 3). The northern portion of the site is underlain by *Danville silty clay loam, 0 to 2 percent slopes* unit. This unit consists of very deep, well-drained soils that formed in alluvium derived from sedimentary bedrock. It is typically found on low alluvial terraces at elevations of 20 to 300 feet. Permeability is slow (0.06-2.0 in/hr), runoff is slow, and there is no hazard of erosion. The potential for shrinking and swelling with changes in soil moisture content is high. In general, this unit classifies as having significant limitations for local roads and streets due to the low strength/high shrink-swell potential where suitable base material is required.

The southern portion of the site is underlain by *Yolo silt loam, 0 to 2 percent slopes* unit. This unit consists of very deep, well-drained soils that formed in alluvium derived from sedimentary bedrock. It is typically found on flood plains and alluvial fans at elevations of 20 to 200 feet. Permeability is moderate (0.6-2.0 in/hr), runoff is slow, and there is no hazard of erosion. The potential for shrinking and swelling with changes in soil moisture content is low to moderate. In general, this unit classifies as having moderate limitations for local roads and streets due to the low strength/moderate shrink-swell potential, and favorable drainage.

4.0 PUBLIC RECORDS RESEARCH

We researched public records available online at the Department of Toxic Substance Control's data management system, Envirostor (http://www.envirostor.dtsc.ca.gov). The following table is a summary of groundwater information for nearby projects:

Location	Distance to Project Site	Date	Subsurface Explorations	Depth to Groundwater
21659 Mission Blvd., Hayward, CA	5628 feet SE of Coring C-10	2007	Shallow (11) & deep borings (2)	45.0 feet to 46.5 feet
222 Burbank St., Hayward	9457 feet S of Coring C-10	2013	Deep borings	40 feet
22815 Sutro St., Hayward, CA	11,085 feet SE of Coring C-10	2000-2012	Monitoring wells (14)	39.50 feet to 54.85 feet
San Leandro Blvd, San Leandro, CA	12,620 feet NW of Coring C-1	2015	Monitoring well	29.39 feet to 28.85 feet

*The sites listed are at the same approximate ground elevation as the project site. Although data from the public records would suggest that shallow groundwater conditions are not likely to be present at the project site, we nevertheless recommend that contractors account for potentially elevated groundwater during the stormdrain rehabilitation.

5.0 SUBSURFACE EXPLORATION AND TESTING

5.1 USA Marking

We completed a reconnaissance of the project site on 27 April 2018 to preview the sampling locations and mark for Underground Service Alert (USA).

5.2 Permitting

PEI secured an encroachment permit with CALTRANS prior to starting work. An encroachment permit was not required from the City of San Leandro or Alameda County. A drilling permit was secured with Alameda County for the environmental sampling.

5.3 Paving Testing and Sampling by PEI

PEI completed its field explorations on 10 July 2018. The field work consisted of deflection testing using a Dynaflect pavement deflection testing device in general accordance with CTM 356, coring to measure the existing pavement thicknesses, and a visual condition survey. Coring and deflection testing were performed at 16 locations along East 14th Street. R-values were determined at four of the 16 locations.

5.4 Environmental Sampling by CE&G

CE&G completed its field explorations on 10 July 2018 concurrently with PEI's field crew and traffic control. The samples were obtained by the direct push method from a drill rig operated by Environmental Control Associates (ECA). The samples were retained, marked, and sealed in 2-inch diameter plastic sleeve liners stored in ice chests filled with ice. The samples were handed off to a representative from Bellecci and Associates at the conclusion of the day with the appropriate chain of custody paperwork. Due to issues with traffic control and the presence of bus loading zones, we were able to complete sampling at 8 of the requested 10 locations (Corings C-3 and C-6 were not completed).

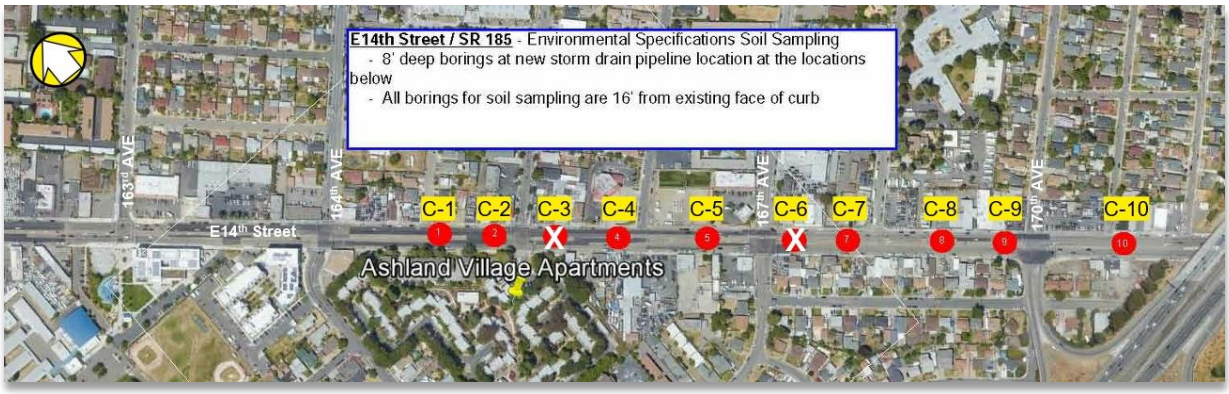

Figure 2 – Environmental Coring Location Map

6.0 SUMMARY OF TEST RESULTS

The excerpts in the following sections are from the complete PEI deflection analysis report included in Appendix A.

6.1 Pavement Coring and R-Value Results

CORING LOG

Core No.	Location	HMA Layer (Inches)	PCC Layer (inches)	AB Layer (Inches)	R-value
1	NB2 385 ft north of 172nd Street	6	4-1/2	---	10
2	NB2 1330 ft north of 172nd Street	6-1/2	5-1/2	---	15
3	NB2 2450 ft north of 172nd Street	6-1/2	5	---	10
4	NB2 3500 ft north of 172nd Street	6	4-1/2	---	11
5	NB1 1150 ft north of 172nd Street	7-1/2	4-1/2	8	---
6	NB1 2000 ft north of 172nd Street	7	6	---	---
7	NB1 3150 ft north of 172nd Street	12	---	---	---
8	NB1 3950 ft north of 172nd Street	11-1/2	---	7	---
9	SB2 600 ft south of 162nd Street	6-3/4	0	7	---
10	SB2 1500 ft south of 162nd Street	6	5-1/2	7	---
11	SB2 2675 ft south of 162nd Street	6	4	5	---
12	SB2 3500 ft south of 162nd Street	6	6	2-1/2	---
13	SB1 1100 ft south of 162nd Street	8	0	0	---
14	SB1 2100 ft south of 162nd Street	6-1/2	7	3	---
15	SB1 2950 ft south of 162nd Street	7	7	3-1/2	----
16	SB1 3950 ft south of 162nd Street	5-1/2	6-1/4	3	---

In an effort to assist in visually locating the pavement coring locations, we have attached mapped Google Earth images to the end of the PEI report in Appendix A.

6.2 Structural Requirements by Traffic Index

Direction	Traffic Index (TI)	Tolerable	80th Percentile	HMA Overlay Requirement (Inches)
NB1	8.0	17	21	3/4
NB2	8.0	17	22	1
SB1	8.0	17	23	1-1/2
SB2	8.0	17	21	1/2

Direction	Traffic Index (TI)	Tolerable	80th Percentile	HMA Overlay Requirement (Inches)
NB1	9.0	14	21	2
NB2	9.0	14	22	2-1/4
SB1	9.0	14	23	2-1/2
SB2	9.0	14	21	1-34

Direction	Traffic Index (TI)	Tolerable	80th Percentile	HMA Overlay Requirement (Inches)
NB1	10.0	12	21	3
NB2	10.0	12	22	3-1/2
SB1	10.0	12	23	4
SB2	10.0	12	21	3

6.3 Reflective Cracking Requirements

HMA Overlay Requirement (Inches)*	Pavement Fabric Required (Yes or No)
5-1/4	Yes

**(Required overlay by reflective cracking is half the existing AC thickness - if pavement fabric is used then this criteria can be reduced by 1-1/4 inch with at least a minimum overlay requirement of 1-3/4 inch)*

7.0 GEOTECHNICAL CONSIDERATIONS

7.1 Excavations and Utility Trench Backfill Requirements

All excavations made during development of the site should be backfilled with engineered fill. This includes excavations created during the installation of the utility lines, sewer lines, stormdrain lines, etc. Based on the coring data provided by PEI, we anticipate that utility trenching will encounter either aggregate base material or PPC sub slab.

7.1.1 Trenches Through Aggregate Base Material

In areas where the asphalt concrete pavement is underlain by aggregate base material, we recommend that backfill of utility trenches consist of Caltrans Class II AB placed at a minimum relative compaction of 95% per ASTM D1557. Aggregate base should be properly moisture-conditioned, spread evenly, and compacted in uniform lifts not exceeding 8 inches in un-compacted thickness.

7.1.2 Trenches Through PCC Sub Slab

In addition to utility trench excavations that may be underlain by PCC sub slab, we recommend that all excavations that involve the exposing and removal of PCC be neatly saw-cut in place in order to minimum disturbance to the other pavement layers during the excavation process. The utility trench and other excavations should be backfilled with a self-leveling, self-compacting cementitious material with an unconfined compressive strength of 1,200 psi or less (i.e. Controlled Low Strength Materials, CLSM, per Caltrans).

7.2 Observations and Testing During Construction

Field observation and testing services are essential parts of the proposed improvements. It is important that Cal Engineering & Geology, Inc. be retained to observe and test the relevant phases of the proposed roadway improvements including: utility excavations and backfill; placement of other deep fills; preparation/compaction of subgrade; placement/compaction of aggregate base; and placement of asphalt concrete. The recommendations of this report are contingent upon this stipulation.

8.0 ENVIRONMENRAL TEST RESULTS

The results of the environmental testing are included in Appendix B. An evaluation of the environmental test results was beyond our authorized scope of work.

9.0 LIMITATIONS

We have employed accepted civil and geotechnical engineering procedures, and our professional opinions and conclusions are made in accordance with generally accepted civil and geotechnical engineering principles and practices. This standard is in lieu of all warranties, either expressed or implied.

We trust this report provides you with the information you need. If you have any questions, please call us.

10.0 REFERENCES

Department of Toxic Substance Control, data management system, Envirostor; http://www.envirostor.dtsc.ca.gov, accessed online

Dibblee, T. W. Jr., 2005, Geologic Map of the Hayward Quadrangle, Alameda and Contra Costa Counties, U.S. Geological Survey, DF-163.

Soil Conservation Service, 1981, Soil survey of Alameda County, California, Western Part: U.S. Department of Agriculture, map scale 1:24,000

United States Department of Agriculture, Natural Resources Conservation Service (NRCS), Web Soil Survey, accessed online

.

BASEMAP REFERENCE

1. BASEMAP FROM ESRI (DIGITALGLOBE 2017).
2. STREET CENTERLINES FROM CALTRANS CALIFORNIA ROAD SYSTEM, DOWNLOADED ON 20 NOV 2017.

0 0.25 0.5 1
MILES

N

M:\2018\180240 Bellecci - East 14th St Corridor Improv Proj_ACPWA\GIS\180240-Fig1-Site-Location.mxd; 12/31/2018; kdrozynska

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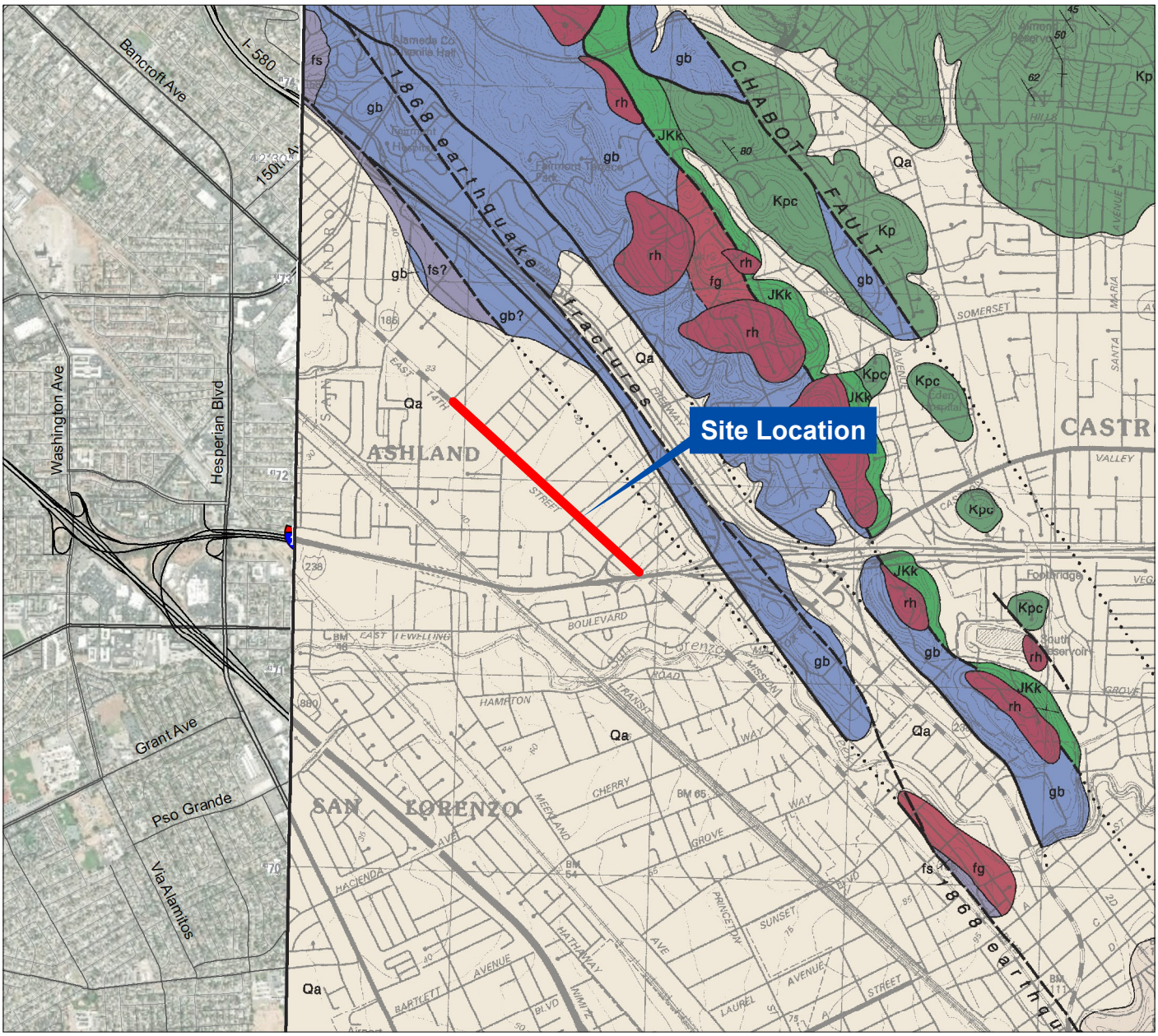
ALAMEDA COUNTY - E14TH STREET IMPROVEMENTS
E14TH STREET BETWEEN 162ND AVENUE AND 172ND AVENUE
SAN LEANDRO, CALIFORNIA

SITE LOCATION MAP

180240	JULY 2018	PLATE 1



BASEMAP REFERENCE

1. REGIONAL GEOLOGY FROM DIBBLEE, 2005, HAYWARD (DF-163).

0 0.25 0.5 1 MILES

N

Qa — **SURFICIAL SEDIMENTS**
Qa ALLUVIAL GRAVEL, SAND, AND CLAY OF VALLEY AREAS, INCLUDES GRAVEL AND SAND OF MAJOR STREAM CHANNELS

Kp, Kpc — **PANOCHE FORMATION** - ***MARINE CLASTIC, LITHIFIED; AGE, LATE CRETACEOUS***
Kp CLAY SHALE OR CLAYSTONE, DARK GRAY, MICACEOUS, BEDDED
Kpc CONGLOMERATE COMPOSED OF SMOOTH COBBLES AND PEBBLES OF PORPHYRITIC METAVOLCANIC ROCKS, HARD PLUTONIC AND DIORITIC ROCKS, QUARTZITE, AND BLACK CHERT IN MATRIX OF BROWN SANDSTONE

JKk — **KNOXVILLE FORMATION** - ***MARINE CLASTIC, LITHIFIED; AGE, LATE JURASSIC AND EARLY CRETACEOUS ON FOSSIL EVIDENCE***
JKk CLAY SHALE, DARK BROWNISH GRAY, BEDDED, MICACEOUS, INCLUDES THIN INTERBEDS OF OLIVE BROWN FINE GRAINED GRAYWACKE, SANDSTONE AND BROWN DOLOMITE

rh, gb — **COAST RANGE OPHIOLITE COMPLEX** - ***IGNEOUS COMPLEX, PROBABLY INTRUSIVE; AGE, LATE JURASSIC***
rh LEONA RHYOLITE; OF LAWSON, 1914, AGE FORMERLY INTERPRETED AS LATE CENOZOIC, NOW RADIOMETRICALLY DATED AS, LATE JURASSIC
gb GABBRO-DIABASE, BLACK, MEDIUM TO FINE GRAINED, MASSIVE, OF MAFIC MINERALS, AGE LATE JURASSIC

fs, fg — **FRANCISCAN ASSEMBLAGE** - ***SUBMETAMORPHOSED EUGEOSYNCLINAL MARINE SEDIMENTARY AND MAFIC IGNEOUS ROCKS; AGE, LATE JURASSIC AND CRETACEOUS;***
fs GRAYWACKE SANDSTONE, GRAY, MASSIVE, FINE GRAINED, WITH NUMEROUS DARK GRAINS, INCLUDES SOME GRAY CLAY SHALE, SEVERELY SHEARED BRECCIATED IN PART TO MELANGE
fg GREENSTONE (METABASALT), DARK GRAY TO BLACK, MASSIVE, APHANITIC

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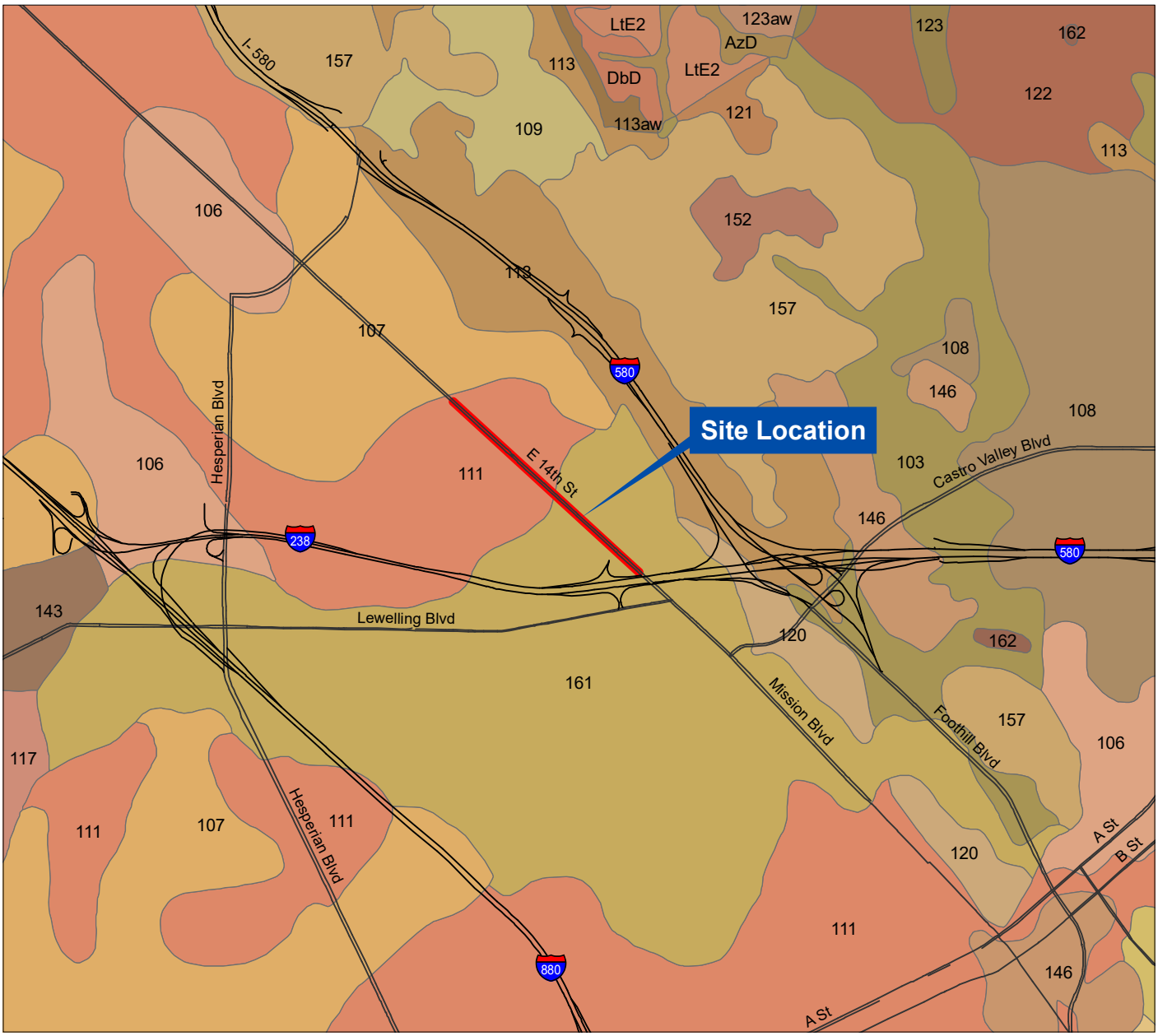
ALAMEDA COUNTY - E14TH STREET IMPROVEMENTS
E14TH STREET BETWEEN 162ND AVENUE AND 172ND AVENUE
SAN LEANDRO, CALIFORNIA

REGIONAL GEOLOGY MAP

180240	JULY 2018	PLATE 2



BASEMAP REFERENCE

1. SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE. WEB SOIL SURVEY, ACCESSED ONLINE 30 DEC 2018.
2. STREET CENTERLINES FROM CALTRANS CALIFORNIA ROAD SYSTEM, DOWNLOADED ON 20 NOV 2017.

0 0.25 0.5 1
MILES

N

103	AZULE CLAY LOAM, 9 TO 30 PERCENT SLOPES	120	LOS OSOS SILTY CLAY LOAM, 9 TO 30 PERCENT SLOPES
106	BOTELLA LOAM, 0 TO 2 PERCENT SLOPES, MLRA 14	122	LOS OSOS-MILLSHOLM COMPLEX, 9 TO 30 PERCENT SLOPES
107	CLEAR LAKE CLAY, DRAINED, 0 TO 2 PERCENT SLOPES, MLRA 14	143	SYCAMORE SILT LOAM, DRAINED, 0 TO 2 PERCENT SLOPES, MLRA 14
108	CLEAR LAKE CLAY, 2 TO 9 PERCENT SLOPES, DRAINED	146	URBAN LAND
109	CLIMARA CLAY, 30 TO 50 PERCENT SLOPES, MLRA 15	152	URBAN LAND-TIERRA COMPLEX, 15 TO 30 PERCENT SLOPES
111	DANVILLE SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	157	XERORTHENTS-ALTAMONT COMPLEX, 30 TO 50 PERCENT SLOPES
113	DIABLO CLAY, 9 TO 15 PERCENT SLOPES, MLRA 15	161	YOLO SILT LOAM, 0 TO 3 PERCENT SLOPES, DRY, MLRA 14

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NRCS SOIL MAP

180240	JULY 2018	PLATE 3

M:\2018\180240 Bellecci - East 14th St Corridor Improv Proj_ACPWA\GIS\180240-Fig-Soils.mxd; 12/31/2018; kdrozynska

APPENDIX A

DEFLECTION ANALYSIS REPORT BY PEI

DEFLECTION ANALYSIS
FOR
EAST 14TH STREET
SAN LEANDRO, CALIFORNIA

Pavement Engineering Inc.

August 23, 2018 Project No. 180234-01

Dave Buscheck
Cal Engineering and Geology
23785 Cabot Blvd, #321
Hayward CA 94545

Subject: Deflection Analysis for the East 14th Street from 162nd to 172nd Street in the City of San Leandro

Dear Dave:

In accordance with your request, we have completed the pavement deflection analysis for the subject project and are herein providing our findings and recommendations.

INTRODUCTION

Our field work consisted of deflection testing using our Dynaflect pavement deflection testing device in general accordance with CTM 356; coring to measure the existing pavement thickness; and a visual condition survey. This work was performed by Brett Long and Colby Decker of PEI's staff. Visual evaluations were performed by Bill Long of PEI's engineering staff. The traffic indexes used in this analysis were provided by Cal Engineering and Geology.

We have summarized our analysis on the deflection summary sheets for each street segment following this report. Included on the summary sheets are the coring data for existing pavement thickness, visual condition survey, deflection test results analysis and rehabilitation recommendations.

ANALYSIS

The rehabilitation alternatives have been designed using structural requirements from the deflection analysis contained in CTM 356, reflective cracking criteria and the visual condition survey. Reflection cracking requirements are determined as a minimum of one-half the bonded layer section per current Caltrans recommendations for reflective cracking. Engineering judgment and experience has been used in applying these criteria to the individual street segments.

The rehabilitation alternatives evaluated in this analysis include HMA and RHMA overlays; milling and replacement with HMA; Cold In-place Recycling (CIR); Full Depth Reclamation (FDR); and reconstruction.

OVERLAYS

The recommended overlays must meet both the requirements of the structural requirement from the deflection analysis and reflective cracking requirements. The minimum recommended overlay thickness is 1-3/4 inches to ensure that the HMA can be properly compacted.

For HMA overlays, typically a 1/2-inch HMA leveling course is recommended if pavement fabric is placed. The leveling course provides a uniform surface and fills cracks to insure the fabric is bonded properly to the overlay.

PEI also recommends placing a 1/2-inch leveling course under RHMA overlays. The leveling course helps provide a uniform surface for placing the RHMA to insure the thickness of the RHMA overlay. Minimum thickness for RHMA overlays is critical for compaction.

MILLING AND REPLACEMENT

Milling and replacement is generally recommended when overlay requirements for reflective cracking exceed 3-1/2 inches, but are structurally adequate by deflection. Overlays which exceed 3-1/2 inches are not usually feasible due to geometric constraints such as curb and gutter.

Mill and replacement alternatives allow for resurfacing the pavement to match the existing profile. This alternative can also reduce the lift thickness to meet reflective cracking requirements if the pavement is structurally adequate. The expected pavement life for milling and replacing is similar to an overlay. Milling and replacement is a green alternative also, because asphalt suppliers use the removed asphalt in Rap mixes.

COLD IN-PLACE RECYCLING (CIR)

CIR is an option when pavements are structurally adequate or slightly structurally deficient. It can be especially useful when pavements are thick (greater than 6 inches). CIR helps reduce crack history in thicker pavement and provides a green approach by using existing materials. CIR consists of either an emulsion process or a foaming process. The cold foam process can include mixing aggregate base with the asphalt.

FULL DEPTH RECLAMATION (FDR)

FDR is a good alternative for streets with lower traffic indexes (7 or less). This alternative consists of pulverizing the existing pavement structure, removing the pulverized material to the depth of the HMA design thickness, treating the remaining asphalt concrete, aggregate base and possibly native soil to a specified depth with cement, cement/lime, or lime. This alternative requires additional testing to determine the best treatment option.

RECONSTRUCTION

Full-depth HMA is recommended for speed of construction and allows for phases that provide access to the public. Because this process allows for access to the public and this process uses only one material, this process can be considered a viable alternative.

HMA over aggregate base can reduce cost, but increases the impact on the public and is typically not used for rehabilitating existing pavements.

PROJECT ANALYSIS AND DESIGN OVERVIEW

PEI evaluated multiple alternatives for rehabilitating the pavements. The estimated design life of each recommended alternative are provided in the following table:

Proposed Treatment	Expected Service Life
Overlays	7-12 years
Milling and Replacement	7-12 years
Cold-In-Place Recycling	7-12 years
Full Depth Reclamation (FDR)	15-20 years
Reconstruction	15-20 years

The road segment is generally asphalt concrete over PCC pavement. Because the combined thickness results in reflective cracking requirements of 5-1/4 inches over pavement fabric, overlays were not recommended for the roadway. As the traffic index increased the structural deficiency increased and milling with replacement is only feasible for Traffic indexes of 8.0 and 9.0. Cold-In Place recycling is only feasible for a TI of 8.0 due to the structural deficiency.

Full depth reclamation is not feasible because the concrete pavement cannot be pulverized for treatment.

Reconstruction alternatives are provided using both full depth HMA and HMA over aggregate base for all three traffic indexes.

A detailed analysis of the pavement is provided for each traffic index following this report in the appendix section. Each alternative should be evaluated by the design engineer for cost, constructability and impact on the public during construction.

The Deflection Summary Sheets following this report provide the coring data, deflection data and visual condition evaluations used in PEI's analysis. The recommended repair strategies have been provided for rehabilitation alternatives. Following the summary sheets are the deflection data print outs and R-value test results.

MATERIALS AND CONSTRUCTION

HMA recommended for leveling courses less than 3/4 inch should be constructed with #4 mix or 3/8 inch HMA. The leveling course should be rolled and compacted with an 8 to 12 ton pneumatic-tire roller.

HMA recommended for leveling courses between 1/2 and 1-1/4 inch should be constructed using 3/8 inch maximum HMA. The leveling course should be rolled and compacted with an 8 to 12 ton pneumatic-tire roller.

HMA with thicknesses of 1-1/2 to 2 inches should be constructed using 1/2 inch maximum HMA. HMA layer thicknesses greater than 2 inches can be constructed with either 1/2 or 3/4 inch maximum HMA.

RHMA should be constructed with 3/8 inches maximum aggregate for overlays less than 2 inches and 1/2 inch maximum size aggregate for overlays greater than or equal to 2 inches.

All HMA and RHMA work should be placed in accordance with Caltrans 2010 Section 39 using the standard process.

LIMITATIONS

This report has been prepared based on the indicated field testing and application of our knowledge of pavement technology. The repair strategies in this report are based upon industry standards.

Our professional services were performed, findings obtained, and recommendations prepared in accordance with generally accepted engineering principles and practices. No warranty is either expressed or implied.

SUMMARY

We performed deflection testing for the subject project and have provided recommendations and repair strategies for resurfacing or reconstructing the pavements of each street segment.

If you have any questions, please do not hesitate to give me a call at (530) 224-4535.

Very truly yours,
PAVEMENT ENGINEERING INC.

William J. Long, P.E.
Senior Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
WILLIAM J. LONG
No. C047552
Exp. 12-31-18
CIVIL
STATE OF CALIFORNIA

Attachments: DSS sheets
R-value Test results
Deflection Analysis Sheets
Core Photos
Project Photos

pc: C File
180234-01

East 14th Street

162nd Street to 172nd Street
(Analysis at Traffic Index of 8.0)

CORING LOG

Core No.	Location	HMA Layer (Inches)	PCC Layer (inches)	AB Layer (Inches)	R-value
1	NB2 385 ft north of 172nd Street	6	4-1/2	---	10
2	NB2 1330 ft north of 172nd Street	6-1/2	5-1/2	---	15
3	NB2 2450 ft north of 172nd Street	6-1/2	5	---	10
4	NB2 3500 ft north of 172nd Street	6	4-1/2	---	11
5	NB1 1150 ft north of 172nd Street	7-1/2	4-1/2	8	---
6	NB1 2000 ft north of 172nd Street	7	6	---	---
7	NB1 3150 ft north of 172nd Street	12	---	---	---
8	NB1 3950 ft north of 172nd Street	11-1/2	---	7	---
9	SB2 600 ft south of 162nd Street	6-3/4	0	7	---
10	SB2 1500 ft south of 162nd Street	6	5-1/2	7	---
11	SB2 2675 ft south of 162nd Street	6	4	5	---
12	SB2 3500 ft south of 162nd Street	6	6	2-1/2	---
13	SB1 1100 ft south of 162nd Street	8	0	0	---
14	SB1 2100 ft south of 162nd Street	6-1/2	7	3	---
15	SB1 2950 ft south of 162nd Street	7	7	3-1/2	----
16	SB1 3950 ft south of 162nd Street	5-1/2	6-1/4	3	---

STRUCTURAL REQUIREMENTS
(by Deflection Analysis)

Direction	Traffic Index (TI)	Tolerable	80th Percentile	HMA Overlay Requirement (Inches)
NB1	8.0	17	21	3/4
NB2	8.0	17	22	1
SB1	8.0	17	23	1-1/2
SB2	8.0	17	21	1/2

REFLECTIVE CRACKING REQUIREMENTS

HMA Overlay Requirement (Inches)*	Pavement Fabric Required (Yes or No)
5-1/4	Yes

**(Required overlay by reflective cracking is half the existing AC thickness - if pavement fabric is used then this criteria can be reduced by 1-1/4 inch with at least a minimum overlay requirement of 1-3/4 inch)*

VISUAL CONDITIONS

The pavement exhibits block shrinkage cracking with alligator cracking developing. Some areas of alligator cracking have progressed to base failures. There are numerous large areas of repaired pavement in all lanes

ANALYSIS

The existing pavement structure is variable with most areas having asphalt concrete over PCC pavement. There are some locations that have asphalt concrete over the native soil or aggregate base. The general pavement section is 6 to 7 inches of asphalt concrete over 4-1/2 to 6 inches of PCC pavement. The condition of the pavement does not show signs of slab movement from the PCC. The pavement repairs cover such a large part of the pavement area, it may be difficult to determine if any slab movement is occurring.

The native soils are brown silty clays with R-values ranging from 10 to 15. The soils are slightly to moderately expansive. The recommended design R-value is 10.

Based on the deflection analysis, the pavement is structurally deficient by 1-1/2 inches of HMA.

For this pavement, PEI is providing recommendations for cold in place recycling, milling and replacement and reconstruction with Full Depth HMA or HMA over aggregate base. Full depth reclamation (FDR) is not recommended due to the concrete under the HMA.

RECOMMENDATIONS

Overlay Options

Overlays are not recommended because the minimum thickness required to inhibit reflective cracking exceeds 3 inches.

Milling and Replacement Option

HMA
We recommend milling off 3-1/2 inches of the existing pavement, 9 inch digouts of base failures, placing a 1-1/2 inch HMA leveling course, pavement fabric and a 2 inch HMA overlay. Digouts include removing the PCC pavement.

RHMA
We recommend milling off 3 inches of the existing pavement, 9 inch digouts of base failures, placing a 1 inch HMA leveling course and placing a 2 inch RHMA overlay. Digouts include removing the PCC pavement.

Recycling Option

We recommend milling off 2-1/2 inches of the existing pavement, Cold In-place Recycling (CIR) to a depth of 3 inches, placing a 1/2 inch HMA leveling course and a 2 inch RHMA overlay. If digouts are required, they should be constructed to a depth of 10 inches and includes taking out the concrete.

FDR Option

FDR is not recommended because the PCC pavement cannot be pulverized for treatment.

Reconstruction Options

Full Depth HMA
We recommend removing to a depth of 12 inches and placing 12 inches of HMA in 4 to 5 lifts. A few areas have HMA and PCC pavement to a depth of greater than 12 inches. An allowance should be made for additional removal and HMA if this alternative is chosen.

HMA over Aggregate Base
We recommend removing to a depth of 18 inches, installing a SEG fabric, placing 13 inches of aggregate base and 5 inches of HMA in two lifts.

As previously discussed in the report, rehabilitation alternatives may have different anticipated service lives. The design engineer should evaluate each alternative based on cost, constructability, and impact on the public.

PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 **Petaluma** (707) 769-5330 **San Luis Obispo** (805) 781-2265

City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	172nd Street	Thickness:	1.00
To:	162nd Street	Traffic Index:	8.00
Lane/Line:	NB1	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	10.84	18.05	25.82	3.75

Road Surface

Thickness	Traffic Index
1.00	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
17.00	21.19	22.84	19.79	0.11

HMA Overlay
0.06

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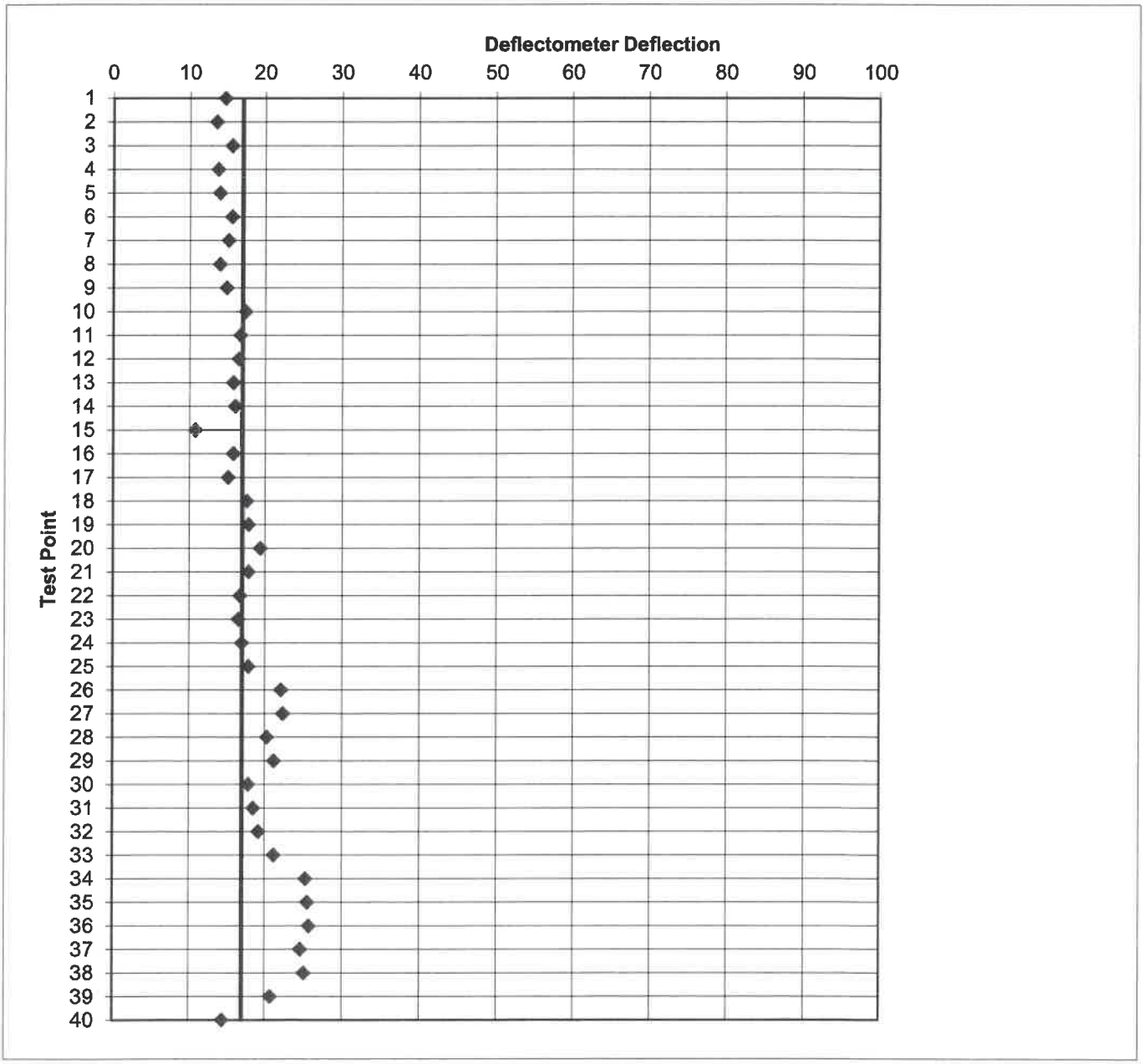
Redding (530) 224-4535
Petaluma (707) 769-5330
San Luis Obispo (805) 781-2265

City of San Leandro

Road: East 14th Street
From: 172nd Street
To: 162nd Street
Lane/Line: NB1

Survey Date: 07/10/18
Thickness: 1.00
Traffic Index: 8.00
Project Number: 180234



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City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	172nd Street	Thickness:	1.00
To:	162nd Street	Traffic Index:	8.00
Lane/Line:	NB2	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	14.02	19.34	33.53	3.63

Road Surface

Thickness	Traffic Index
1.00	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
17.00	22.39	23.99	24.08	0.16

HMA Overlay
0.08

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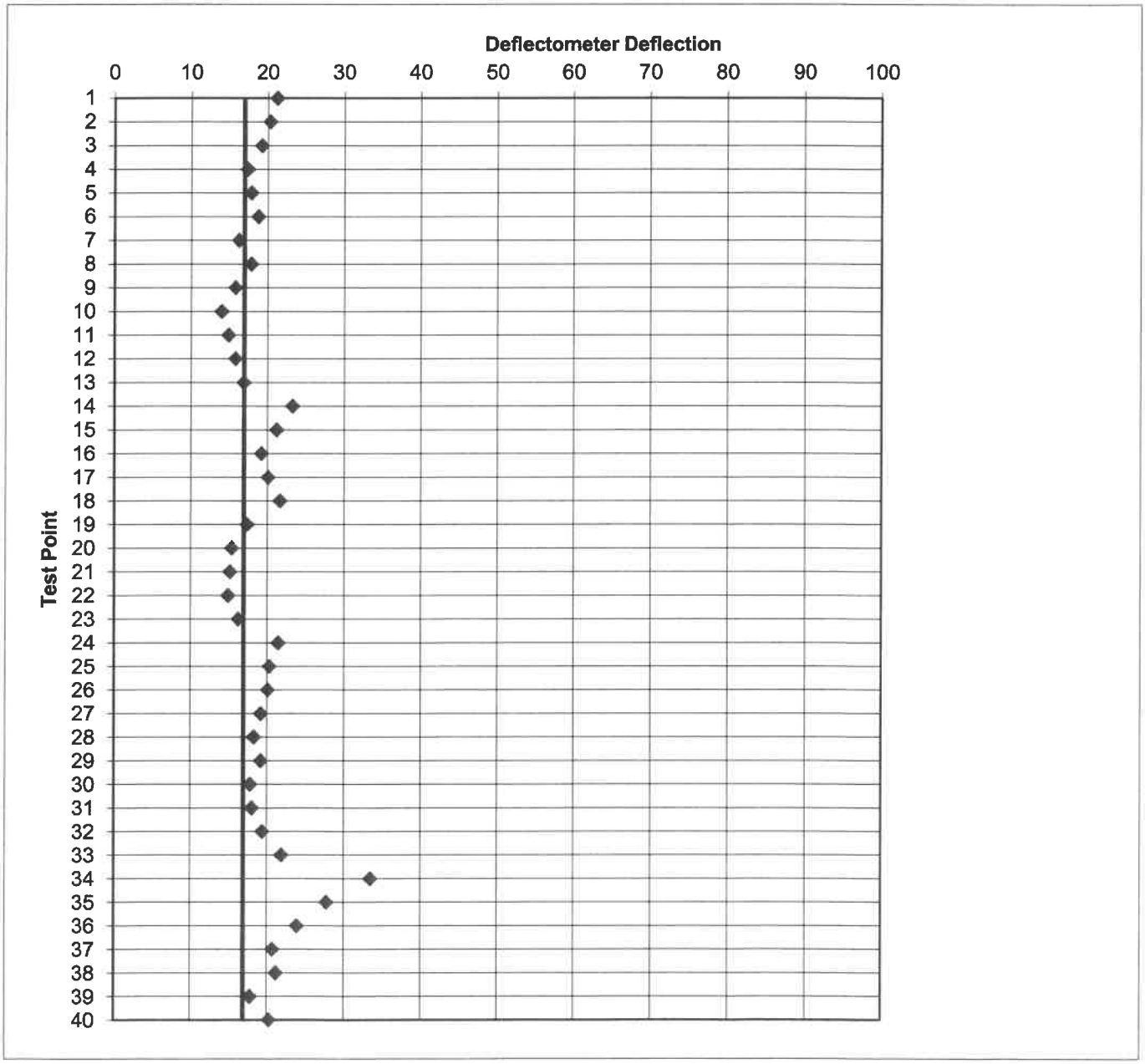
Redding (530) 224-4535 Petaluma (707) 769-5330 San Luis Obispo (805) 781-2265

City of San Leandro

Road: East 14th Street
From: 172nd Street
To: 162nd Street
Lane/Line: NB2

Survey Date: 07/10/18
Thickness: 1.00
Traffic Index: 8.00
Project Number: 180234



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City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	162nd Street	Thickness:	1.00
To:	172nd Street	Traffic Index:	8.00
Lane/Line:	SB1	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	14.25	19.62	30.81	4.25

Road Surface

Thickness	Traffic Index
1.00	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
17.00	23.19	25.06	26.68	0.20

HMA Overlay
0.11

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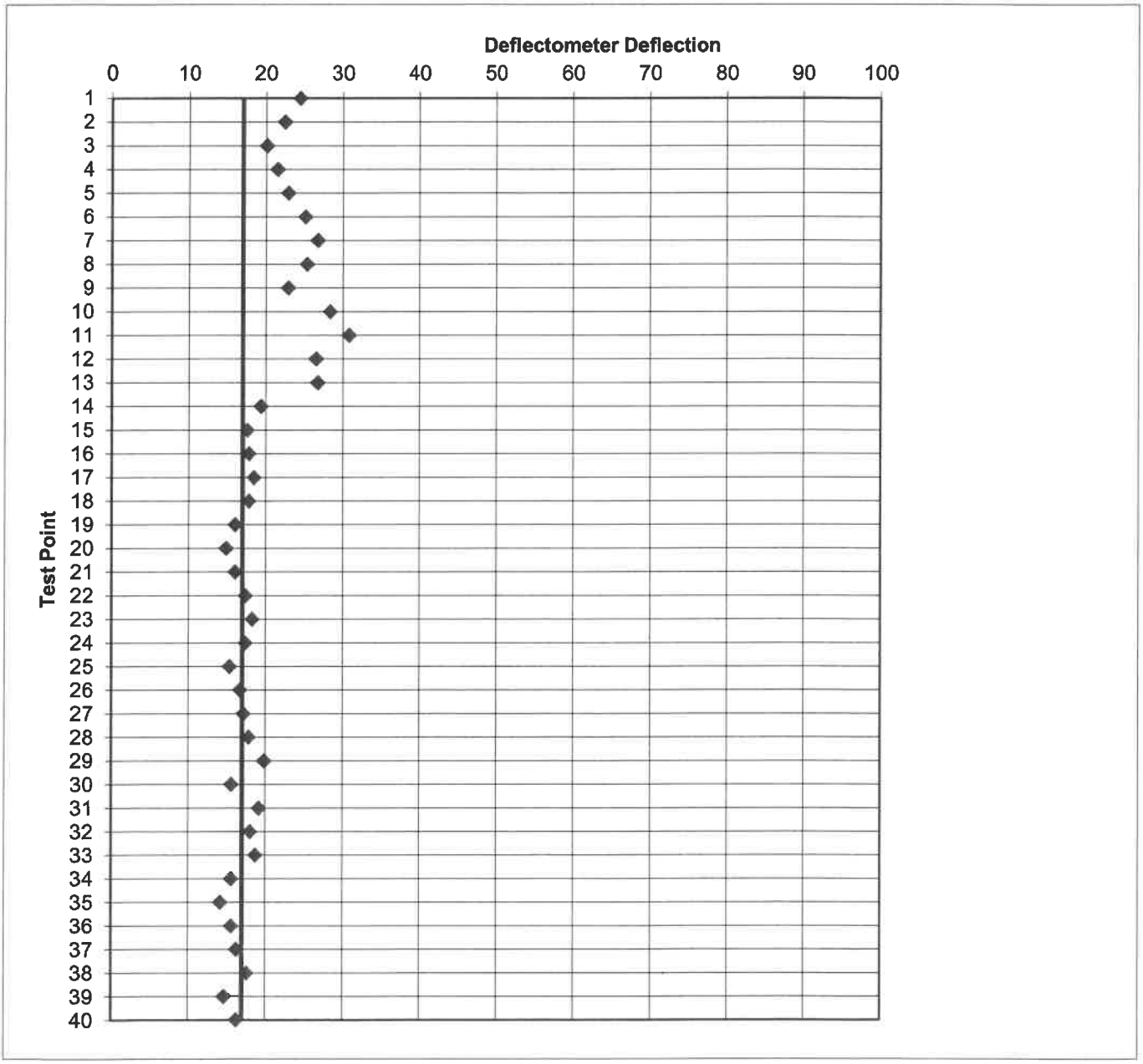
City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	162nd Street	Thickness:	1.00
To:	172nd Street	Traffic Index:	8.00
Lane/Line:	SB1	Project Number:	180234



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City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	162nd Street	Thickness:	1.00
To:	172nd Street	Traffic Index:	8.00
Lane/Line:	SB2	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	11.07	17.45	26.04	3.83

Road Surface

Thickness	Traffic Index
1.00	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
17.00	20.67	22.35	17.75	0.08

HMA Overlay
0.04

PAVEMENT ENGINEERING INCORPORATED

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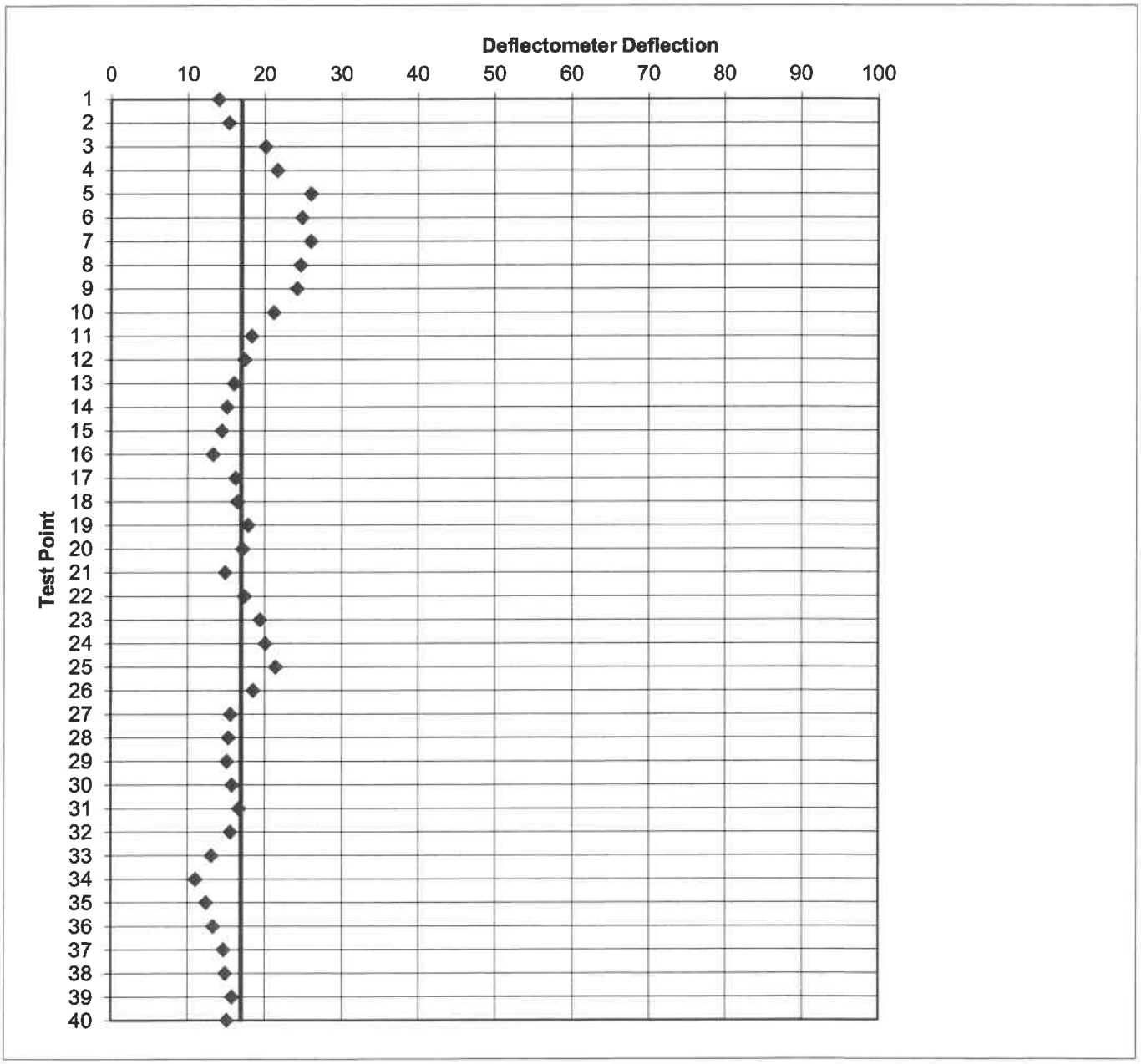
City of San Leandro

Road: East 14th Street
From: 162nd Street
To: 172nd Street
Lane/Line: SB2

Survey Date: 07/10/18
Thickness: 1.00
Traffic Index: 8.00
Project Number: 180234



East 14th Street

162nd Street to 172nd Street
(Analysis at Traffic index of 9.0)

CORING LOG

Core No.	Location	HMA Layer (Inches)	PCC Layer (inches)	AB Layer (Inches)	R-value
1	NB2 385 ft north of 172nd Street	6	4-1/2	---	10
2	NB2 1330 ft north of 172nd Street	6-1/2	5-1/2	---	15
3	NB2 2450 ft north of 172nd Street	6-1/2	5	---	10
4	NB2 3500 ft north of 172nd Street	6	4-1/2	---	11
5	NB1 1150 ft north of 172nd Street	7-1/2	4-1/2	8	---
6	NB1 2000 ft north of 172nd Street	7	6	---	---
7	NB1 3150 ft north of 172nd Street	12	---	---	---
8	NB1 3950 ft north of 172nd Street	11-1/2	---	7	---
9	SB2 600 ft south of 162nd Street	6-3/4	0	7	---
10	SB2 1500 ft south of 162nd Street	6	5-1/2	7	---
11	SB2 2675 ft south of 162nd Street	6	4	5	---
12	SB2 3500 ft south of 162nd Street	6	6	2-1/2	---
13	SB1 1100 ft south of 162nd Street	8	0	0	---
14	SB1 2100 ft south of 162nd Street	6-1/2	7	3	---
15	SB1 2950 ft south of 162nd Street	7	7	3-1/2	----
16	SB1 3950 ft south of 162nd Street	5-1/2	6-1/4	3	---

STRUCTURAL REQUIREMENTS
(by Deflection Analysis)

Direction	Traffic Index (TI)	Tolerable	80th Percentile	HMA Overlay Requirement (Inches)
NB1	9.0	14	21	2
NB2	9.0	14	22	2-1/4
SB1	9.0	14	23	2-1/2
SB2	9.0	14	21	1-34

REFLECTIVE CRACKING REQUIREMENTS

HMA Overlay Requirement (Inches)*	Pavement Fabric Required (Yes or No)
5-1/4	Yes

**(Required overlay by reflective cracking is half the existing AC thickness - if pavement fabric is used then this criteria can be reduced by 1-1/4 inch with at least a minimum overlay requirement of 1-3/4 inch)*

VISUAL CONDITIONS

The pavement exhibits block shrinkage cracking with alligator cracking developing. Some areas of alligator cracking have progressed to base failures. There are numerous large areas of repaired pavement in all lanes.

ANALYSIS

The existing pavement structure is variable with most areas having asphalt concrete over PCC pavement. There are some locations that have asphalt concrete over the native soil or aggregate base. The general pavement section is 6 to 7 inches of asphalt concrete over 4-1/2 to 6 inches of PCC pavement. The condition of the pavement does not show signs of slab movement from the PCC. The pavement repairs cover such a large part of the pavement area, it may be difficult to determine if any slab movement is occurring.

The native soils are brown silty clays with R-values ranging from 10 to 15. The soils are slightly to moderately expansive. The recommended design R-value is 10.

Based on the deflection analysis, the pavement is structurally deficient by 2-1/2 inches of HMA.

For this pavement, PEI is providing recommendations milling and replacement and reconstruction with Full Depth HMA or HMA over aggregate base. Full depth reclamation (FDR) is not recommended due to the concrete under the HMA.

RECOMMENDATIONS

Overlay Options

Overlays are not recommended because the minimum thickness required to inhibit reflective cracking exceeds 3 inches.

Milling and Replacement Option

We recommend milling off 5 inches of the existing pavement, placing a 2-1/2 HMA leveling course and a 2-1/2 inch HMA overlay. RHMA can be used in lieu of HMA for the surface course overlay if a rubber grant is available.

Recycling Option

Recycling is not recommended due to the structural deficiency of the pavement.

FDR Option

FDR is not recommended because the PCC pavement cannot be pulverized for treatment.

Reconstruction Options

Full Depth HMA
We recommend removing to a depth of 13-1/2 inches and placing 13-1/2 inches of HMA in 5 to 6 lifts.

HMA over Aggregate Base
We recommend removing to a depth of 21-1/2 inches, installing a SEG fabric, placing 16 inches of aggregate base and 5-1/2 inches of HMA in two lifts.

As previously discussed in the report, rehabilitation alternatives may have different anticipated service lives. The design engineer should evaluate each alternative based on cost, constructability, and impact on the public.

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Redding (530) 224-4535 **Petaluma** (707) 769-5330 **San Luis Obispo** (805) 781-2265

City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	172nd Street	Thickness:	1.00
To:	162nd Street	Traffic Index:	9.00
Lane/Line:	NB1	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	10.84	18.05	25.82	3.75

Road Surface

Thickness	Traffic Index
1.00	9.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
14.00	21.19	22.84	33.94	0.31

HMA Overlay
0.16

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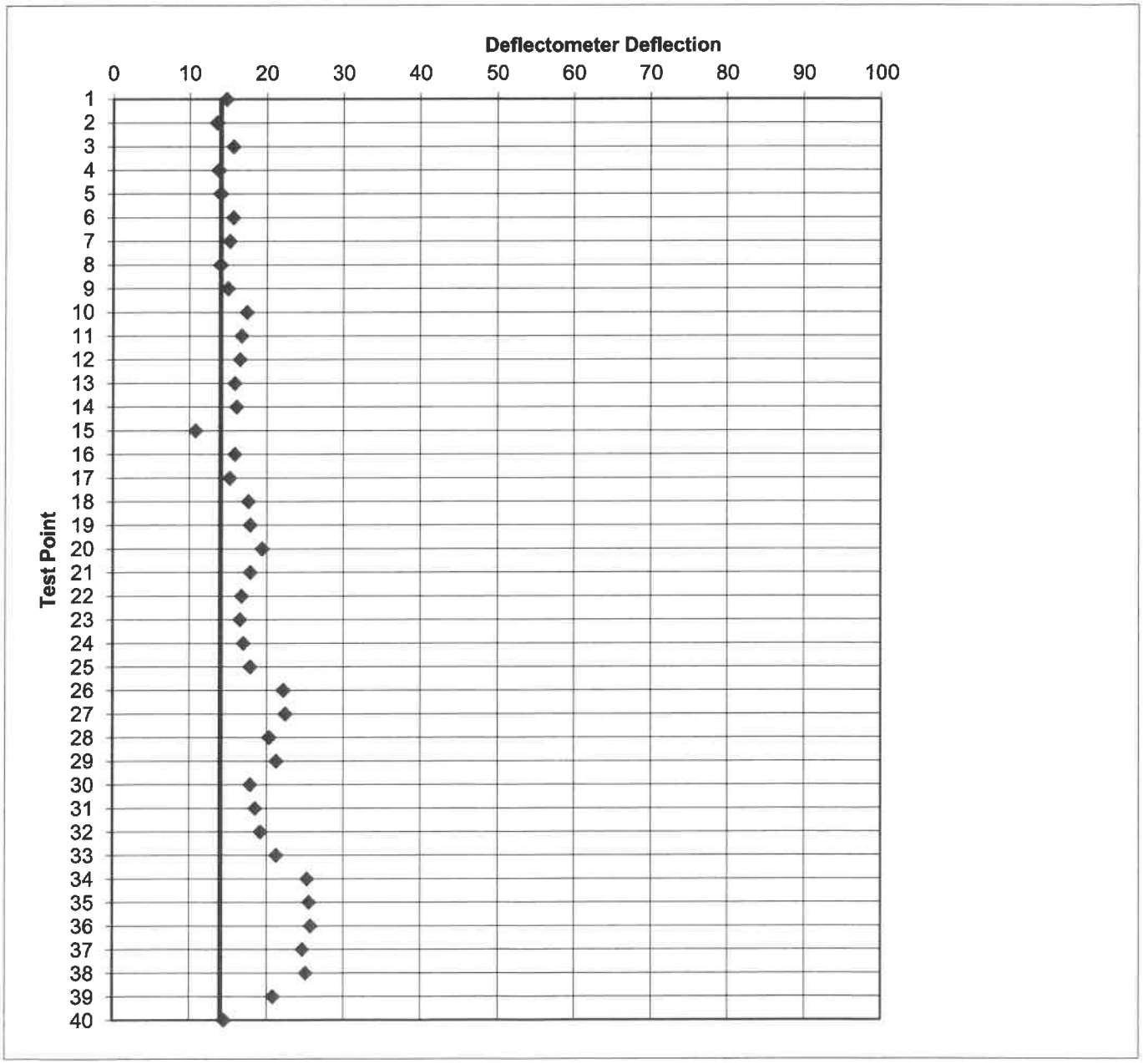
City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	172nd Street	Thickness:	1.00
To:	162nd Street	Traffic Index:	9.00
Lane/Line:	NB1	Project Number:	180234



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City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	172nd Street	Thickness:	1.00
To:	162nd Street	Traffic Index:	9.00
Lane/Line:	NB2	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	14.02	19.34	33.53	3.63

Road Surface

Thickness	Traffic Index
1.00	9.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
14.00	22.39	23.99	37.48	0.37

HMA Overlay
0.19

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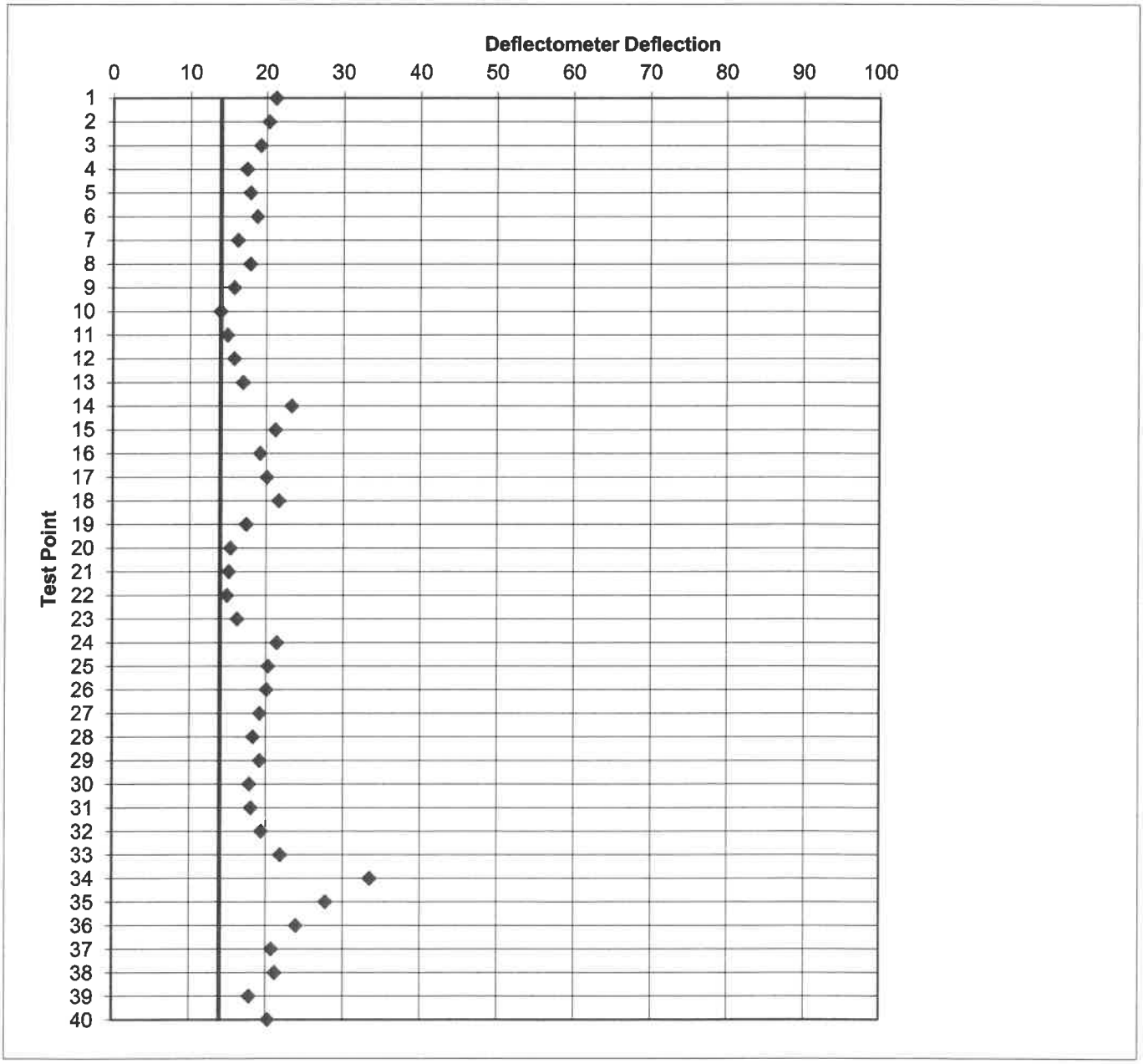
City of San Leandro

Road: East 14th Street
From: 172nd Street
To: 162nd Street
Lane/Line: NB2

Survey Date: 07/10/18
Thickness: 1.00
Traffic Index: 9.00
Project Number: 180234



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City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	162nd Street	Thickness:	1.00
To:	172nd Street	Traffic Index:	9.00
Lane/Line:	SB1	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	14.25	19.62	30.81	4.25

Road Surface

Thickness	Traffic Index
1.00	9.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
14.00	23.19	25.06	39.62	0.41

HMA Overlay
0.22

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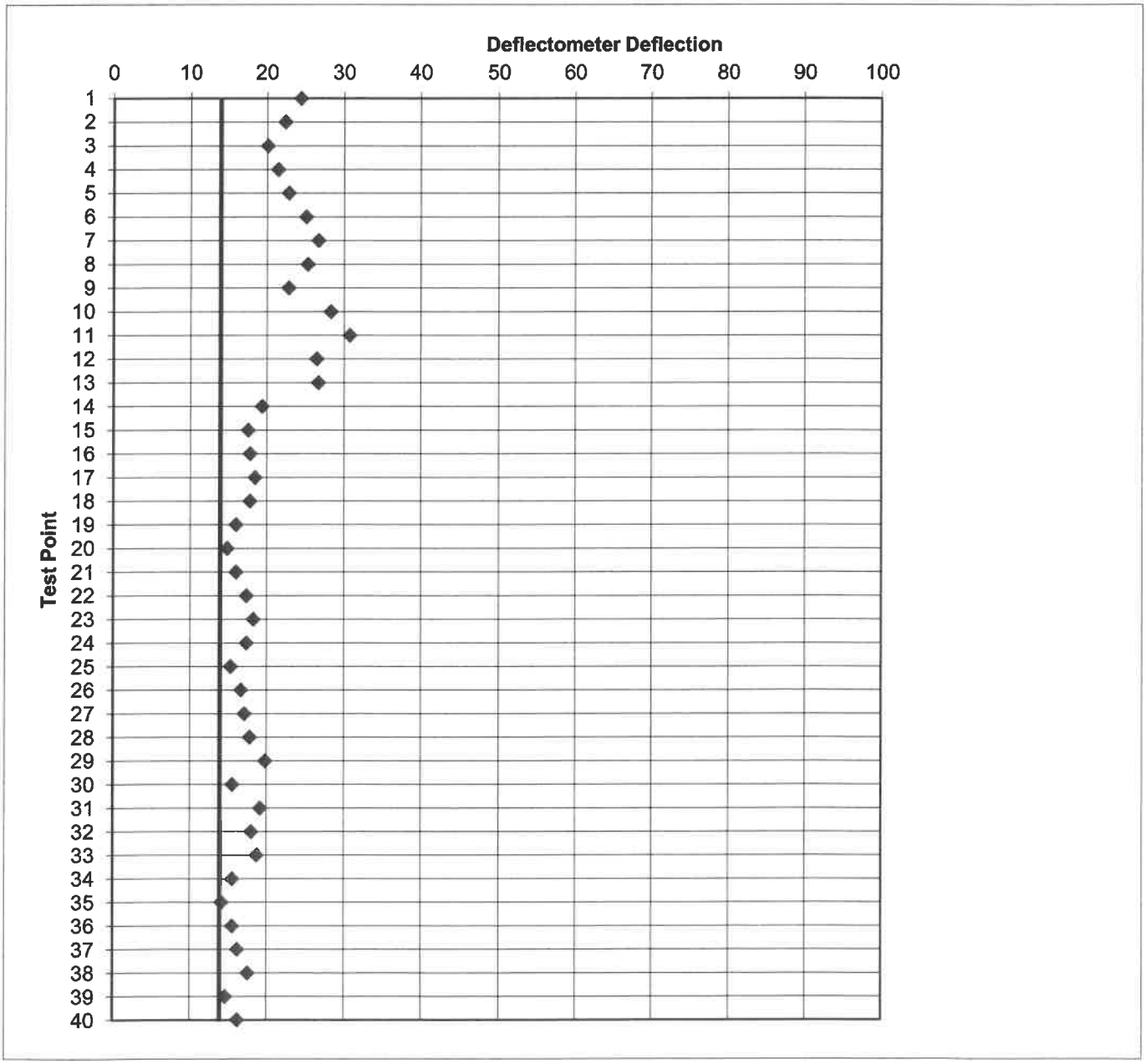
City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	162nd Street	Thickness:	1.00
To:	172nd Street	Traffic Index:	9.00
Lane/Line:	SB1	Project Number:	180234



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City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	162nd Street	Thickness:	1.00
To:	172nd Street	Traffic Index:	9.00
Lane/Line:	SB2	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	11.07	17.45	26.04	3.83

Road Surface

Thickness	Traffic Index
1.00	9.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
14.00	20.67	22.35	32.26	0.28

HMA Overlay
0.15

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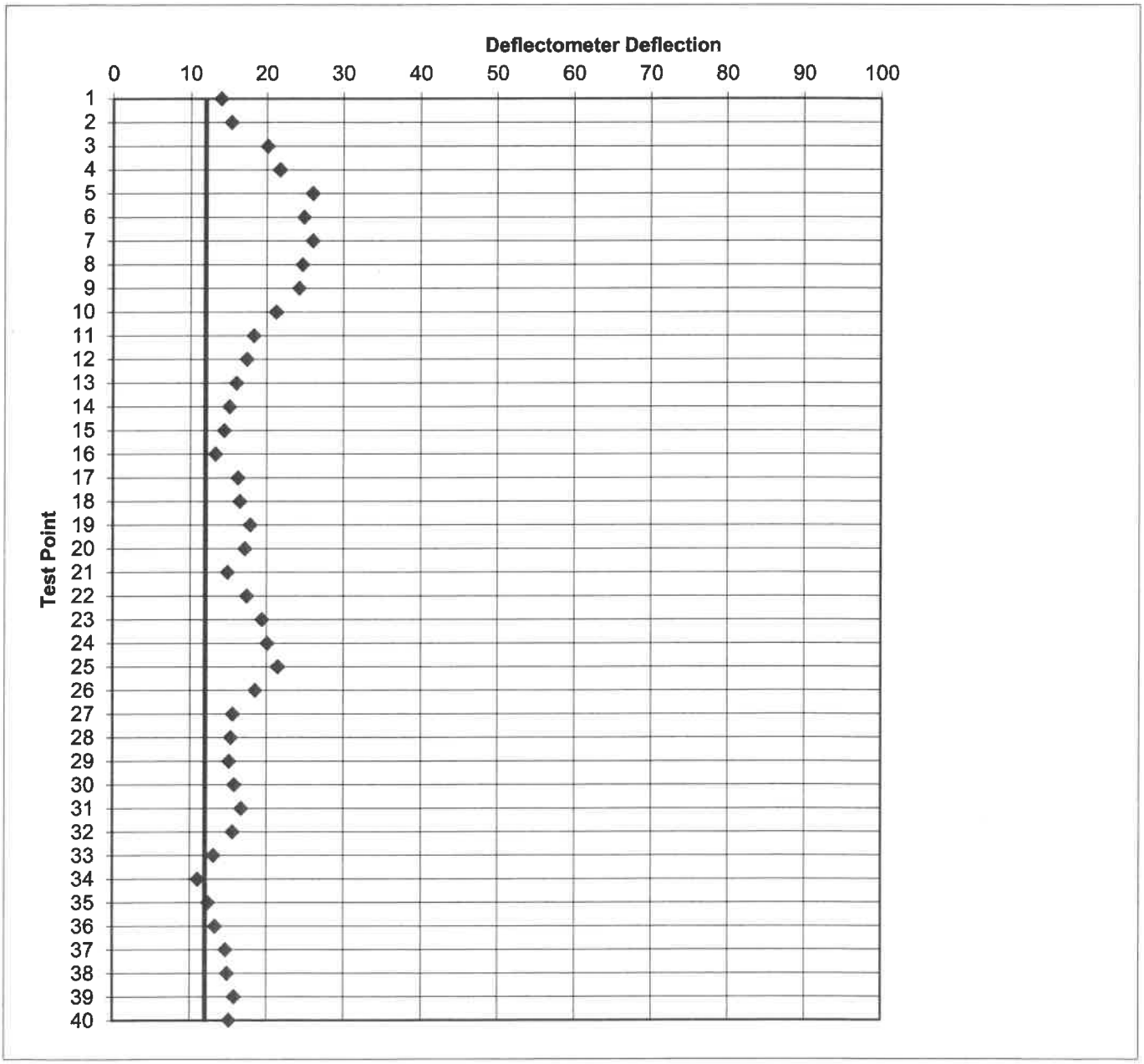
City of San Leandro

Road: East 14th Street
From: 162nd Street
To: 172nd Street
Lane/Line: SB2

Survey Date: 07/10/18
Thickness: 1.00
Traffic Index: 9.00
Project Number: 180234



East 14th Street

162nd Street to 172nd Street
(Analysis at Traffic Index of 10.0)

CORING LOG

Core No.	Location	HMA Layer (Inches)	PCC Layer (inches)	AB Layer (Inches)	R-value
1	NB2 385 ft north of 172nd Street	6	4-1/2	---	10
2	NB2 1330 ft north of 172nd Street	6-1/2	5-1/2	---	15
3	NB2 2450 ft north of 172nd Street	6-1/2	5	---	10
4	NB2 3500 ft north of 172nd Street	6	4-1/2	---	11
5	NB1 1150 ft north of 172nd Street	7-1/2	4-1/2	8	---
6	NB1 2000 ft north of 172nd Street	7	6	---	---
7	NB1 3150 ft north of 172nd Street	12	---	---	---
8	NB1 3950 ft north of 172nd Street	11-1/2	---	7	---
9	SB2 600 ft south of 162nd Street	6-3/4	0	7	---
10	SB2 1500 ft south of 162nd Street	6	5-1/2	7	---
11	SB2 2675 ft south of 162nd Street	6	4	5	---
12	SB2 3500 ft south of 162nd Street	6	6	2-1/2	---
13	SB1 1100 ft south of 162nd Street	8	0	0	---
14	SB1 2100 ft south of 162nd Street	6-1/2	7	3	---
15	SB1 2950 ft south of 162nd Street	7	7	3-1/2	----
16	SB1 3950 ft south of 162nd Street	5-1/2	6-1/4	3	---

STRUCTURAL REQUIREMENTS
(by Deflection Analysis)

Direction	Traffic Index (TI)	Tolerable	80th Percentile	HMA Overlay Requirement (Inches)
NB1	10.0	12	21	3
NB2	10.0	12	22	3-1/2
SB1	10.0	12	23	4
SB2	10.0	12	21	3

REFLECTIVE CRACKING REQUIREMENTS

HMA Overlay Requirement (Inches)*	Pavement Fabric Required (Yes or No)
5-1/4	Yes

**(Required overlay by reflective cracking is half the existing AC thickness - if pavement fabric is used then this criteria can be reduced by 1-1/4 inch with at least a minimum overlay requirement of 1-3/4 inch)*

VISUAL CONDITIONS

The pavement exhibits block shrinkage cracking with alligator cracking developing. Some areas of alligator cracking have progressed to base failures. There are numerous large areas of repaired pavement in all lanes

ANALYSIS

The existing pavement structure is variable with most areas having asphalt concrete over PCC pavement. There are some locations that have asphalt concrete over the native soil or aggregate base. The general pavement section is 6 to 7 inches of asphalt concrete over 4-1/2 to 6 inches of PCC pavement. The condition of the pavement does not show signs of slab movement from the PCC. The pavement repairs cover such a large part of the pavement area, it may be difficult to determine if any slab movement is occurring.

The native soils are brown silty clays with R-values ranging from 10 to 15. The soils are slightly to moderately expansive. The recommended design R-value is 10.

Based on the deflection analysis, the pavement is structurally deficient by 4 inches of HMA.

For this pavement, PEI is providing recommendations for reconstruction with Full Depth HMA or HMA over aggregate base. Full depth reclamation (FDR) is not recommended due to the concrete under the HMA.

RECOMMENDATIONS

Overlay Options

Overlays are not recommended because the minimum thickness required to inhibit reflective cracking exceeds 3 inches.

Milling and Replacement Option

Milling and replacement is not recommended because the milling depth would be deeper than the existing HMA layer to meet structural requirements.

Recycling Option

Recycling is not recommended due to the structural deficiency.

FDR Option

FDR is not recommended because the PCC pavement cannot be pulverized for treatment.

Reconstruction Options

Full Depth HMA
We recommend removing to a depth of 15 inches and placing 15 inches of HMA in 5 to 6 lifts

HMA over Aggregate Base
We recommend removing to a depth of 24-1/2 inches, installing a SEG fabric, placing 18-1/2 inches of aggregate base 6 inches of HMA in two to three lifts.

As previously discussed in the report, rehabilitation alternatives may have different anticipated service lives. The design engineer should evaluate each alternative based on cost, constructability, and impact on the public.

PAVEMENT ENGINEERING INCORPORATED

Redding	Petaluma	San Luis Obispo
(530) 224-4535	(707) 769-5330	(805) 781-2265

City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	172nd Street	Thickness:	1.00
To:	162nd Street	Traffic Index:	10.00
Lane/Line:	NB1	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	10.84	18.05	25.82	3.75

Road Surface

Thickness	Traffic Index
1.00	10.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
12.00	21.19	22.84	43.38	0.49

HMA Overlay
0.26

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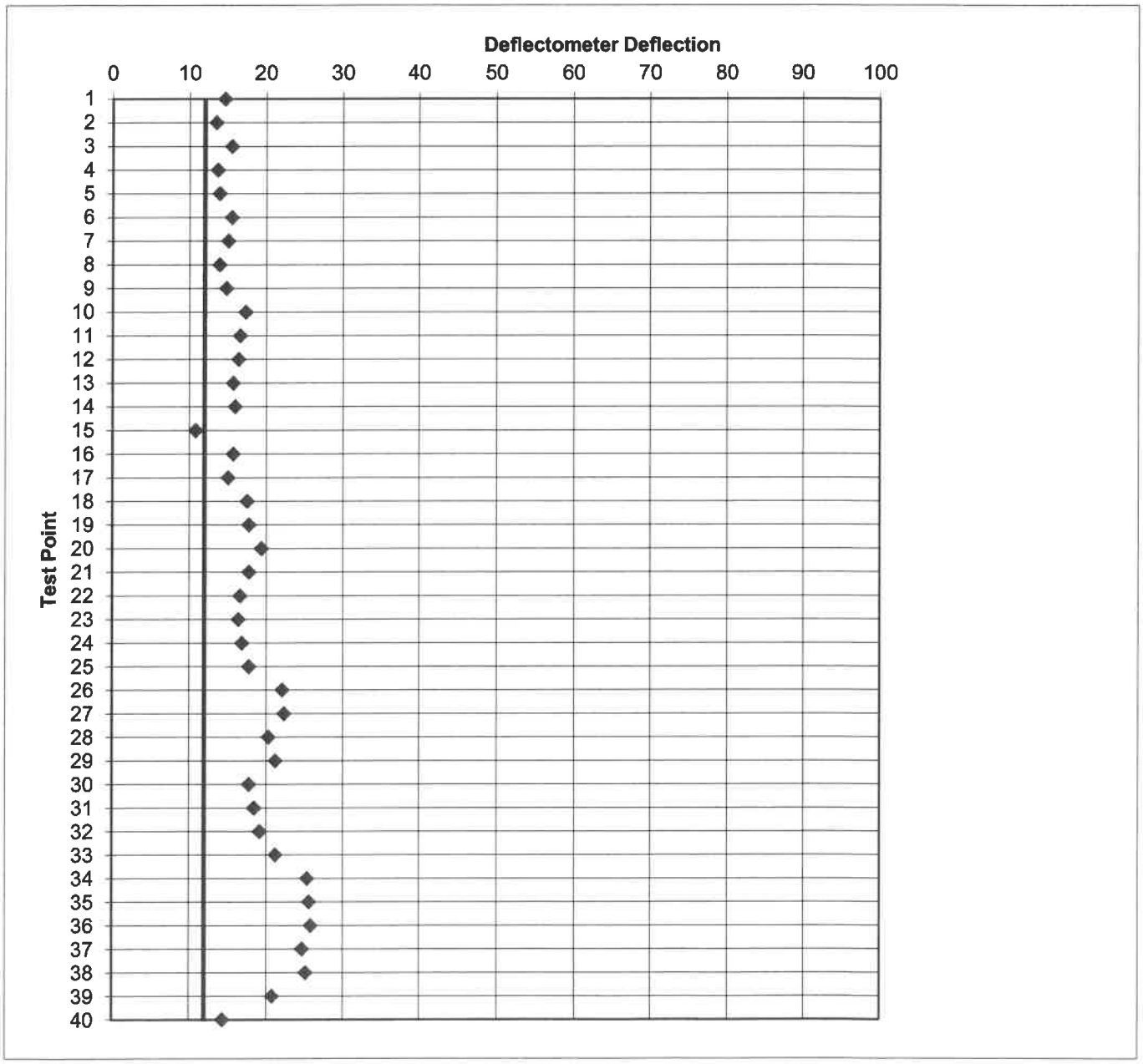
San Luis Obispo (805) 781-2265

City of San Leandro

Road: East 14th Street
From: 172nd Street
To: 162nd Street
Lane/Line: NB1

Survey Date: 07/10/18
Thickness: 1.00
Traffic Index: 10.00
Project Number: 180234



PAVEMENT ENGINEERING INCORPORATED

Redding	Petaluma	San Luis Obispo
(530) 224-4535	(707) 769-5330	(805) 781-2265

City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	172nd Street	Thickness:	1.00
To:	162nd Street	Traffic Index:	10.00
Lane/Line:	NB2	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	14.02	19.34	33.53	3.63

Road Surface

Thickness	Traffic Index
1.00	10.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
12.00	22.39	23.99	46.41	0.56

HMA Overlay
0.29

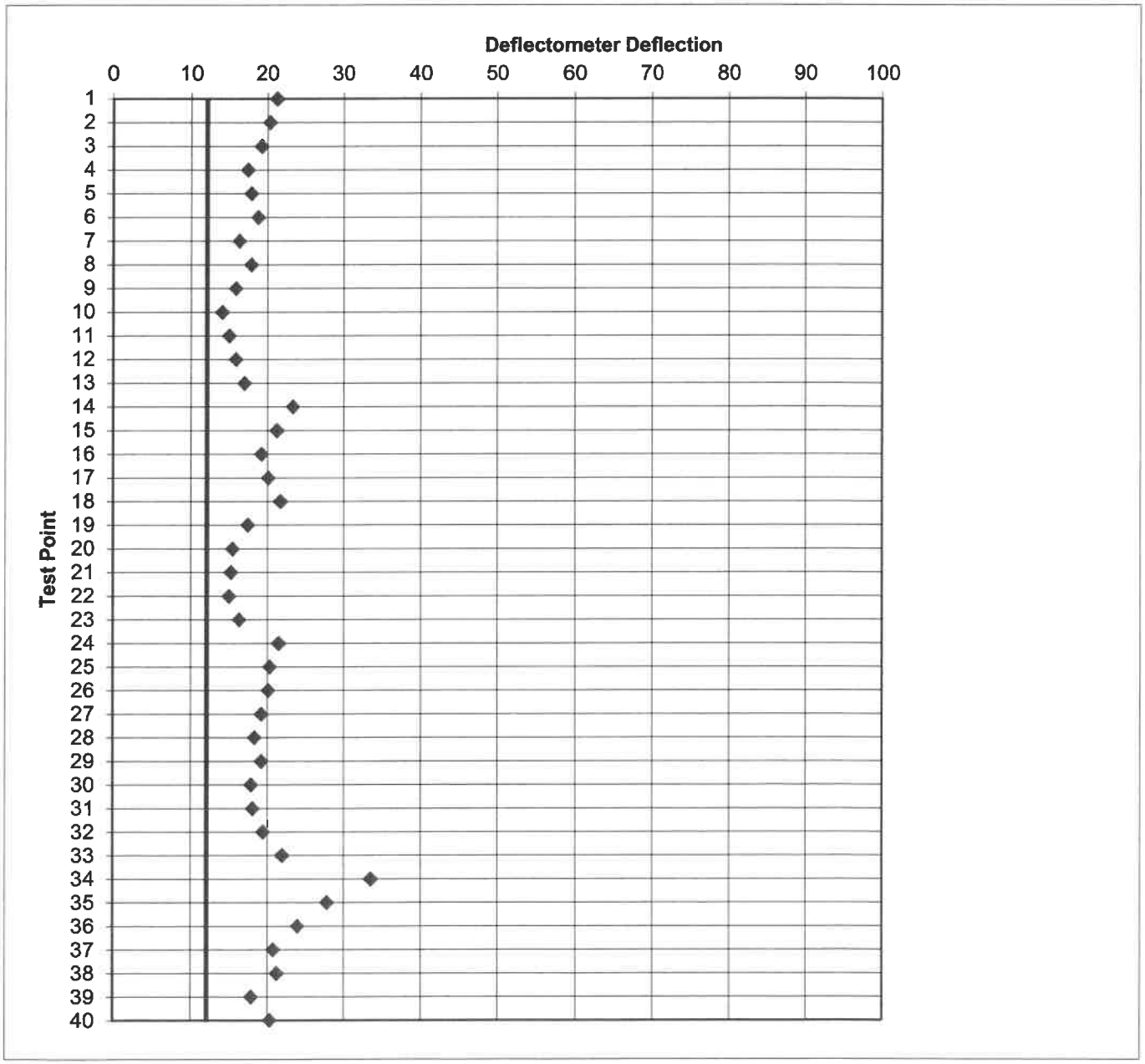
PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | **Petaluma** (707) 769-5330 | **San Luis Obispo** (805) 781-2265

City of San Leandro

Road: East 14th Street
From: 172nd Street
To: 162nd Street
Lane/Line: NB2

Survey Date: 07/10/18
Thickness: 1.00
Traffic Index: 10.00
Project Number: 180234



PAVEMENT ENGINEERING INCORPORATED

Redding	Petaluma	San Luis Obispo
(530) 224-4535	(707) 769-5330	(805) 781-2265

City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	162nd Street	Thickness:	1.00
To:	172nd Street	Traffic Index:	10.00
Lane/Line:	SB1	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	14.25	19.62	30.81	4.25

Road Surface

Thickness	Traffic Index
1.00	10.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
12.00	23.19	25.06	48.25	0.60

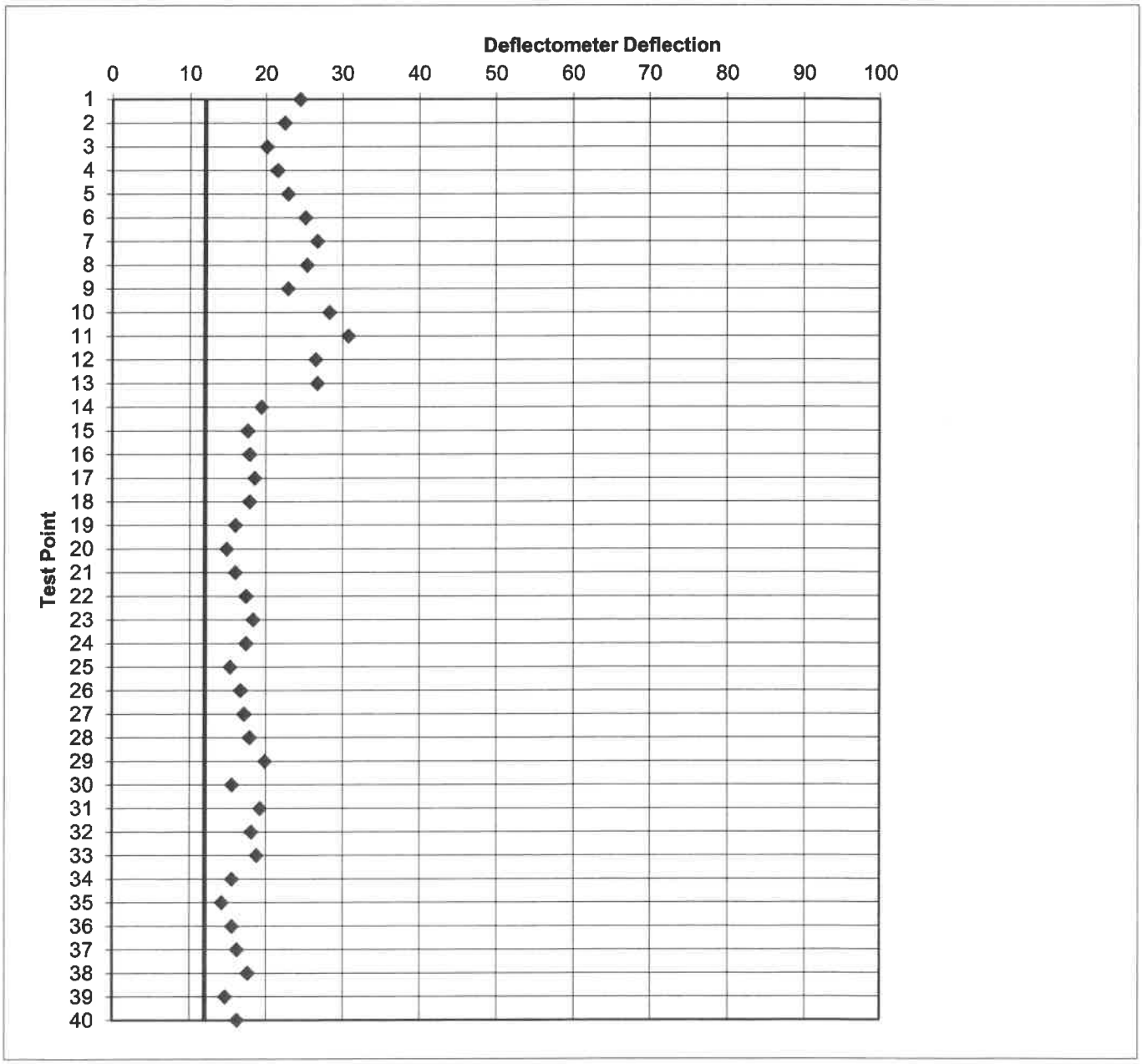
HMA Overlay
0.32

PAVEMENT ENGINEERING INCORPORATED
Redding (530) 224-4535
Petaluma (707) 769-5330
San Luis Obispo (805) 781-2265

City of San Leandro

Road: East 14th Street
From: 162nd Street
To: 172nd Street
Lane/Line: SB1

Survey Date: 07/10/18
Thickness: 1.00
Traffic Index: 10.00
Project Number: 180234



PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 **Petaluma** (707) 769-5330 **San Luis Obispo** (805) 781-2265

City of San Leandro

Road:	East 14th Street	Survey Date:	07/10/18
From:	162nd Street	Thickness:	1.00
To:	172nd Street	Traffic Index:	10.00
Lane/Line:	SB2	Project Number:	180234

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
40	11.07	17.45	26.04	3.83

Road Surface

Thickness	Traffic Index
1.00	10.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
12.00	20.67	22.35	41.94	0.46

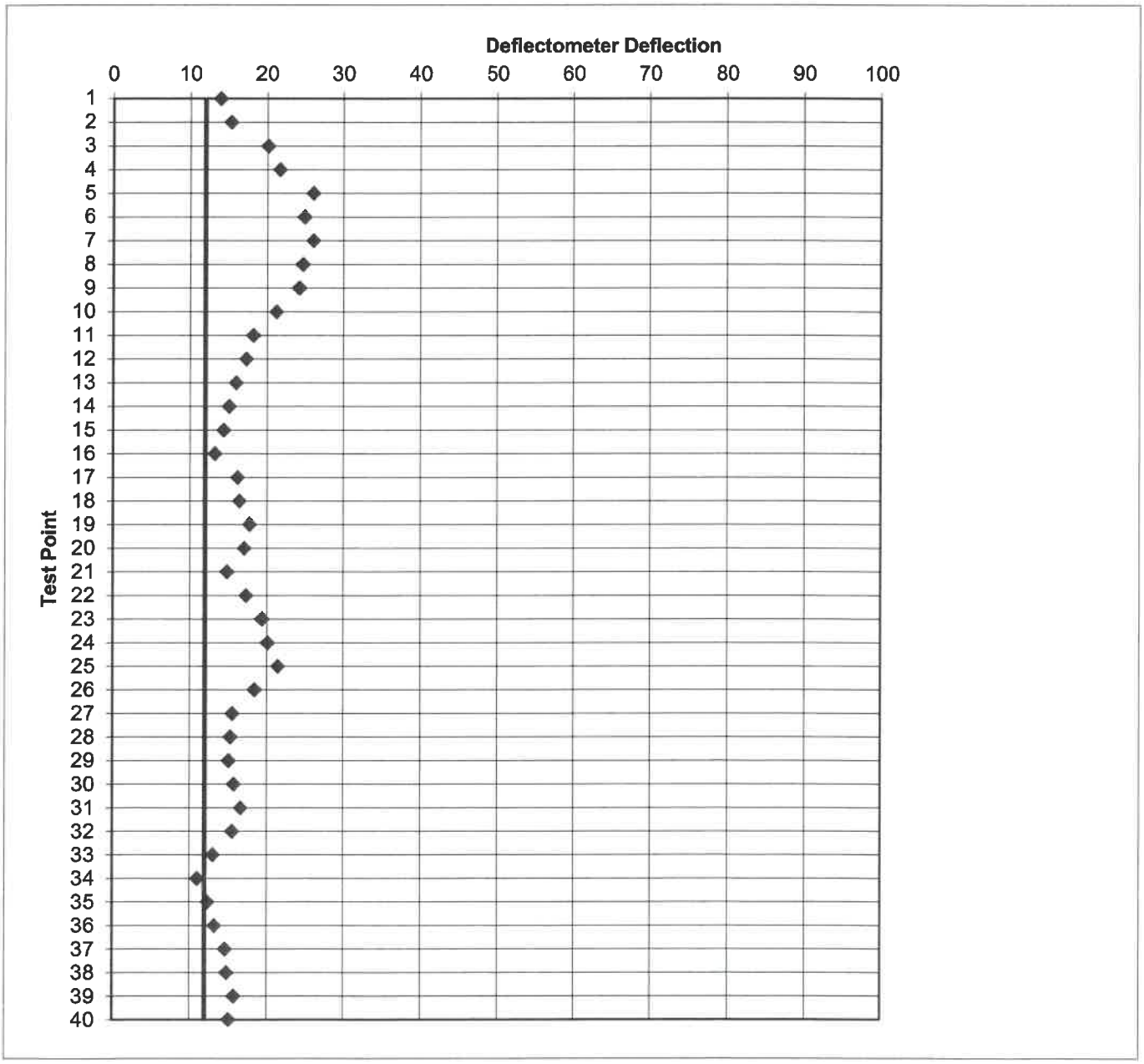
HMA Overlay
0.24

PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | **Petaluma** (707) 769-5330 | **San Luis Obispo** (805) 781-2265

City of San Leandro

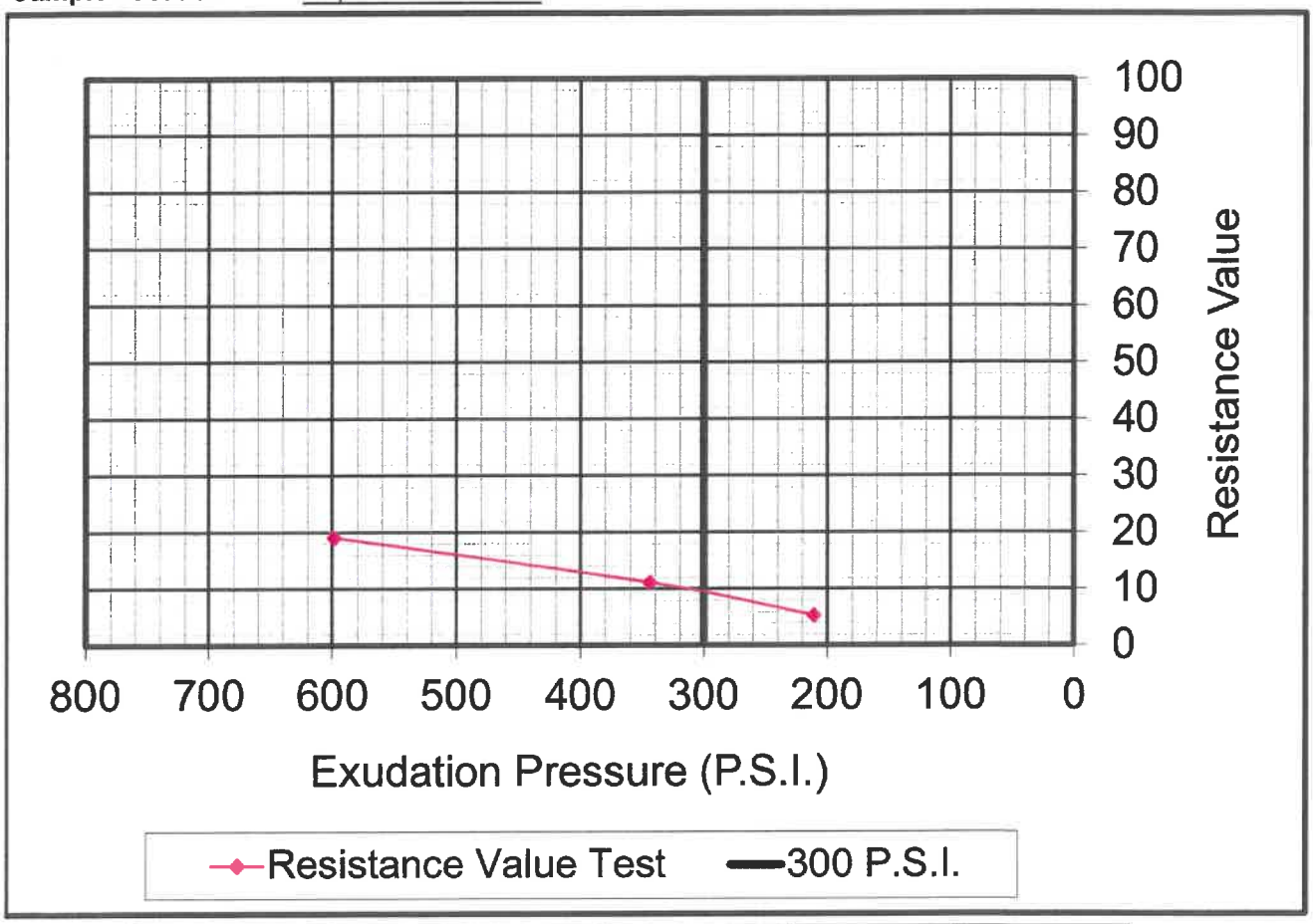
Road:	East 14th Street	Survey Date:	07/10/18
From:	162nd Street	Thickness:	1.00
To:	172nd Street	Traffic Index:	10.00
Lane/Line:	SB2	Project Number:	180234



Pavement Engineering Inc.
Redding • San Luis Obispo
Caltrans® / AMRL / QC • QA

RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.: L181069
Project No.: 180234
Sample Date: July 10, 2018
Report Date: July 14, 2018
Client: Cal Engineering & Geology, Inc.
Project Name: Deflection Analysis for East 14th St. San Leandro
Sample Description: Brown Silty Clay
Sample Location: C1, East 14th Street



Specimen No.	7	8	9
Moisture Content (%)	13.4	14.6	12.7
Dry Density (PCF)	117.5	116.4	120.5
Resistance Value (R)	11	5	19
Exudation Pressure (PSI)	344	211	598
Expansion Pressure	26	22	95
As Received Moisture Content (%)	13.4		

RESISTANCE VALUE AT 300 P.S.I. **10**

AASHTO R18

Reviewed By: _____
Brandon Rodebaugh
Materials Engineer

Pavement Engineering Inc.
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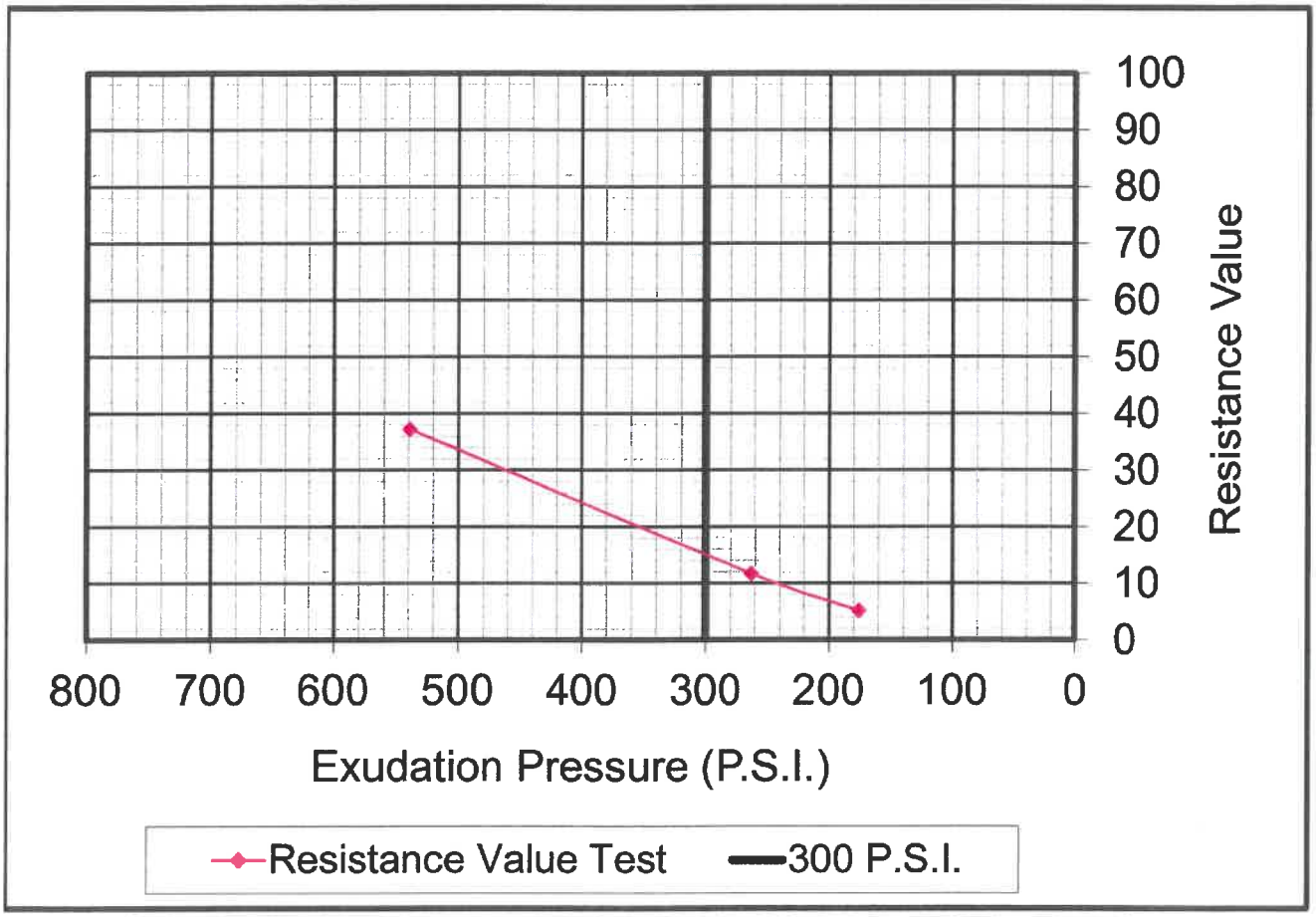
RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.: L181062
Project No.: 180234
Sample Date: July 10, 2018
Report Date: July 13, 2018
Client: Cal Engineering & Geology, Inc.
Project Name: Deflection Analysis for East 14th St. San Leandro
Sample Description: Brown Silty Clay
Sample Location: C2, East 14th Street



Specimen No.	10	11	12
Moisture Content (%)	14.0	15.0	12.9
Dry Density (PCF)	117.6	116.9	119.8
Resistance Value (R)	12	5	37
Exudation Pressure (PSI)	263	176	539
Expansion Pressure	78	61	108
As Received Moisture Content (%)	14.0		

RESISTANCE VALUE AT 300 P.S.I. **15**

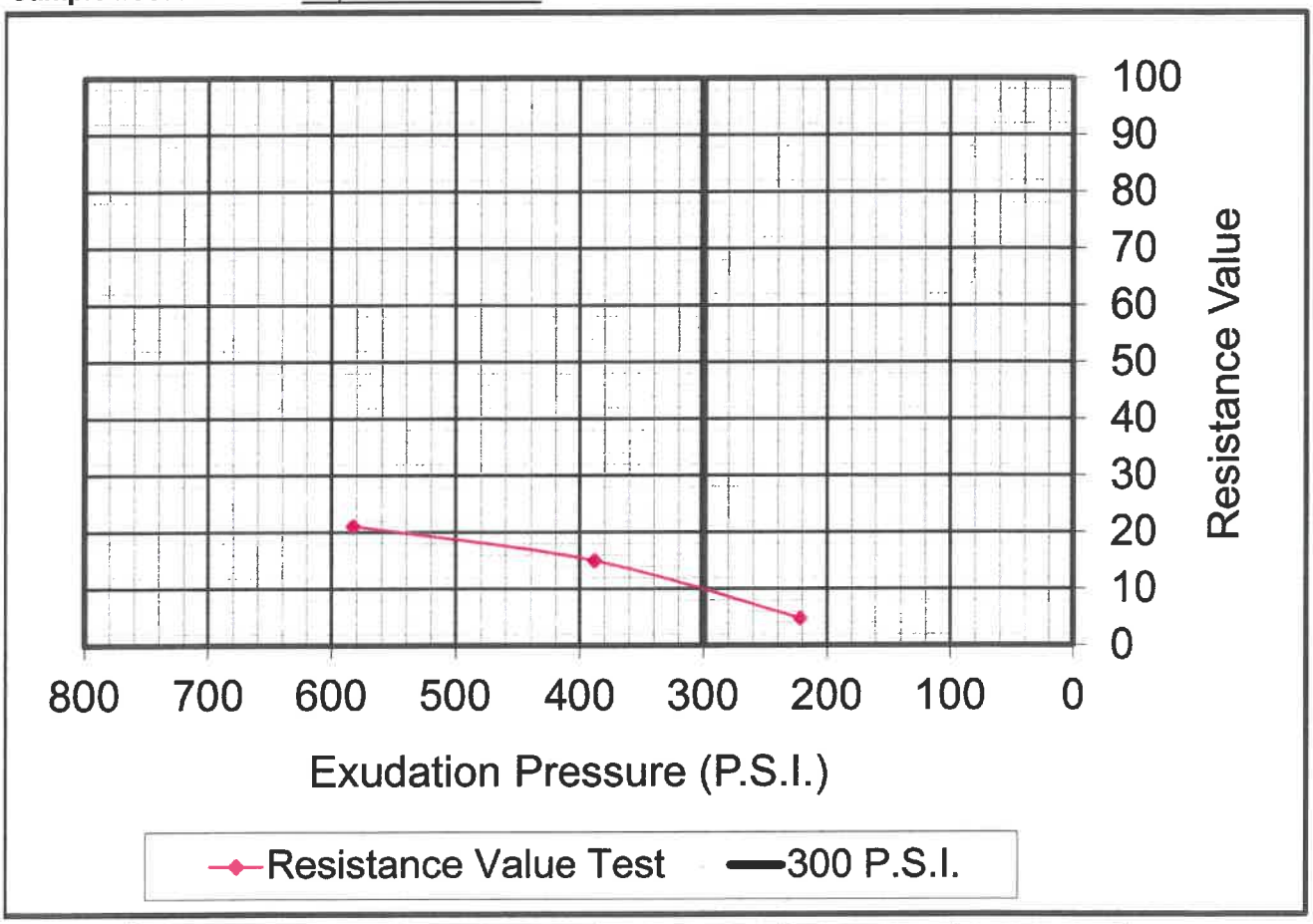
AAP® AASHTO R18

Reviewed By: _____
Brandon Rodebaugh
Materials Engineer

Pavement Engineering Inc.
Redding • San Luis Obispo
Caltrans® / AMRL / QC • QA

RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.: L181072
Project No.: 180234
Sample Date: July 10, 2018
Report Date: July 14, 2018
Client: Cal Engineering & Geology, Inc.
Project Name: Deflection Analysis for East 14th St. San Leandro
Sample Description: Brown Silty Clay
Sample Location: C3, East 14th Street



Specimen No.	1	2	3
Moisture Content (%)	15.6	14.5	14.9
Dry Density (PCF)	116.7	119.8	120.3
Resistance Value (R)	5	21	15
Exudation Pressure (PSI)	222	583	388
Expansion Pressure	52	91	65
As Received Moisture Content (%)	15.6		

RESISTANCE VALUE AT 300 P.S.I. **10**

AASHTO R18

Reviewed By: _____
Brandon Rodebaugh
Materials Engineer

Pavement Engineering Inc.
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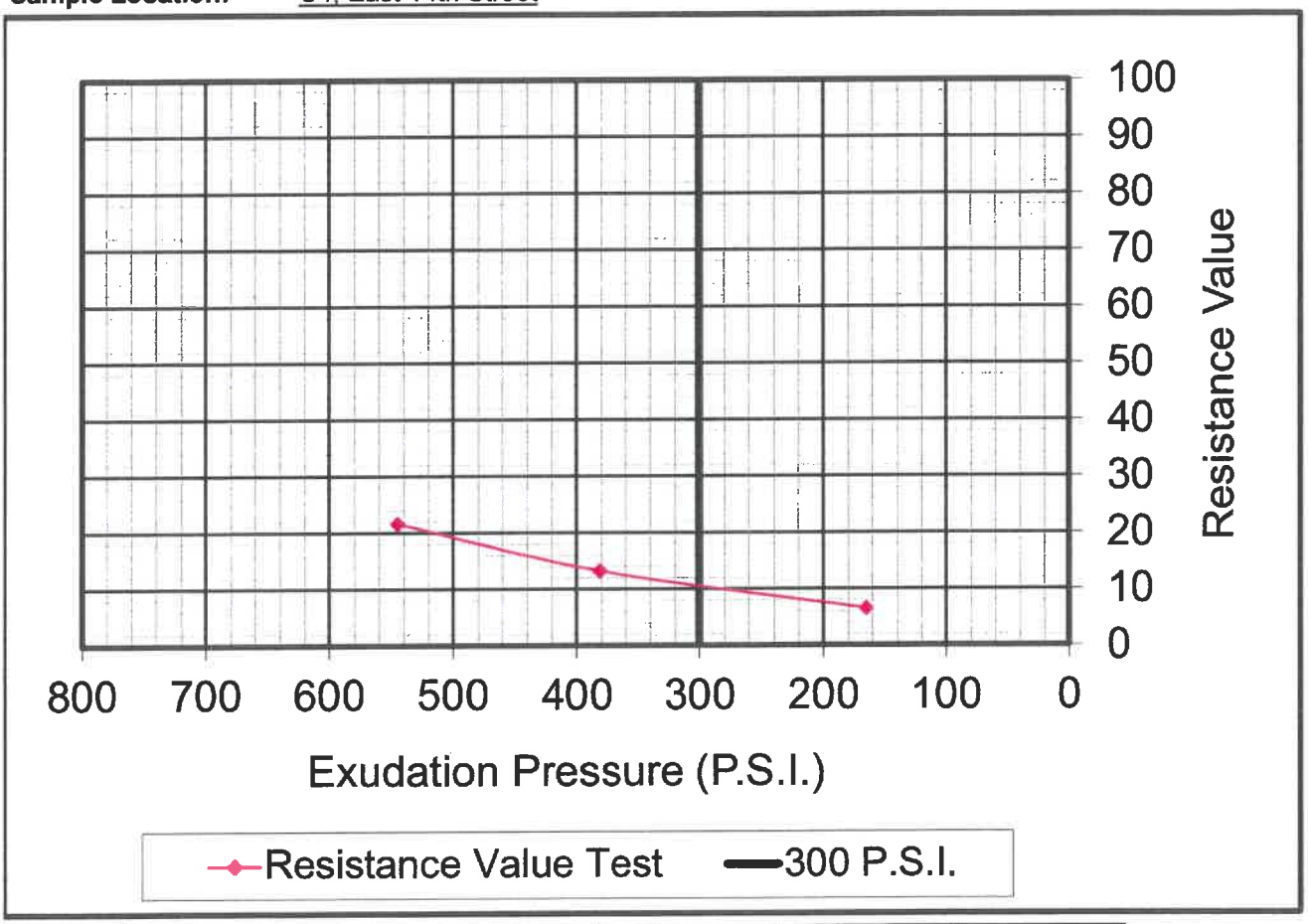
RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.: L181072
Project No.: 180234
Sample Date: July 10, 2018
Report Date: July 14, 2018
Client: Cal Engineering & Geology, Inc.
Project Name: Deflection Analysis for East 14th St. San Leandro
Sample Description: Brown Silty Clay
Sample Location: C4, East 14th Street



Specimen No.	7	8	9
Moisture Content (%)	12.7	13.8	12.2
Dry Density (PCF)	124.5	123.5	125.0
Resistance Value (R)	13	7	22
Exudation Pressure (PSI)	382	165	545
Expansion Pressure	0	0	26
As Received Moisture Content (%)	12.7		

RESISTANCE VALUE AT 300 P.S.I. 11

AAP® AASHTO R18

Reviewed By: _____
Brandon Rodebaugh
Materials Engineer

East 14th Street

EAST 14TH STREET – LOCATION #1

Near 162nd SB

EAST 14TH STREET – LOCATION #2

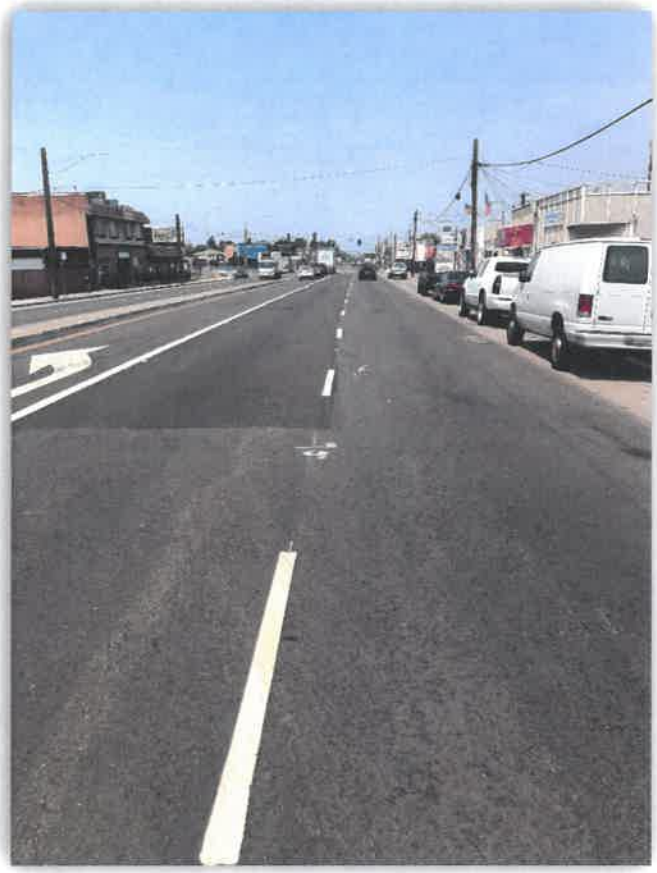
Near Kent Street SB

EAST 14TH STREET – LOCATION #3

Near 166th SB

EAST 14TH STREET – LOCATION #4

Near 170th SB



EAST 14TH STREET – LOCATION #5

Near 172nd NB

EAST 14TH STREET – LOCATION #6

Near 166th NB

EAST 14TH STREET – LOCATION #7

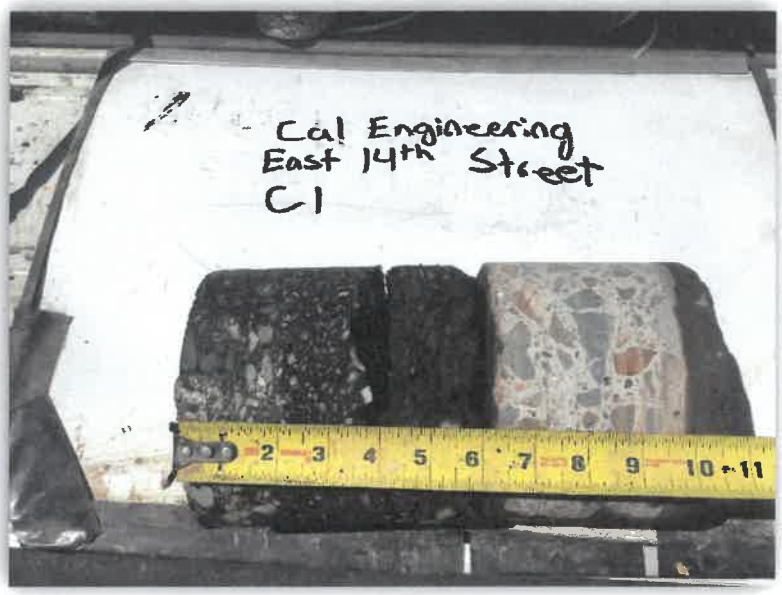
Near Pajaro Court NB

EAST 14TH STREET – LOCATION #8

Near 163rd NB

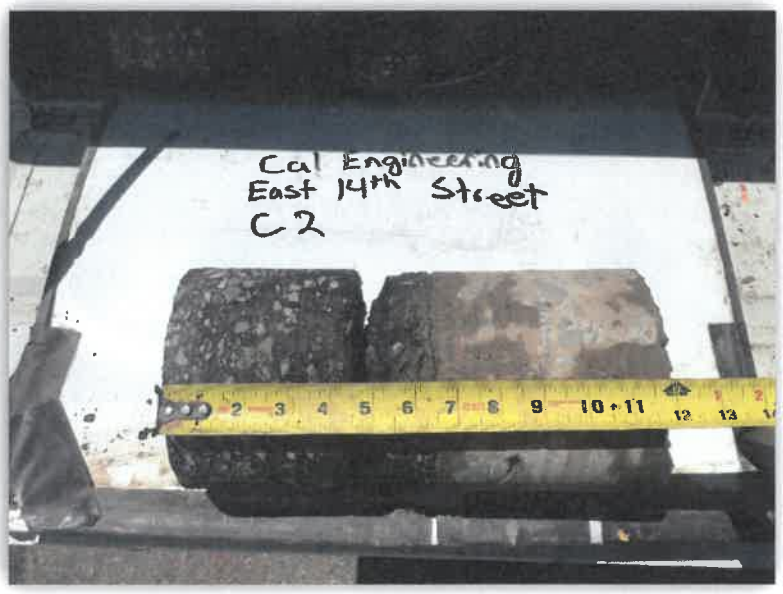
City of San Leandro - Coring Photo Log

East 14th Street



EAST 14TH STREET - CORE #1

HMA Layer 6" AB Layer 0" PCC Layer 4.5"



EAST 14TH STREET - CORE #2

HMA Layer 6.5" AB Layer 0" PCC Layer 5.5"

EAST 14TH STREET - CORE #3

HMA Layer 6.5" AB Layer 0" PCC Layer 5"

EAST 14TH STREET - CORE #4

HMA Layer 6" AB Layer 8" PCC Layer 4.5"

EAST 14TH STREET - CORE #5

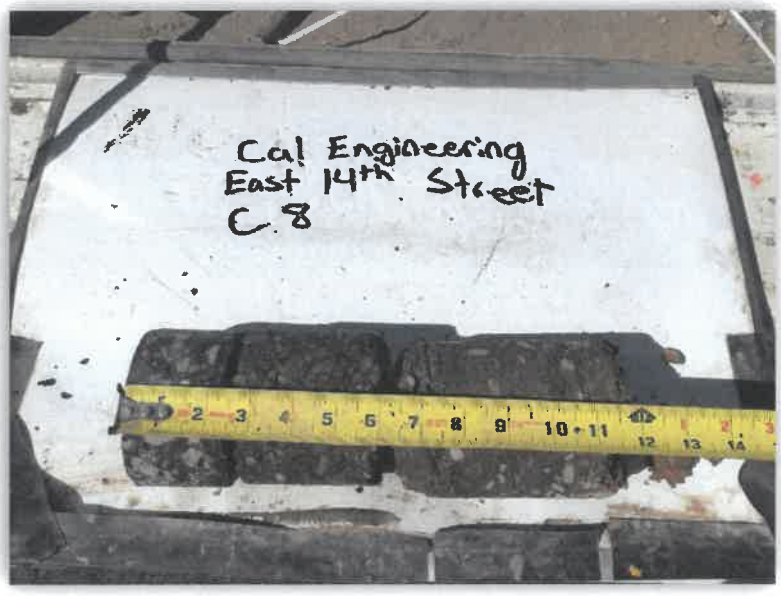
HMA Layer 7.5" AB Layer 0" PCC Layer 6"

EAST 14TH STREET - CORE #6

HMA Layer 7" AB Layer 0" PCC Layer 6"

EAST 14TH STREET - CORE #7

HMA Layer 12" AB Layer 0" PCC Layer 0"



EAST 14TH STREET - CORE #8

HMA Layer 11.5" AB Layer 7" PCC Layer 0"

EAST 14TH STREET - CORE #9

HMA Layer 6.75" AB Layer 7" PCC Layer 0"

EAST 14TH STREET - CORE #10

HMA Layer 6" AB Layer 7" PCC Layer 5.5"

EAST 14TH STREET - CORE #11

HMA Layer 6" AB Layer 5" PCC Layer 4"

EAST 14TH STREET - CORE #12

HMA Layer 6" AB Layer 2.5" PCC Layer 6"

EXHIBIT D-1

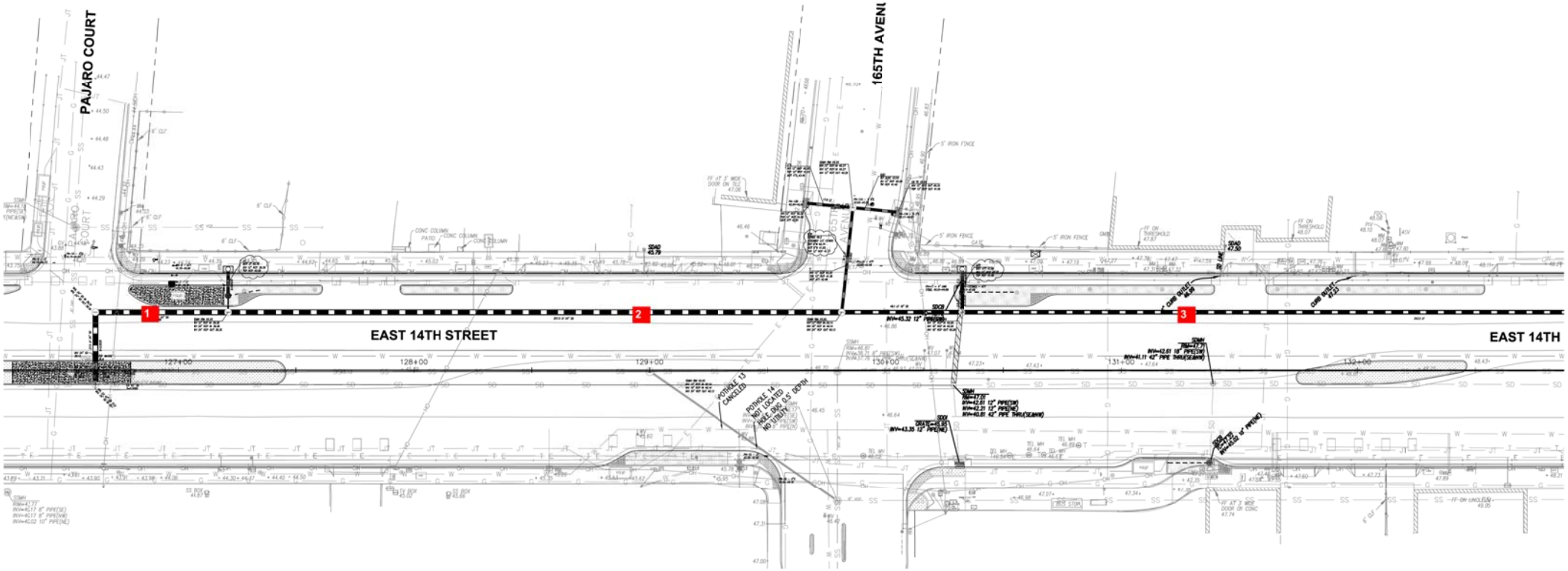

PAJARO COURT
165TH AVENI
EAST 14TH STREET
EAST 14TH
1
2
3
127+00
128+00
129+00
130+00
131+00
132+00

EXHIBIT D-1

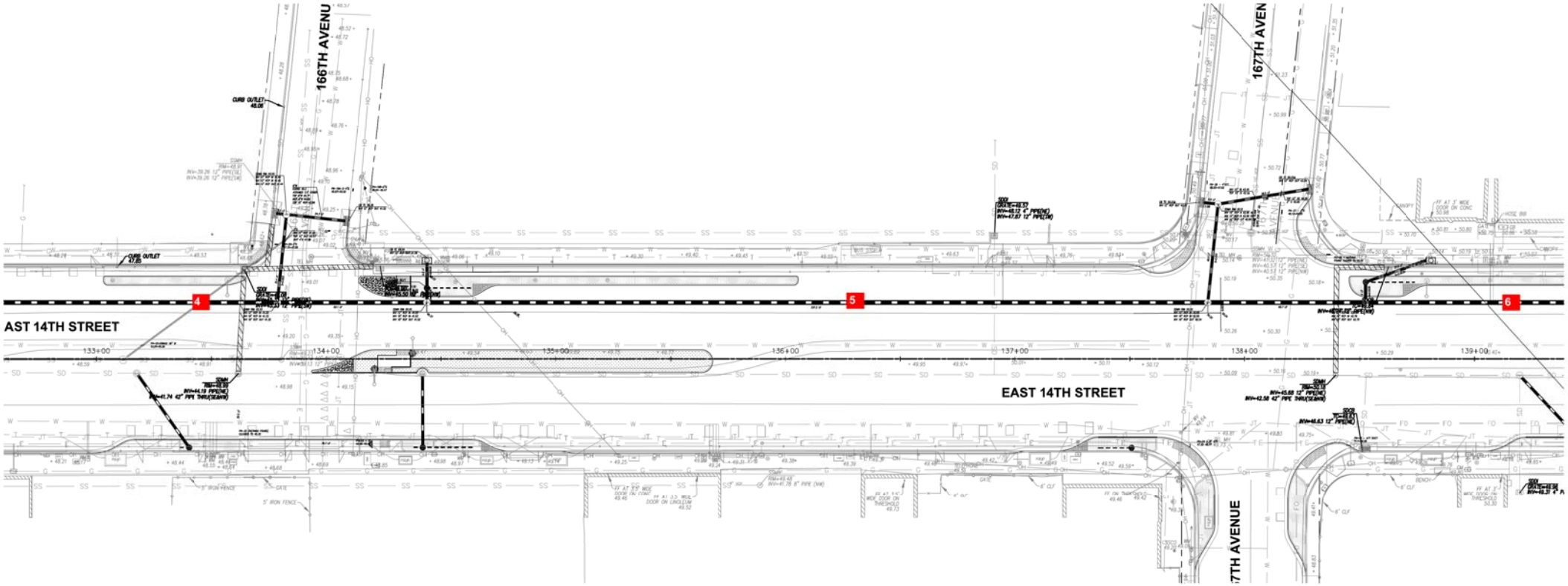

166TH AVENU
167TH AVEN
AST 14TH STREET
EAST 14TH STREET
4
5
6
133+00
134+00
135+00
136+00
137+00
138+00
139+00
7TH AVENUE

EXHIBIT D-1

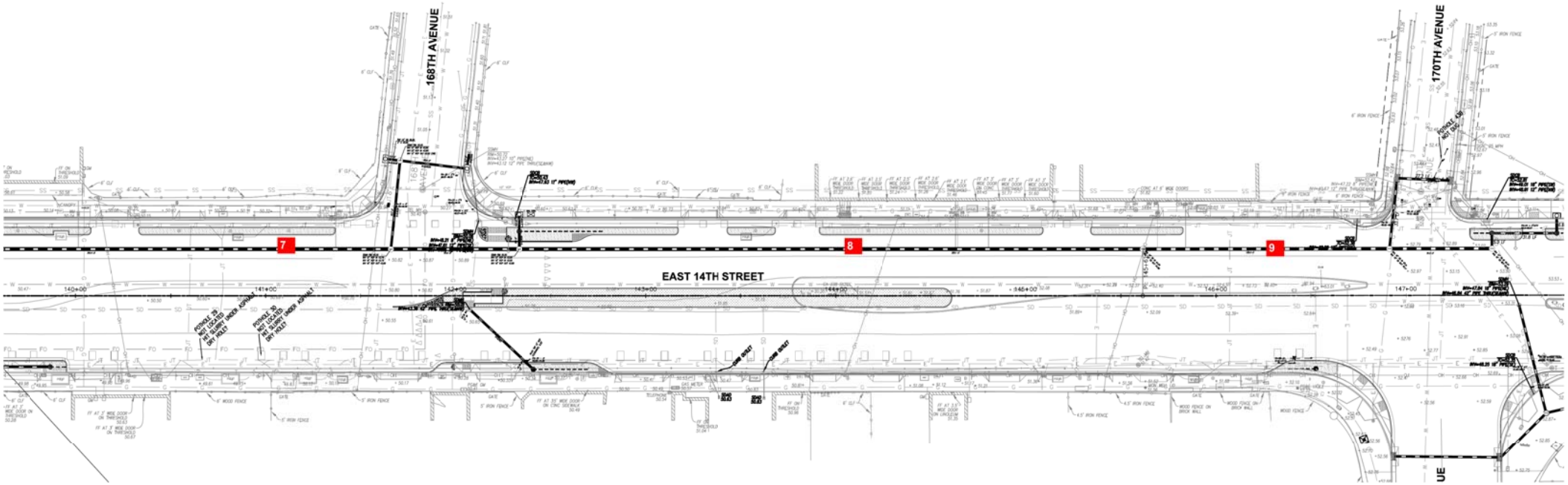
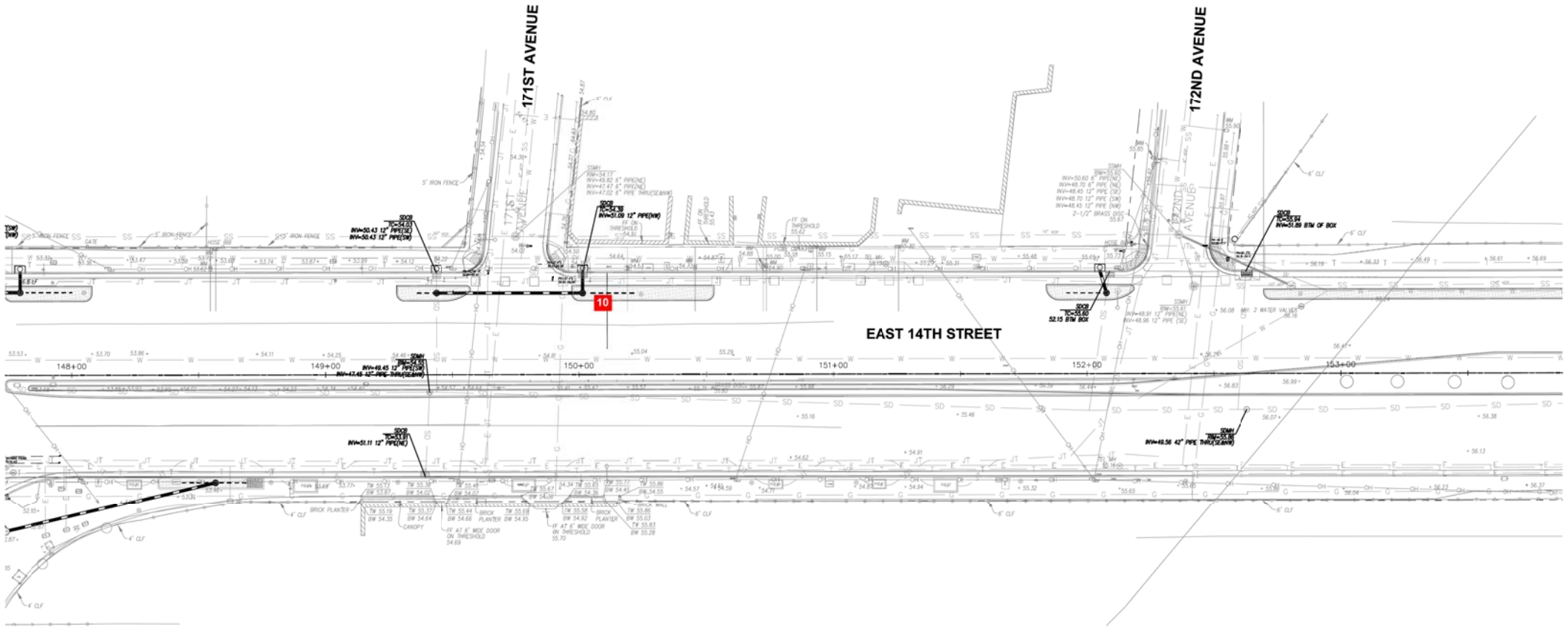

168TH AVENUE
170TH AVENUE
EAST 14TH STREET
7
8
9
140+00
141+00
142+00
143+00
144+00
145+00
146+00
147+00

EXHIBIT D-1


171ST AVENUE
172ND AVENUE
EAST 14TH STREET
148+00
149+00
150+00
151+00
152+00
153+00
10

EAST 14TH STREET - CORE #13

HMA Layer 8" AB Layer 0" PCC Layer 0"

EAST 14TH STREET - CORE #14

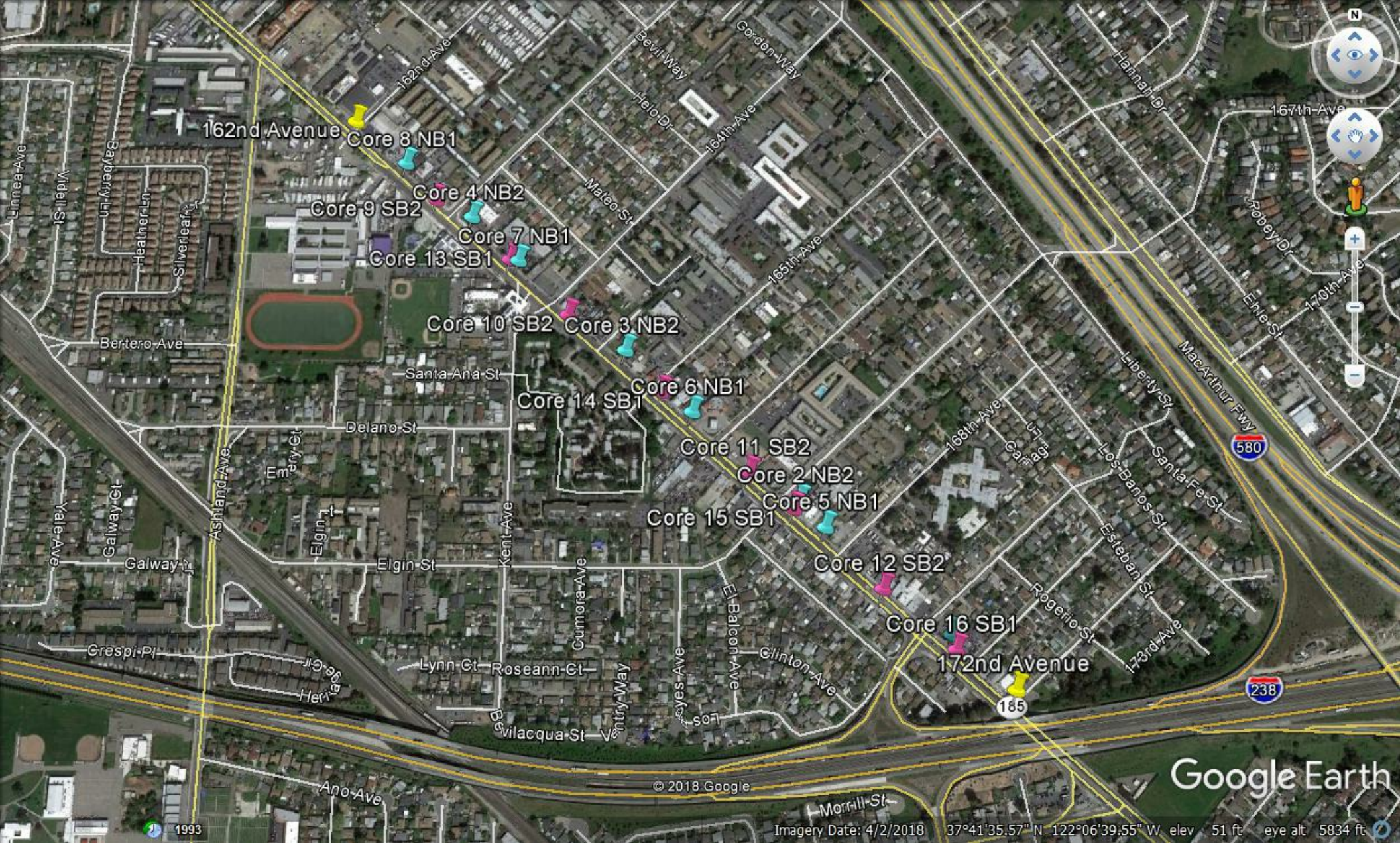
HMA Layer 6.5" AB Layer 3" PCC Layer 7"

EAST 14TH STREET - CORE #15

HMA Layer 7" AB Layer 3.5" PCC Layer 7"

EAST 14TH STREET - CORE #16

HMA Layer 5.5" AB Layer 3" PCC Layer 6.25"

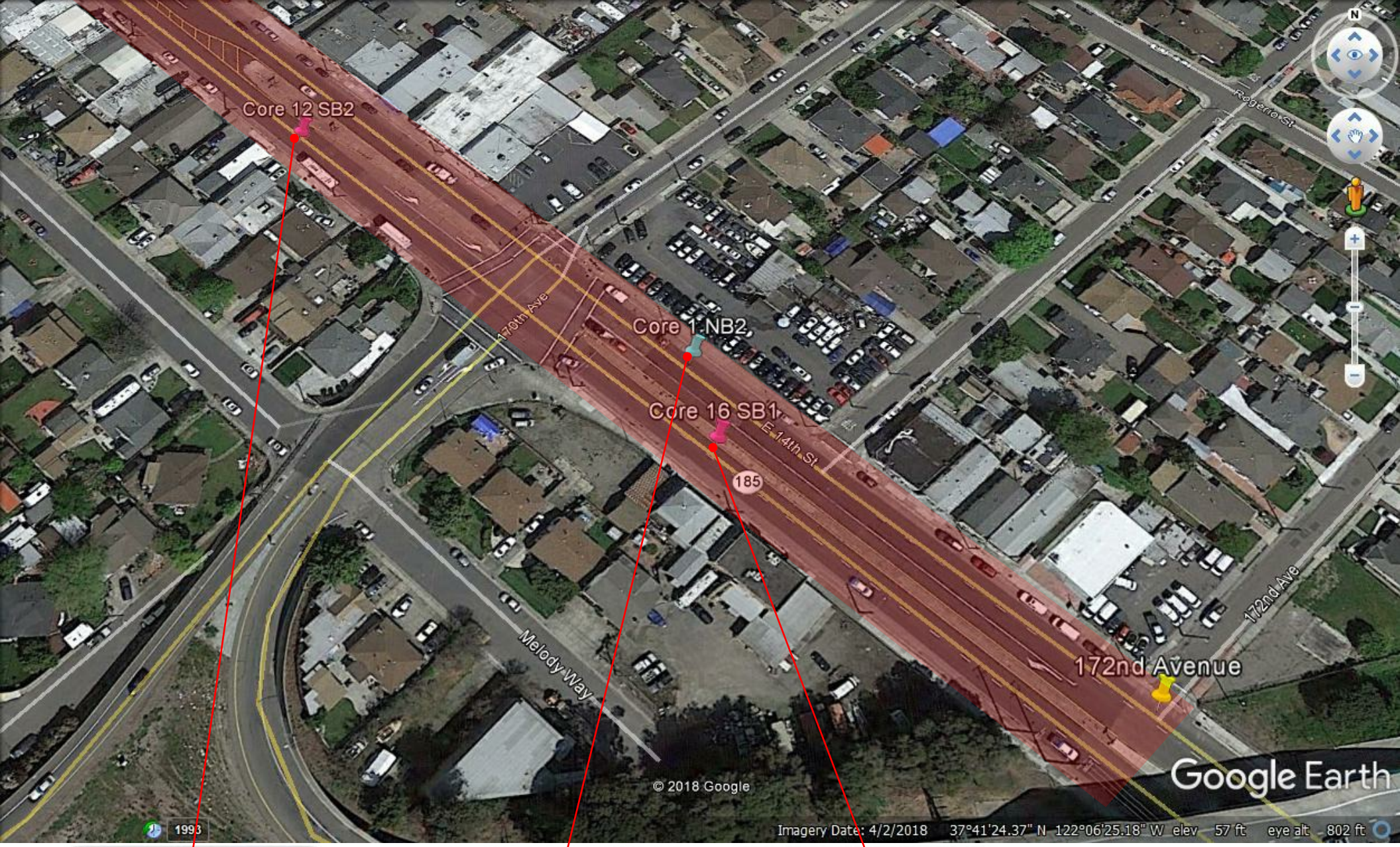


LEGEND (FOR PROCEEDING PAGES)

CORINGS ENCOUNTERED PCC

CORINGS DID NOT ENCOUNTER PCC

NOTE THAT SHADING IS INTERPOLATED AND NOT CONFIRMED.



EAST 14TH STREET - CORE #12
HMA Layer 6" AB Layer 2.5" PCC Layer 6"

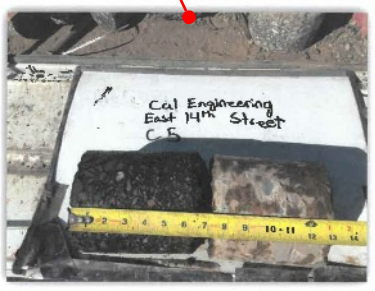
EAST 14TH STREET - CORE #1
HMA Layer 6" AB Layer 0" PCC Layer 4.5"

EAST 14TH STREET - CORE #16
HMA Layer 5.5" AB Layer 3" PCC Layer 6.25"

EAST 14TH STREET - CORE #11
HMA Layer 6" AB Layer 5" PCC Layer 4"

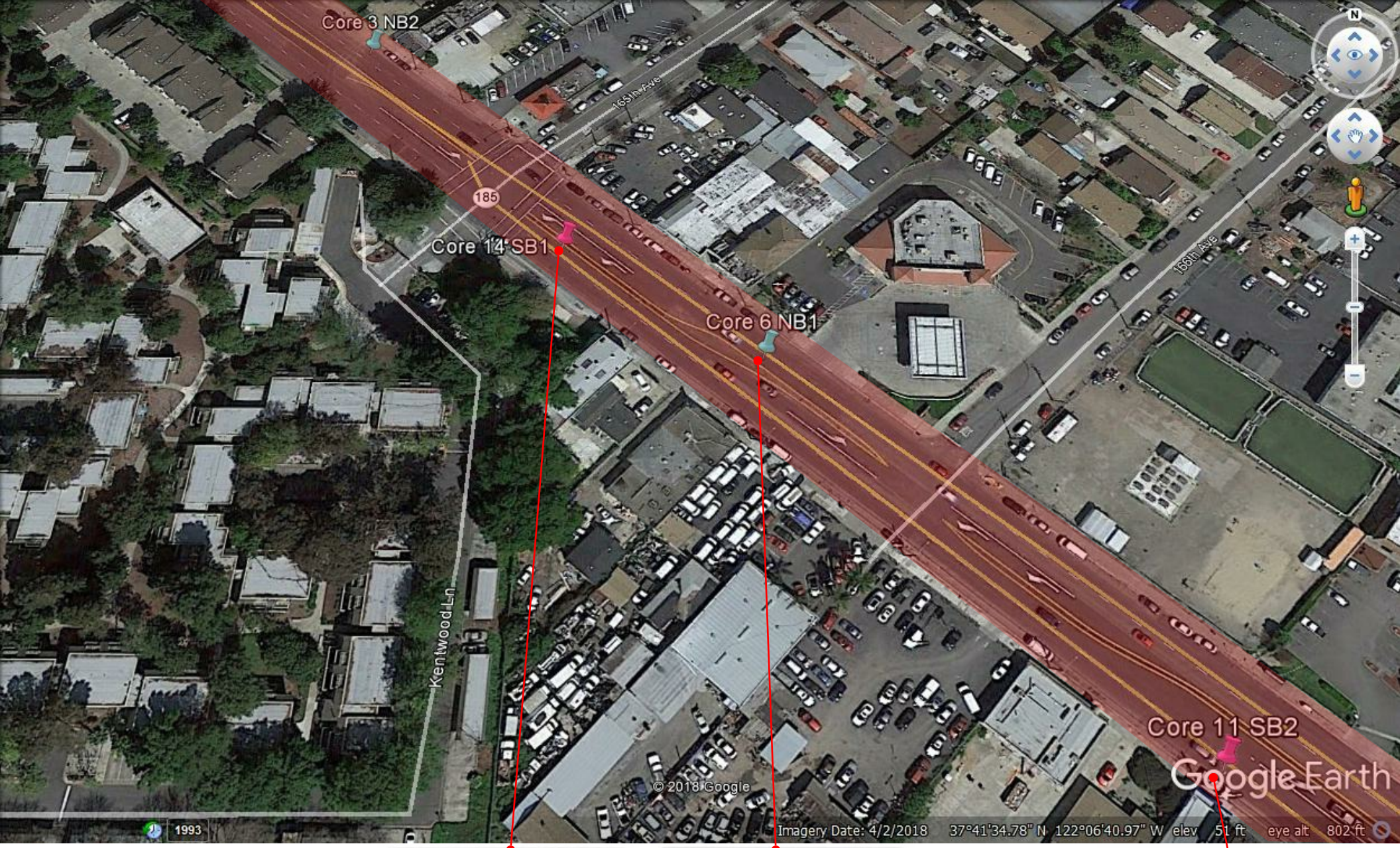
EAST 14TH STREET - CORE #15
HMA Layer 7" AB Layer 3.5" PCC Layer 7"

EAST 14TH STREET - CORE #2
HMA Layer 6.5" AB Layer 0" PCC Layer 5.5"



EAST 14TH STREET - CORE #5
HMA Layer 7.5" AB Layer 0" PCC Layer 6"

EAST 14TH STREET - CORE #12
HMA Layer 6" AB Layer 2.5" PCC Layer 6"

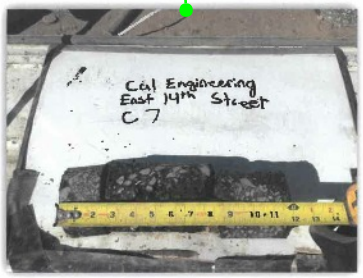


EAST 14TH STREET - CORE #14
HMA Layer 6.5" AB Layer 3" PCC Layer 7"

EAST 14TH STREET - CORE #6
HMA Layer 7" AB Layer 0" PCC Layer 6"

EAST 14TH STREET - CORE #11
HMA Layer 6" AB Layer 5" PCC Layer 4"

EAST 14TH STREET - CORE #13
HMA Layer 8" AB Layer 0" PCC Layer 0"



EAST 14TH STREET - CORE #7
HMA Layer 12" AB Layer 0" PCC Layer 0"

EAST 14TH STREET - CORE #10
HMA Layer 6" AB Layer 7" PCC Layer 5.5"

EAST 14TH STREET - CORE #3
HMA Layer 6.5" AB Layer 0" PCC Layer 5"

EAST 14TH STREET - CORE #8

HMA Layer 11.5" AB Layer 7" PCC Layer 0"

EAST 14TH STREET - CORE #9

HMA Layer 6.75" AB Layer 7" PCC Layer 0"

EAST 14TH STREET - CORE #4

HMA Layer 6" AB Layer 8" PCC Layer 4.5"

APPENDIX B

ENVIRONMENTAL TEST RESULTS BY MCCAMPBELL ANALYTICAL

McCampbell Analytical, Inc.
"When Quality Counts"

Analytical Report

WorkOrder: 1807490

Report Created for: Bellicci & Associates

2290 Diamond Boulevard
Concord, CA 94520

Project Contact: Daniel Leary
Project P.O.:
Project: 16158; Plan 13-E. 14th Phase 2

Project Received: 07/10/2018

Analytical Report reviewed & approved for release on 07/17/2018 by:

Christine Askari
Project Manager

1534 Willow Pass Rd. Pittsburg, CA 94565 ♦ TEL: (877) 252-9262 ♦ FAX: (925) 252-9269 ♦ www.mccampbell.com
CA ELAP 1644 ♦ NELAP 4033 ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Bellicci & Associates
Project: 16158; Plan 13-E. 14th Phase 2
WorkOrder: 1807490

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Bellicci & Associates
Project: 16158; Plan 13-E. 14th Phase 2
WorkOrder: 1807490

Analytical Qualifiers

d7	Strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
d9	No recognizable pattern
e2	Diesel range compounds are significant; no recognizable pattern
e7	Oil range compounds are significant
h7	Copper (EPA 3660B) cleanup

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3550B
Date Prepared:	7/11/18	**Analytical Method:**	SW8082
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-10	**1807490-001A**	**Soil**	**07/10/2018 10:45**	**GC41 07121811.d**	**161298**

Analytes	Result	RL	DF	Date Analyzed
Aroclor1016	ND	0.050	1	07/12/2018 18:28
Aroclor1221	ND	0.050	1	07/12/2018 18:28
Aroclor1232	ND	0.050	1	07/12/2018 18:28
Aroclor1242	ND	0.050	1	07/12/2018 18:28
Aroclor1248	ND	0.050	1	07/12/2018 18:28
Aroclor1254	ND	0.050	1	07/12/2018 18:28
Aroclor1260	ND	0.050	1	07/12/2018 18:28
PCBs, total	ND	0.050	1	07/12/2018 18:28

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	97	70-130	07/12/2018 18:28

Analyst(s): KX Analytical Comments: h7

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9	**1807490-002A**	**Soil**	**07/10/2018 11:10**	**GC41 07121812.d**	**161298**

Analytes	Result	RL	DF	Date Analyzed
Aroclor1016	ND	0.050	1	07/12/2018 18:42
Aroclor1221	ND	0.050	1	07/12/2018 18:42
Aroclor1232	ND	0.050	1	07/12/2018 18:42
Aroclor1242	ND	0.050	1	07/12/2018 18:42
Aroclor1248	ND	0.050	1	07/12/2018 18:42
Aroclor1254	ND	0.050	1	07/12/2018 18:42
Aroclor1260	ND	0.050	1	07/12/2018 18:42
PCBs, total	ND	0.050	1	07/12/2018 18:42

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	76	70-130	07/12/2018 18:42

Analyst(s): KX Analytical Comments: h7

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3550B
Date Prepared:	7/11/18	**Analytical Method:**	SW8082
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-8	**1807490-003A**	**Soil**	**07/10/2018 11:50**	**GC41 07121813.d**	**161298**

Analytes	Result	RL	DF	Date Analyzed
Aroclor1016	ND	0.050	1	07/12/2018 18:57
Aroclor1221	ND	0.050	1	07/12/2018 18:57
Aroclor1232	ND	0.050	1	07/12/2018 18:57
Aroclor1242	ND	0.050	1	07/12/2018 18:57
Aroclor1248	ND	0.050	1	07/12/2018 18:57
Aroclor1254	ND	0.050	1	07/12/2018 18:57
Aroclor1260	ND	0.050	1	07/12/2018 18:57
PCBs, total	ND	0.050	1	07/12/2018 18:57

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	72	70-130	07/12/2018 18:57

Analyst(s): KX Analytical Comments: h7

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-7	**1807490-004A**	**Soil**	**07/10/2018 12:20**	**GC41 07121814.d**	**161298**

Analytes	Result	RL	DF	Date Analyzed
Aroclor1016	ND	0.050	1	07/12/2018 19:12
Aroclor1221	ND	0.050	1	07/12/2018 19:12
Aroclor1232	ND	0.050	1	07/12/2018 19:12
Aroclor1242	ND	0.050	1	07/12/2018 19:12
Aroclor1248	ND	0.050	1	07/12/2018 19:12
Aroclor1254	ND	0.050	1	07/12/2018 19:12
Aroclor1260	ND	0.050	1	07/12/2018 19:12
PCBs, total	ND	0.050	1	07/12/2018 19:12

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	78	70-130	07/12/2018 19:12

Analyst(s): KX Analytical Comments: h7

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3550B
Date Prepared:	7/11/18	**Analytical Method:**	SW8082
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-5	**1807490-005A**	**Soil**	**07/10/2018 12:55**	**GC41 07121815.d**	**161298**

Analytes	Result	RL	DF	Date Analyzed
Aroclor1016	ND	0.050	1	07/12/2018 19:27
Aroclor1221	ND	0.050	1	07/12/2018 19:27
Aroclor1232	ND	0.050	1	07/12/2018 19:27
Aroclor1242	ND	0.050	1	07/12/2018 19:27
Aroclor1248	ND	0.050	1	07/12/2018 19:27
Aroclor1254	ND	0.050	1	07/12/2018 19:27
Aroclor1260	ND	0.050	1	07/12/2018 19:27
PCBs, total	ND	0.050	1	07/12/2018 19:27

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	79	70-130	07/12/2018 19:27

Analyst(s): KX Analytical Comments: h7

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-4	**1807490-006A**	**Soil**	**07/10/2018 13:15**	**GC20 07121849.D**	**161298**

Analytes	Result	RL	DF	Date Analyzed
Aroclor1016	ND	0.050	1	07/13/2018 00:20
Aroclor1221	ND	0.050	1	07/13/2018 00:20
Aroclor1232	ND	0.050	1	07/13/2018 00:20
Aroclor1242	ND	0.050	1	07/13/2018 00:20
Aroclor1248	ND	0.050	1	07/13/2018 00:20
Aroclor1254	ND	0.050	1	07/13/2018 00:20
Aroclor1260	ND	0.050	1	07/13/2018 00:20
PCBs, total	ND	0.050	1	07/13/2018 00:20

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	102	70-130	07/13/2018 00:20

Analyst(s): CK

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3550B
Date Prepared:	7/11/18	**Analytical Method:**	SW8082
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2	**1807490-007A**	**Soil**	**07/10/2018 13:55**	**GC41 07121816.d**	**161298**

Analytes	Result	RL	DF	Date Analyzed
Aroclor1016	ND	0.050	1	07/12/2018 19:42
Aroclor1221	ND	0.050	1	07/12/2018 19:42
Aroclor1232	ND	0.050	1	07/12/2018 19:42
Aroclor1242	ND	0.050	1	07/12/2018 19:42
Aroclor1248	ND	0.050	1	07/12/2018 19:42
Aroclor1254	ND	0.050	1	07/12/2018 19:42
Aroclor1260	ND	0.050	1	07/12/2018 19:42
PCBs, total	ND	0.050	1	07/12/2018 19:42

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	88	70-130	07/12/2018 19:42

Analyst(s): KX Analytical Comments: h7

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1	**1807490-008A**	**Soil**	**07/10/2018 14:15**	**GC41 07121817.d**	**161298**

Analytes	Result	RL	DF	Date Analyzed
Aroclor1016	ND	0.050	1	07/12/2018 19:57
Aroclor1221	ND	0.050	1	07/12/2018 19:57
Aroclor1232	ND	0.050	1	07/12/2018 19:57
Aroclor1242	ND	0.050	1	07/12/2018 19:57
Aroclor1248	ND	0.050	1	07/12/2018 19:57
Aroclor1254	ND	0.050	1	07/12/2018 19:57
Aroclor1260	ND	0.050	1	07/12/2018 19:57
PCBs, total	ND	0.050	1	07/12/2018 19:57

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	81	70-130	07/12/2018 19:57

Analyst(s): KX Analytical Comments: h7

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-10	1807490-001A	Soil	07/10/2018 10:45	GC18 07161823.D	161551

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	07/16/2018 22:34
tert-Amyl methyl ether (TAME)	ND	0.0050	1	07/16/2018 22:34
Benzene	ND	0.0050	1	07/16/2018 22:34
Bromobenzene	ND	0.0050	1	07/16/2018 22:34
Bromochloromethane	ND	0.0050	1	07/16/2018 22:34
Bromodichloromethane	ND	0.0050	1	07/16/2018 22:34
Bromoform	ND	0.0050	1	07/16/2018 22:34
Bromomethane	ND	0.0050	1	07/16/2018 22:34
2-Butanone (MEK)	ND	0.020	1	07/16/2018 22:34
t-Butyl alcohol (TBA)	ND	0.050	1	07/16/2018 22:34
n-Butyl benzene	ND	0.0050	1	07/16/2018 22:34
sec-Butyl benzene	ND	0.0050	1	07/16/2018 22:34
tert-Butyl benzene	ND	0.0050	1	07/16/2018 22:34
Carbon Disulfide	ND	0.0050	1	07/16/2018 22:34
Carbon Tetrachloride	ND	0.0050	1	07/16/2018 22:34
Chlorobenzene	ND	0.0050	1	07/16/2018 22:34
Chloroethane	ND	0.0050	1	07/16/2018 22:34
Chloroform	ND	0.0050	1	07/16/2018 22:34
Chloromethane	ND	0.0050	1	07/16/2018 22:34
2-Chlorotoluene	ND	0.0050	1	07/16/2018 22:34
4-Chlorotoluene	ND	0.0050	1	07/16/2018 22:34
Dibromochloromethane	ND	0.0050	1	07/16/2018 22:34
1,2-Dibromo-3-chloropropane	ND	0.0040	1	07/16/2018 22:34
1,2-Dibromoethane (EDB)	ND	0.0040	1	07/16/2018 22:34
Dibromomethane	ND	0.0050	1	07/16/2018 22:34
1,2-Dichlorobenzene	ND	0.0050	1	07/16/2018 22:34
1,3-Dichlorobenzene	ND	0.0050	1	07/16/2018 22:34
1,4-Dichlorobenzene	ND	0.0050	1	07/16/2018 22:34
Dichlorodifluoromethane	ND	0.0050	1	07/16/2018 22:34
1,1-Dichloroethane	ND	0.0050	1	07/16/2018 22:34
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	07/16/2018 22:34
1,1-Dichloroethene	ND	0.0050	1	07/16/2018 22:34
cis-1,2-Dichloroethene	ND	0.0050	1	07/16/2018 22:34
trans-1,2-Dichloroethene	ND	0.0050	1	07/16/2018 22:34
1,2-Dichloropropane	ND	0.0050	1	07/16/2018 22:34
1,3-Dichloropropane	ND	0.0050	1	07/16/2018 22:34
2,2-Dichloropropane	ND	0.0050	1	07/16/2018 22:34

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-10	1807490-001A	Soil	07/10/2018 10:45	GC18 07161823.D	161551

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	07/16/2018 22:34
cis-1,3-Dichloropropene	ND	0.0050	1	07/16/2018 22:34
trans-1,3-Dichloropropene	ND	0.0050	1	07/16/2018 22:34
Diisopropyl ether (DIPE)	ND	0.0050	1	07/16/2018 22:34
Ethylbenzene	ND	0.0050	1	07/16/2018 22:34
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	07/16/2018 22:34
Freon 113	ND	0.0050	1	07/16/2018 22:34
Hexachlorobutadiene	ND	0.0050	1	07/16/2018 22:34
Hexachloroethane	ND	0.0050	1	07/16/2018 22:34
2-Hexanone	ND	0.0050	1	07/16/2018 22:34
Isopropylbenzene	ND	0.0050	1	07/16/2018 22:34
4-Isopropyl toluene	ND	0.0050	1	07/16/2018 22:34
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	07/16/2018 22:34
Methylene chloride	ND	0.0050	1	07/16/2018 22:34
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	07/16/2018 22:34
Naphthalene	ND	0.0050	1	07/16/2018 22:34
n-Propyl benzene	ND	0.0050	1	07/16/2018 22:34
Styrene	ND	0.0050	1	07/16/2018 22:34
1,1,1,2-Tetrachloroethane	ND	0.0050	1	07/16/2018 22:34
1,1,2,2-Tetrachloroethane	ND	0.0050	1	07/16/2018 22:34
Tetrachloroethene	ND	0.0050	1	07/16/2018 22:34
Toluene	ND	0.0050	1	07/16/2018 22:34
1,2,3-Trichlorobenzene	ND	0.0050	1	07/16/2018 22:34
1,2,4-Trichlorobenzene	ND	0.0050	1	07/16/2018 22:34
1,1,1-Trichloroethane	ND	0.0050	1	07/16/2018 22:34
1,1,2-Trichloroethane	ND	0.0050	1	07/16/2018 22:34
Trichloroethene	ND	0.0050	1	07/16/2018 22:34
Trichlorofluoromethane	ND	0.0050	1	07/16/2018 22:34
1,2,3-Trichloropropane	ND	0.0050	1	07/16/2018 22:34
1,2,4-Trimethylbenzene	ND	0.0050	1	07/16/2018 22:34
1,3,5-Trimethylbenzene	ND	0.0050	1	07/16/2018 22:34
Vinyl Chloride	ND	0.0050	1	07/16/2018 22:34
Xylenes, Total	ND	0.0050	1	07/16/2018 22:34

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-10	**1807490-001A**	**Soil**	**07/10/2018 10:45**	**GC18 07161823.D**	**161551**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	109	82-136		07/16/2018 22:34
Toluene-d8	123	92-139		07/16/2018 22:34
4-BFB	114	82-135		07/16/2018 22:34
Benzene-d6	100	55-122		07/16/2018 22:34
Ethylbenzene-d10	105	58-141		07/16/2018 22:34
1,2-DCB-d4	80	51-107		07/16/2018 22:34

Analyst(s): KF

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9	1807490-002A	Soil	07/10/2018 11:10	GC18 07131853.D	161304

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	07/14/2018 20:50
tert-Amyl methyl ether (TAME)	ND	0.0050	1	07/14/2018 20:50
Benzene	ND	0.0050	1	07/14/2018 20:50
Bromobenzene	ND	0.0050	1	07/14/2018 20:50
Bromochloromethane	ND	0.0050	1	07/14/2018 20:50
Bromodichloromethane	ND	0.0050	1	07/14/2018 20:50
Bromoform	ND	0.0050	1	07/14/2018 20:50
Bromomethane	ND	0.0050	1	07/14/2018 20:50
2-Butanone (MEK)	ND	0.020	1	07/14/2018 20:50
t-Butyl alcohol (TBA)	ND	0.050	1	07/14/2018 20:50
n-Butyl benzene	ND	0.0050	1	07/14/2018 20:50
sec-Butyl benzene	ND	0.0050	1	07/14/2018 20:50
tert-Butyl benzene	ND	0.0050	1	07/14/2018 20:50
Carbon Disulfide	ND	0.0050	1	07/14/2018 20:50
Carbon Tetrachloride	ND	0.0050	1	07/14/2018 20:50
Chlorobenzene	ND	0.0050	1	07/14/2018 20:50
Chloroethane	ND	0.0050	1	07/14/2018 20:50
Chloroform	ND	0.0050	1	07/14/2018 20:50
Chloromethane	ND	0.0050	1	07/14/2018 20:50
2-Chlorotoluene	ND	0.0050	1	07/14/2018 20:50
4-Chlorotoluene	ND	0.0050	1	07/14/2018 20:50
Dibromochloromethane	ND	0.0050	1	07/14/2018 20:50
1,2-Dibromo-3-chloropropane	ND	0.0040	1	07/14/2018 20:50
1,2-Dibromoethane (EDB)	ND	0.0040	1	07/14/2018 20:50
Dibromomethane	ND	0.0050	1	07/14/2018 20:50
1,2-Dichlorobenzene	ND	0.0050	1	07/14/2018 20:50
1,3-Dichlorobenzene	ND	0.0050	1	07/14/2018 20:50
1,4-Dichlorobenzene	ND	0.0050	1	07/14/2018 20:50
Dichlorodifluoromethane	ND	0.0050	1	07/14/2018 20:50
1,1-Dichloroethane	ND	0.0050	1	07/14/2018 20:50
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	07/14/2018 20:50
1,1-Dichloroethene	ND	0.0050	1	07/14/2018 20:50
cis-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 20:50
trans-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 20:50
1,2-Dichloropropane	ND	0.0050	1	07/14/2018 20:50
1,3-Dichloropropane	ND	0.0050	1	07/14/2018 20:50
2,2-Dichloropropane	ND	0.0050	1	07/14/2018 20:50

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9	1807490-002A	Soil	07/10/2018 11:10	GC18 07131853.D	161304

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	07/14/2018 20:50
cis-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 20:50
trans-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 20:50
Diisopropyl ether (DIPE)	ND	0.0050	1	07/14/2018 20:50
Ethylbenzene	ND	0.0050	1	07/14/2018 20:50
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	07/14/2018 20:50
Freon 113	ND	0.0050	1	07/14/2018 20:50
Hexachlorobutadiene	ND	0.0050	1	07/14/2018 20:50
Hexachloroethane	ND	0.0050	1	07/14/2018 20:50
2-Hexanone	ND	0.0050	1	07/14/2018 20:50
Isopropylbenzene	ND	0.0050	1	07/14/2018 20:50
4-Isopropyl toluene	ND	0.0050	1	07/14/2018 20:50
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	07/14/2018 20:50
Methylene chloride	ND	0.0050	1	07/14/2018 20:50
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	07/14/2018 20:50
Naphthalene	ND	0.0050	1	07/14/2018 20:50
n-Propyl benzene	ND	0.0050	1	07/14/2018 20:50
Styrene	ND	0.0050	1	07/14/2018 20:50
1,1,1,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 20:50
1,1,2,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 20:50
Tetrachloroethene	ND	0.0050	1	07/14/2018 20:50
Toluene	ND	0.0050	1	07/14/2018 20:50
1,2,3-Trichlorobenzene	ND	0.0050	1	07/14/2018 20:50
1,2,4-Trichlorobenzene	ND	0.0050	1	07/14/2018 20:50
1,1,1-Trichloroethane	ND	0.0050	1	07/14/2018 20:50
1,1,2-Trichloroethane	ND	0.0050	1	07/14/2018 20:50
Trichloroethene	ND	0.0050	1	07/14/2018 20:50
Trichlorofluoromethane	ND	0.0050	1	07/14/2018 20:50
1,2,3-Trichloropropane	ND	0.0050	1	07/14/2018 20:50
1,2,4-Trimethylbenzene	ND	0.0050	1	07/14/2018 20:50
1,3,5-Trimethylbenzene	ND	0.0050	1	07/14/2018 20:50
Vinyl Chloride	ND	0.0050	1	07/14/2018 20:50
Xylenes, Total	ND	0.0050	1	07/14/2018 20:50

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9	**1807490-002A**	**Soil**	**07/10/2018 11:10**	**GC18 07131853.D**	**161304**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	110	82-136		07/14/2018 20:50
Toluene-d8	120	92-139		07/14/2018 20:50
4-BFB	111	82-135		07/14/2018 20:50
Benzene-d6	97	55-122		07/14/2018 20:50
Ethylbenzene-d10	99	58-141		07/14/2018 20:50
1,2-DCB-d4	76	51-107		07/14/2018 20:50

Analyst(s): TK

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-8	1807490-003A	Soil	07/10/2018 11:50	GC18 07131854.D	161304

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	07/14/2018 21:30
tert-Amyl methyl ether (TAME)	ND	0.0050	1	07/14/2018 21:30
Benzene	ND	0.0050	1	07/14/2018 21:30
Bromobenzene	ND	0.0050	1	07/14/2018 21:30
Bromochloromethane	ND	0.0050	1	07/14/2018 21:30
Bromodichloromethane	ND	0.0050	1	07/14/2018 21:30
Bromoform	ND	0.0050	1	07/14/2018 21:30
Bromomethane	ND	0.0050	1	07/14/2018 21:30
2-Butanone (MEK)	ND	0.020	1	07/14/2018 21:30
t-Butyl alcohol (TBA)	ND	0.050	1	07/14/2018 21:30
n-Butyl benzene	ND	0.0050	1	07/14/2018 21:30
sec-Butyl benzene	ND	0.0050	1	07/14/2018 21:30
tert-Butyl benzene	ND	0.0050	1	07/14/2018 21:30
Carbon Disulfide	ND	0.0050	1	07/14/2018 21:30
Carbon Tetrachloride	ND	0.0050	1	07/14/2018 21:30
Chlorobenzene	ND	0.0050	1	07/14/2018 21:30
Chloroethane	ND	0.0050	1	07/14/2018 21:30
Chloroform	ND	0.0050	1	07/14/2018 21:30
Chloromethane	ND	0.0050	1	07/14/2018 21:30
2-Chlorotoluene	ND	0.0050	1	07/14/2018 21:30
4-Chlorotoluene	ND	0.0050	1	07/14/2018 21:30
Dibromochloromethane	ND	0.0050	1	07/14/2018 21:30
1,2-Dibromo-3-chloropropane	ND	0.0040	1	07/14/2018 21:30
1,2-Dibromoethane (EDB)	ND	0.0040	1	07/14/2018 21:30
Dibromomethane	ND	0.0050	1	07/14/2018 21:30
1,2-Dichlorobenzene	ND	0.0050	1	07/14/2018 21:30
1,3-Dichlorobenzene	ND	0.0050	1	07/14/2018 21:30
1,4-Dichlorobenzene	ND	0.0050	1	07/14/2018 21:30
Dichlorodifluoromethane	ND	0.0050	1	07/14/2018 21:30
1,1-Dichloroethane	ND	0.0050	1	07/14/2018 21:30
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	07/14/2018 21:30
1,1-Dichloroethene	ND	0.0050	1	07/14/2018 21:30
cis-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 21:30
trans-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 21:30
1,2-Dichloropropane	ND	0.0050	1	07/14/2018 21:30
1,3-Dichloropropane	ND	0.0050	1	07/14/2018 21:30
2,2-Dichloropropane	ND	0.0050	1	07/14/2018 21:30

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-8	1807490-003A	Soil	07/10/2018 11:50	GC18 07131854.D	161304

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	07/14/2018 21:30
cis-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 21:30
trans-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 21:30
Diisopropyl ether (DIPE)	ND	0.0050	1	07/14/2018 21:30
Ethylbenzene	ND	0.0050	1	07/14/2018 21:30
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	07/14/2018 21:30
Freon 113	ND	0.0050	1	07/14/2018 21:30
Hexachlorobutadiene	ND	0.0050	1	07/14/2018 21:30
Hexachloroethane	ND	0.0050	1	07/14/2018 21:30
2-Hexanone	ND	0.0050	1	07/14/2018 21:30
Isopropylbenzene	ND	0.0050	1	07/14/2018 21:30
4-Isopropyl toluene	ND	0.0050	1	07/14/2018 21:30
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	07/14/2018 21:30
Methylene chloride	ND	0.0050	1	07/14/2018 21:30
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	07/14/2018 21:30
Naphthalene	ND	0.0050	1	07/14/2018 21:30
n-Propyl benzene	ND	0.0050	1	07/14/2018 21:30
Styrene	ND	0.0050	1	07/14/2018 21:30
1,1,1,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 21:30
1,1,2,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 21:30
Tetrachloroethene	ND	0.0050	1	07/14/2018 21:30
Toluene	ND	0.0050	1	07/14/2018 21:30
1,2,3-Trichlorobenzene	ND	0.0050	1	07/14/2018 21:30
1,2,4-Trichlorobenzene	ND	0.0050	1	07/14/2018 21:30
1,1,1-Trichloroethane	ND	0.0050	1	07/14/2018 21:30
1,1,2-Trichloroethane	ND	0.0050	1	07/14/2018 21:30
Trichloroethene	ND	0.0050	1	07/14/2018 21:30
Trichlorofluoromethane	ND	0.0050	1	07/14/2018 21:30
1,2,3-Trichloropropane	ND	0.0050	1	07/14/2018 21:30
1,2,4-Trimethylbenzene	ND	0.0050	1	07/14/2018 21:30
1,3,5-Trimethylbenzene	ND	0.0050	1	07/14/2018 21:30
Vinyl Chloride	ND	0.0050	1	07/14/2018 21:30
Xylenes, Total	ND	0.0050	1	07/14/2018 21:30

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-8	**1807490-003A**	**Soil**	**07/10/2018 11:50**	**GC18 07131854.D**	**161304**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	110	82-136		07/14/2018 21:30
Toluene-d8	119	92-139		07/14/2018 21:30
4-BFB	114	82-135		07/14/2018 21:30
Benzene-d6	95	55-122		07/14/2018 21:30
Ethylbenzene-d10	95	58-141		07/14/2018 21:30
1,2-DCB-d4	75	51-107		07/14/2018 21:30

Analyst(s): TK

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-7	1807490-004A	Soil	07/10/2018 12:20	GC18 07131855.D	161304

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	07/14/2018 22:10
tert-Amyl methyl ether (TAME)	ND	0.0050	1	07/14/2018 22:10
Benzene	ND	0.0050	1	07/14/2018 22:10
Bromobenzene	ND	0.0050	1	07/14/2018 22:10
Bromochloromethane	ND	0.0050	1	07/14/2018 22:10
Bromodichloromethane	ND	0.0050	1	07/14/2018 22:10
Bromoform	ND	0.0050	1	07/14/2018 22:10
Bromomethane	ND	0.0050	1	07/14/2018 22:10
2-Butanone (MEK)	ND	0.020	1	07/14/2018 22:10
t-Butyl alcohol (TBA)	ND	0.050	1	07/14/2018 22:10
n-Butyl benzene	ND	0.0050	1	07/14/2018 22:10
sec-Butyl benzene	ND	0.0050	1	07/14/2018 22:10
tert-Butyl benzene	ND	0.0050	1	07/14/2018 22:10
Carbon Disulfide	ND	0.0050	1	07/14/2018 22:10
Carbon Tetrachloride	ND	0.0050	1	07/14/2018 22:10
Chlorobenzene	ND	0.0050	1	07/14/2018 22:10
Chloroethane	ND	0.0050	1	07/14/2018 22:10
Chloroform	ND	0.0050	1	07/14/2018 22:10
Chloromethane	ND	0.0050	1	07/14/2018 22:10
2-Chlorotoluene	ND	0.0050	1	07/14/2018 22:10
4-Chlorotoluene	ND	0.0050	1	07/14/2018 22:10
Dibromochloromethane	ND	0.0050	1	07/14/2018 22:10
1,2-Dibromo-3-chloropropane	ND	0.0040	1	07/14/2018 22:10
1,2-Dibromoethane (EDB)	ND	0.0040	1	07/14/2018 22:10
Dibromomethane	ND	0.0050	1	07/14/2018 22:10
1,2-Dichlorobenzene	ND	0.0050	1	07/14/2018 22:10
1,3-Dichlorobenzene	ND	0.0050	1	07/14/2018 22:10
1,4-Dichlorobenzene	ND	0.0050	1	07/14/2018 22:10
Dichlorodifluoromethane	ND	0.0050	1	07/14/2018 22:10
1,1-Dichloroethane	ND	0.0050	1	07/14/2018 22:10
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	07/14/2018 22:10
1,1-Dichloroethene	ND	0.0050	1	07/14/2018 22:10
cis-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 22:10
trans-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 22:10
1,2-Dichloropropane	ND	0.0050	1	07/14/2018 22:10
1,3-Dichloropropane	ND	0.0050	1	07/14/2018 22:10
2,2-Dichloropropane	ND	0.0050	1	07/14/2018 22:10

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-7	1807490-004A	Soil	07/10/2018 12:20	GC18 07131855.D	161304

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	07/14/2018 22:10
cis-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 22:10
trans-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 22:10
Diisopropyl ether (DIPE)	ND	0.0050	1	07/14/2018 22:10
Ethylbenzene	ND	0.0050	1	07/14/2018 22:10
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	07/14/2018 22:10
Freon 113	ND	0.0050	1	07/14/2018 22:10
Hexachlorobutadiene	ND	0.0050	1	07/14/2018 22:10
Hexachloroethane	ND	0.0050	1	07/14/2018 22:10
2-Hexanone	ND	0.0050	1	07/14/2018 22:10
Isopropylbenzene	ND	0.0050	1	07/14/2018 22:10
4-Isopropyl toluene	ND	0.0050	1	07/14/2018 22:10
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	07/14/2018 22:10
Methylene chloride	ND	0.0067	1	07/14/2018 22:10
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	07/14/2018 22:10
Naphthalene	ND	0.0050	1	07/14/2018 22:10
n-Propyl benzene	ND	0.0050	1	07/14/2018 22:10
Styrene	ND	0.0050	1	07/14/2018 22:10
1,1,1,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 22:10
1,1,2,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 22:10
Tetrachloroethene	ND	0.0050	1	07/14/2018 22:10
Toluene	ND	0.0050	1	07/14/2018 22:10
1,2,3-Trichlorobenzene	ND	0.0050	1	07/14/2018 22:10
1,2,4-Trichlorobenzene	ND	0.0050	1	07/14/2018 22:10
1,1,1-Trichloroethane	ND	0.0050	1	07/14/2018 22:10
1,1,2-Trichloroethane	ND	0.0050	1	07/14/2018 22:10
Trichloroethene	ND	0.0050	1	07/14/2018 22:10
Trichlorofluoromethane	ND	0.0050	1	07/14/2018 22:10
1,2,3-Trichloropropane	ND	0.0050	1	07/14/2018 22:10
1,2,4-Trimethylbenzene	ND	0.0050	1	07/14/2018 22:10
1,3,5-Trimethylbenzene	ND	0.0050	1	07/14/2018 22:10
Vinyl Chloride	ND	0.0050	1	07/14/2018 22:10
Xylenes, Total	ND	0.0050	1	07/14/2018 22:10

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-7	**1807490-004A**	**Soil**	**07/10/2018 12:20**	**GC18 07131855.D**	**161304**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	110	82-136		07/14/2018 22:10
Toluene-d8	120	92-139		07/14/2018 22:10
4-BFB	112	82-135		07/14/2018 22:10
Benzene-d6	95	55-122		07/14/2018 22:10
Ethylbenzene-d10	97	58-141		07/14/2018 22:10
1,2-DCB-d4	75	51-107		07/14/2018 22:10

Analyst(s): TK

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-5	1807490-005A	Soil	07/10/2018 12:55	GC18 07131856.D	161304

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	07/14/2018 22:53
tert-Amyl methyl ether (TAME)	ND	0.0050	1	07/14/2018 22:53
Benzene	ND	0.0050	1	07/14/2018 22:53
Bromobenzene	ND	0.0050	1	07/14/2018 22:53
Bromochloromethane	ND	0.0050	1	07/14/2018 22:53
Bromodichloromethane	ND	0.0050	1	07/14/2018 22:53
Bromoform	ND	0.0050	1	07/14/2018 22:53
Bromomethane	ND	0.0050	1	07/14/2018 22:53
2-Butanone (MEK)	ND	0.020	1	07/14/2018 22:53
t-Butyl alcohol (TBA)	ND	0.050	1	07/14/2018 22:53
n-Butyl benzene	ND	0.0050	1	07/14/2018 22:53
sec-Butyl benzene	ND	0.0050	1	07/14/2018 22:53
tert-Butyl benzene	ND	0.0050	1	07/14/2018 22:53
Carbon Disulfide	ND	0.0050	1	07/14/2018 22:53
Carbon Tetrachloride	ND	0.0050	1	07/14/2018 22:53
Chlorobenzene	ND	0.0050	1	07/14/2018 22:53
Chloroethane	ND	0.0050	1	07/14/2018 22:53
Chloroform	ND	0.0050	1	07/14/2018 22:53
Chloromethane	ND	0.0050	1	07/14/2018 22:53
2-Chlorotoluene	ND	0.0050	1	07/14/2018 22:53
4-Chlorotoluene	ND	0.0050	1	07/14/2018 22:53
Dibromochloromethane	ND	0.0050	1	07/14/2018 22:53
1,2-Dibromo-3-chloropropane	ND	0.0040	1	07/14/2018 22:53
1,2-Dibromoethane (EDB)	ND	0.0040	1	07/14/2018 22:53
Dibromomethane	ND	0.0050	1	07/14/2018 22:53
1,2-Dichlorobenzene	ND	0.0050	1	07/14/2018 22:53
1,3-Dichlorobenzene	ND	0.0050	1	07/14/2018 22:53
1,4-Dichlorobenzene	ND	0.0050	1	07/14/2018 22:53
Dichlorodifluoromethane	ND	0.0050	1	07/14/2018 22:53
1,1-Dichloroethane	ND	0.0050	1	07/14/2018 22:53
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	07/14/2018 22:53
1,1-Dichloroethene	ND	0.0050	1	07/14/2018 22:53
cis-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 22:53
trans-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 22:53
1,2-Dichloropropane	ND	0.0050	1	07/14/2018 22:53
1,3-Dichloropropane	ND	0.0050	1	07/14/2018 22:53
2,2-Dichloropropane	ND	0.0050	1	07/14/2018 22:53

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-5	1807490-005A	Soil	07/10/2018 12:55	GC18 07131856.D	161304

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	07/14/2018 22:53
cis-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 22:53
trans-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 22:53
Diisopropyl ether (DIPE)	ND	0.0050	1	07/14/2018 22:53
Ethylbenzene	ND	0.0050	1	07/14/2018 22:53
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	07/14/2018 22:53
Freon 113	ND	0.0050	1	07/14/2018 22:53
Hexachlorobutadiene	ND	0.0050	1	07/14/2018 22:53
Hexachloroethane	ND	0.0050	1	07/14/2018 22:53
2-Hexanone	ND	0.0050	1	07/14/2018 22:53
Isopropylbenzene	ND	0.0050	1	07/14/2018 22:53
4-Isopropyl toluene	ND	0.0050	1	07/14/2018 22:53
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	07/14/2018 22:53
Methylene chloride	ND	0.0050	1	07/14/2018 22:53
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	07/14/2018 22:53
Naphthalene	ND	0.0050	1	07/14/2018 22:53
n-Propyl benzene	ND	0.0050	1	07/14/2018 22:53
Styrene	ND	0.0050	1	07/14/2018 22:53
1,1,1,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 22:53
1,1,2,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 22:53
Tetrachloroethene	ND	0.0050	1	07/14/2018 22:53
Toluene	ND	0.0050	1	07/14/2018 22:53
1,2,3-Trichlorobenzene	ND	0.0050	1	07/14/2018 22:53
1,2,4-Trichlorobenzene	ND	0.0050	1	07/14/2018 22:53
1,1,1-Trichloroethane	ND	0.0050	1	07/14/2018 22:53
1,1,2-Trichloroethane	ND	0.0050	1	07/14/2018 22:53
Trichloroethene	ND	0.0050	1	07/14/2018 22:53
Trichlorofluoromethane	ND	0.0050	1	07/14/2018 22:53
1,2,3-Trichloropropane	ND	0.0050	1	07/14/2018 22:53
1,2,4-Trimethylbenzene	ND	0.0050	1	07/14/2018 22:53
1,3,5-Trimethylbenzene	ND	0.0050	1	07/14/2018 22:53
Vinyl Chloride	ND	0.0050	1	07/14/2018 22:53
Xylenes, Total	ND	0.0050	1	07/14/2018 22:53

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-5	**1807490-005A**	**Soil**	**07/10/2018 12:55**	**GC18 07131856.D**	**161304**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	111	82-136		07/14/2018 22:53
Toluene-d8	121	92-139		07/14/2018 22:53
4-BFB	112	82-135		07/14/2018 22:53
Benzene-d6	102	55-122		07/14/2018 22:53
Ethylbenzene-d10	104	58-141		07/14/2018 22:53
1,2-DCB-d4	79	51-107		07/14/2018 22:53

Analyst(s): TK

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-4	1807490-006A	Soil	07/10/2018 13:15	GC18 07131857.D	161304

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	07/14/2018 23:34
tert-Amyl methyl ether (TAME)	ND	0.0050	1	07/14/2018 23:34
Benzene	ND	0.0050	1	07/14/2018 23:34
Bromobenzene	ND	0.0050	1	07/14/2018 23:34
Bromochloromethane	ND	0.0050	1	07/14/2018 23:34
Bromodichloromethane	ND	0.0050	1	07/14/2018 23:34
Bromoform	ND	0.0050	1	07/14/2018 23:34
Bromomethane	ND	0.0050	1	07/14/2018 23:34
2-Butanone (MEK)	ND	0.020	1	07/14/2018 23:34
t-Butyl alcohol (TBA)	ND	0.050	1	07/14/2018 23:34
n-Butyl benzene	ND	0.0050	1	07/14/2018 23:34
sec-Butyl benzene	ND	0.0050	1	07/14/2018 23:34
tert-Butyl benzene	ND	0.0050	1	07/14/2018 23:34
Carbon Disulfide	ND	0.0050	1	07/14/2018 23:34
Carbon Tetrachloride	ND	0.0050	1	07/14/2018 23:34
Chlorobenzene	ND	0.0050	1	07/14/2018 23:34
Chloroethane	ND	0.0050	1	07/14/2018 23:34
Chloroform	ND	0.0050	1	07/14/2018 23:34
Chloromethane	ND	0.0050	1	07/14/2018 23:34
2-Chlorotoluene	ND	0.0050	1	07/14/2018 23:34
4-Chlorotoluene	ND	0.0050	1	07/14/2018 23:34
Dibromochloromethane	ND	0.0050	1	07/14/2018 23:34
1,2-Dibromo-3-chloropropane	ND	0.0040	1	07/14/2018 23:34
1,2-Dibromoethane (EDB)	ND	0.0040	1	07/14/2018 23:34
Dibromomethane	ND	0.0050	1	07/14/2018 23:34
1,2-Dichlorobenzene	ND	0.0050	1	07/14/2018 23:34
1,3-Dichlorobenzene	ND	0.0050	1	07/14/2018 23:34
1,4-Dichlorobenzene	ND	0.0050	1	07/14/2018 23:34
Dichlorodifluoromethane	ND	0.0050	1	07/14/2018 23:34
1,1-Dichloroethane	ND	0.0050	1	07/14/2018 23:34
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	07/14/2018 23:34
1,1-Dichloroethene	ND	0.0050	1	07/14/2018 23:34
cis-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 23:34
trans-1,2-Dichloroethene	ND	0.0050	1	07/14/2018 23:34
1,2-Dichloropropane	ND	0.0050	1	07/14/2018 23:34
1,3-Dichloropropane	ND	0.0050	1	07/14/2018 23:34
2,2-Dichloropropane	ND	0.0050	1	07/14/2018 23:34

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-4	1807490-006A	Soil	07/10/2018 13:15	GC18 07131857.D	161304

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	07/14/2018 23:34
cis-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 23:34
trans-1,3-Dichloropropene	ND	0.0050	1	07/14/2018 23:34
Diisopropyl ether (DIPE)	ND	0.0050	1	07/14/2018 23:34
Ethylbenzene	ND	0.0050	1	07/14/2018 23:34
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	07/14/2018 23:34
Freon 113	ND	0.0050	1	07/14/2018 23:34
Hexachlorobutadiene	ND	0.0050	1	07/14/2018 23:34
Hexachloroethane	ND	0.0050	1	07/14/2018 23:34
2-Hexanone	ND	0.0050	1	07/14/2018 23:34
Isopropylbenzene	ND	0.0050	1	07/14/2018 23:34
4-Isopropyl toluene	ND	0.0050	1	07/14/2018 23:34
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	07/14/2018 23:34
Methylene chloride	ND	0.0050	1	07/14/2018 23:34
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	07/14/2018 23:34
Naphthalene	ND	0.0050	1	07/14/2018 23:34
n-Propyl benzene	ND	0.0050	1	07/14/2018 23:34
Styrene	ND	0.0050	1	07/14/2018 23:34
1,1,1,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 23:34
1,1,2,2-Tetrachloroethane	ND	0.0050	1	07/14/2018 23:34
Tetrachloroethene	ND	0.0050	1	07/14/2018 23:34
Toluene	ND	0.0050	1	07/14/2018 23:34
1,2,3-Trichlorobenzene	ND	0.0050	1	07/14/2018 23:34
1,2,4-Trichlorobenzene	ND	0.0050	1	07/14/2018 23:34
1,1,1-Trichloroethane	ND	0.0050	1	07/14/2018 23:34
1,1,2-Trichloroethane	ND	0.0050	1	07/14/2018 23:34
Trichloroethene	ND	0.0050	1	07/14/2018 23:34
Trichlorofluoromethane	ND	0.0050	1	07/14/2018 23:34
1,2,3-Trichloropropane	ND	0.0050	1	07/14/2018 23:34
1,2,4-Trimethylbenzene	ND	0.0050	1	07/14/2018 23:34
1,3,5-Trimethylbenzene	ND	0.0050	1	07/14/2018 23:34
Vinyl Chloride	ND	0.0050	1	07/14/2018 23:34
Xylenes, Total	ND	0.0050	1	07/14/2018 23:34

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-4	**1807490-006A**	**Soil**	**07/10/2018 13:15**	**GC18 07131857.D**	**161304**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	111	82-136		07/14/2018 23:34
Toluene-d8	118	92-139		07/14/2018 23:34
4-BFB	110	82-135		07/14/2018 23:34
Benzene-d6	94	55-122		07/14/2018 23:34
Ethylbenzene-d10	93	58-141		07/14/2018 23:34
1,2-DCB-d4	74	51-107		07/14/2018 23:34

Analyst(s): TK

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2	1807490-007A	Soil	07/10/2018 13:55	GC18 07131858.D	161304

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	07/15/2018 00:16
tert-Amyl methyl ether (TAME)	ND	0.0050	1	07/15/2018 00:16
Benzene	ND	0.0050	1	07/15/2018 00:16
Bromobenzene	ND	0.0050	1	07/15/2018 00:16
Bromochloromethane	ND	0.0050	1	07/15/2018 00:16
Bromodichloromethane	ND	0.0050	1	07/15/2018 00:16
Bromoform	ND	0.0050	1	07/15/2018 00:16
Bromomethane	ND	0.0050	1	07/15/2018 00:16
2-Butanone (MEK)	ND	0.020	1	07/15/2018 00:16
t-Butyl alcohol (TBA)	ND	0.050	1	07/15/2018 00:16
n-Butyl benzene	ND	0.0050	1	07/15/2018 00:16
sec-Butyl benzene	ND	0.0050	1	07/15/2018 00:16
tert-Butyl benzene	ND	0.0050	1	07/15/2018 00:16
Carbon Disulfide	ND	0.0050	1	07/15/2018 00:16
Carbon Tetrachloride	ND	0.0050	1	07/15/2018 00:16
Chlorobenzene	ND	0.0050	1	07/15/2018 00:16
Chloroethane	ND	0.0050	1	07/15/2018 00:16
Chloroform	ND	0.0050	1	07/15/2018 00:16
Chloromethane	ND	0.0050	1	07/15/2018 00:16
2-Chlorotoluene	ND	0.0050	1	07/15/2018 00:16
4-Chlorotoluene	ND	0.0050	1	07/15/2018 00:16
Dibromochloromethane	ND	0.0050	1	07/15/2018 00:16
1,2-Dibromo-3-chloropropane	ND	0.0040	1	07/15/2018 00:16
1,2-Dibromoethane (EDB)	ND	0.0040	1	07/15/2018 00:16
Dibromomethane	ND	0.0050	1	07/15/2018 00:16
1,2-Dichlorobenzene	ND	0.0050	1	07/15/2018 00:16
1,3-Dichlorobenzene	ND	0.0050	1	07/15/2018 00:16
1,4-Dichlorobenzene	ND	0.0050	1	07/15/2018 00:16
Dichlorodifluoromethane	ND	0.0050	1	07/15/2018 00:16
1,1-Dichloroethane	ND	0.0050	1	07/15/2018 00:16
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	07/15/2018 00:16
1,1-Dichloroethene	ND	0.0050	1	07/15/2018 00:16
cis-1,2-Dichloroethene	ND	0.0050	1	07/15/2018 00:16
trans-1,2-Dichloroethene	ND	0.0050	1	07/15/2018 00:16
1,2-Dichloropropane	ND	0.0050	1	07/15/2018 00:16
1,3-Dichloropropane	ND	0.0050	1	07/15/2018 00:16
2,2-Dichloropropane	ND	0.0050	1	07/15/2018 00:16

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2	1807490-007A	Soil	07/10/2018 13:55	GC18 07131858.D	161304

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	07/15/2018 00:16
cis-1,3-Dichloropropene	ND	0.0050	1	07/15/2018 00:16
trans-1,3-Dichloropropene	ND	0.0050	1	07/15/2018 00:16
Diisopropyl ether (DIPE)	ND	0.0050	1	07/15/2018 00:16
Ethylbenzene	ND	0.0050	1	07/15/2018 00:16
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	07/15/2018 00:16
Freon 113	ND	0.0050	1	07/15/2018 00:16
Hexachlorobutadiene	ND	0.0050	1	07/15/2018 00:16
Hexachloroethane	ND	0.0050	1	07/15/2018 00:16
2-Hexanone	ND	0.0050	1	07/15/2018 00:16
Isopropylbenzene	ND	0.0050	1	07/15/2018 00:16
4-Isopropyl toluene	ND	0.0050	1	07/15/2018 00:16
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	07/15/2018 00:16
Methylene chloride	ND	0.0050	1	07/15/2018 00:16
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	07/15/2018 00:16
Naphthalene	ND	0.0050	1	07/15/2018 00:16
n-Propyl benzene	ND	0.0050	1	07/15/2018 00:16
Styrene	ND	0.0050	1	07/15/2018 00:16
1,1,1,2-Tetrachloroethane	ND	0.0050	1	07/15/2018 00:16
1,1,2,2-Tetrachloroethane	ND	0.0050	1	07/15/2018 00:16
Tetrachloroethene	ND	0.0050	1	07/15/2018 00:16
Toluene	ND	0.0050	1	07/15/2018 00:16
1,2,3-Trichlorobenzene	ND	0.0050	1	07/15/2018 00:16
1,2,4-Trichlorobenzene	ND	0.0050	1	07/15/2018 00:16
1,1,1-Trichloroethane	ND	0.0050	1	07/15/2018 00:16
1,1,2-Trichloroethane	ND	0.0050	1	07/15/2018 00:16
Trichloroethene	ND	0.0050	1	07/15/2018 00:16
Trichlorofluoromethane	ND	0.0050	1	07/15/2018 00:16
1,2,3-Trichloropropane	ND	0.0050	1	07/15/2018 00:16
1,2,4-Trimethylbenzene	ND	0.0050	1	07/15/2018 00:16
1,3,5-Trimethylbenzene	ND	0.0050	1	07/15/2018 00:16
Vinyl Chloride	ND	0.0050	1	07/15/2018 00:16
Xylenes, Total	ND	0.0050	1	07/15/2018 00:16

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2	**1807490-007A**	**Soil**	**07/10/2018 13:55**	**GC18 07131858.D**	**161304**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	112	82-136		07/15/2018 00:16
Toluene-d8	118	92-139		07/15/2018 00:16
4-BFB	110	82-135		07/15/2018 00:16
Benzene-d6	96	55-122		07/15/2018 00:16
Ethylbenzene-d10	94	58-141		07/15/2018 00:16
1,2-DCB-d4	76	51-107		07/15/2018 00:16

Analyst(s): TK

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1	1807490-008A	Soil	07/10/2018 14:15	GC18 07131859.D	161304

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	07/15/2018 00:58
tert-Amyl methyl ether (TAME)	ND	0.0050	1	07/15/2018 00:58
Benzene	ND	0.0050	1	07/15/2018 00:58
Bromobenzene	ND	0.0050	1	07/15/2018 00:58
Bromochloromethane	ND	0.0050	1	07/15/2018 00:58
Bromodichloromethane	ND	0.0050	1	07/15/2018 00:58
Bromoform	ND	0.0050	1	07/15/2018 00:58
Bromomethane	ND	0.0050	1	07/15/2018 00:58
2-Butanone (MEK)	ND	0.020	1	07/15/2018 00:58
t-Butyl alcohol (TBA)	ND	0.050	1	07/15/2018 00:58
n-Butyl benzene	ND	0.0050	1	07/15/2018 00:58
sec-Butyl benzene	ND	0.0050	1	07/15/2018 00:58
tert-Butyl benzene	ND	0.0050	1	07/15/2018 00:58
Carbon Disulfide	ND	0.0050	1	07/15/2018 00:58
Carbon Tetrachloride	ND	0.0050	1	07/15/2018 00:58
Chlorobenzene	ND	0.0050	1	07/15/2018 00:58
Chloroethane	ND	0.0050	1	07/15/2018 00:58
Chloroform	ND	0.0050	1	07/15/2018 00:58
Chloromethane	ND	0.0050	1	07/15/2018 00:58
2-Chlorotoluene	ND	0.0050	1	07/15/2018 00:58
4-Chlorotoluene	ND	0.0050	1	07/15/2018 00:58
Dibromochloromethane	ND	0.0050	1	07/15/2018 00:58
1,2-Dibromo-3-chloropropane	ND	0.0040	1	07/15/2018 00:58
1,2-Dibromoethane (EDB)	ND	0.0040	1	07/15/2018 00:58
Dibromomethane	ND	0.0050	1	07/15/2018 00:58
1,2-Dichlorobenzene	ND	0.0050	1	07/15/2018 00:58
1,3-Dichlorobenzene	ND	0.0050	1	07/15/2018 00:58
1,4-Dichlorobenzene	ND	0.0050	1	07/15/2018 00:58
Dichlorodifluoromethane	ND	0.0050	1	07/15/2018 00:58
1,1-Dichloroethane	ND	0.0050	1	07/15/2018 00:58
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	07/15/2018 00:58
1,1-Dichloroethene	ND	0.0050	1	07/15/2018 00:58
cis-1,2-Dichloroethene	ND	0.0050	1	07/15/2018 00:58
trans-1,2-Dichloroethene	ND	0.0050	1	07/15/2018 00:58
1,2-Dichloropropane	ND	0.0050	1	07/15/2018 00:58
1,3-Dichloropropane	ND	0.0050	1	07/15/2018 00:58
2,2-Dichloropropane	ND	0.0050	1	07/15/2018 00:58

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1	1807490-008A	Soil	07/10/2018 14:15	GC18 07131859.D	161304

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	07/15/2018 00:58
cis-1,3-Dichloropropene	ND	0.0050	1	07/15/2018 00:58
trans-1,3-Dichloropropene	ND	0.0050	1	07/15/2018 00:58
Diisopropyl ether (DIPE)	ND	0.0050	1	07/15/2018 00:58
Ethylbenzene	ND	0.0050	1	07/15/2018 00:58
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	07/15/2018 00:58
Freon 113	ND	0.0050	1	07/15/2018 00:58
Hexachlorobutadiene	ND	0.0050	1	07/15/2018 00:58
Hexachloroethane	ND	0.0050	1	07/15/2018 00:58
2-Hexanone	ND	0.0050	1	07/15/2018 00:58
Isopropylbenzene	ND	0.0050	1	07/15/2018 00:58
4-Isopropyl toluene	ND	0.0050	1	07/15/2018 00:58
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	07/15/2018 00:58
Methylene chloride	ND	0.0050	1	07/15/2018 00:58
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	07/15/2018 00:58
Naphthalene	ND	0.0050	1	07/15/2018 00:58
n-Propyl benzene	ND	0.0050	1	07/15/2018 00:58
Styrene	ND	0.0050	1	07/15/2018 00:58
1,1,1,2-Tetrachloroethane	ND	0.0050	1	07/15/2018 00:58
1,1,2,2-Tetrachloroethane	ND	0.0050	1	07/15/2018 00:58
Tetrachloroethene	ND	0.0050	1	07/15/2018 00:58
Toluene	ND	0.0050	1	07/15/2018 00:58
1,2,3-Trichlorobenzene	ND	0.0050	1	07/15/2018 00:58
1,2,4-Trichlorobenzene	ND	0.0050	1	07/15/2018 00:58
1,1,1-Trichloroethane	ND	0.0050	1	07/15/2018 00:58
1,1,2-Trichloroethane	ND	0.0050	1	07/15/2018 00:58
Trichloroethene	ND	0.0050	1	07/15/2018 00:58
Trichlorofluoromethane	ND	0.0050	1	07/15/2018 00:58
1,2,3-Trichloropropane	ND	0.0050	1	07/15/2018 00:58
1,2,4-Trimethylbenzene	ND	0.0050	1	07/15/2018 00:58
1,3,5-Trimethylbenzene	ND	0.0050	1	07/15/2018 00:58
Vinyl Chloride	ND	0.0050	1	07/15/2018 00:58
Xylenes, Total	ND	0.0050	1	07/15/2018 00:58

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18-7/16/18	**Analytical Method:**	SW8260B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1	**1807490-008A**	**Soil**	**07/10/2018 14:15**	**GC18 07131859.D**	**161304**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	112	82-136		07/15/2018 00:58
Toluene-d8	119	92-139		07/15/2018 00:58
4-BFB	112	82-135		07/15/2018 00:58
Benzene-d6	99	55-122		07/15/2018 00:58
Ethylbenzene-d10	98	58-141		07/15/2018 00:58
1,2-DCB-d4	78	51-107		07/15/2018 00:58

Analyst(s): TK

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3050B
Date Prepared:	7/11/18	**Analytical Method:**	SW6020
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-10	**1807490-001A**	**Soil**	**07/10/2018 10:45**	**ICP-MS2 182SMPL.D**	**161336**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	07/14/2018 10:33
Arsenic	**4.8**	0.50	1	07/14/2018 10:33
Barium	**130**	5.0	1	07/14/2018 10:33
Beryllium	ND	0.50	1	07/14/2018 10:33
Cadmium	ND	0.25	1	07/14/2018 10:33
Chromium	**33**	0.50	1	07/14/2018 10:33
Cobalt	**7.7**	0.50	1	07/14/2018 10:33
Copper	**16**	0.50	1	07/14/2018 10:33
Lead	**5.7**	0.50	1	07/14/2018 10:33
Mercury	ND	0.050	1	07/14/2018 10:33
Molybdenum	**0.60**	0.50	1	07/14/2018 10:33
Nickel	**39**	0.50	1	07/14/2018 10:33
Selenium	ND	0.50	1	07/14/2018 10:33
Silver	ND	0.50	1	07/14/2018 10:33
Thallium	ND	0.50	1	07/14/2018 10:33
Vanadium	**31**	0.50	1	07/14/2018 10:33
Zinc	**39**	5.0	1	07/14/2018 10:33

Surrogates	REC (%)	Limits	
Terbium	98	70-130	07/14/2018 10:33

Analyst(s): DB

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3050B
Date Prepared:	7/11/18	**Analytical Method:**	SW6020
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9	**1807490-002A**	**Soil**	**07/10/2018 11:10**	**ICP-MS2 183SMPL.D**	**161336**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	07/14/2018 10:39
Arsenic	**4.2**	0.50	1	07/14/2018 10:39
Barium	**110**	5.0	1	07/14/2018 10:39
Beryllium	ND	0.50	1	07/14/2018 10:39
Cadmium	ND	0.25	1	07/14/2018 10:39
Chromium	**33**	0.50	1	07/14/2018 10:39
Cobalt	**7.8**	0.50	1	07/14/2018 10:39
Copper	**17**	0.50	1	07/14/2018 10:39
Lead	**6.2**	0.50	1	07/14/2018 10:39
Mercury	**0.059**	0.050	1	07/14/2018 10:39
Molybdenum	ND	0.50	1	07/14/2018 10:39
Nickel	**37**	0.50	1	07/14/2018 10:39
Selenium	ND	0.50	1	07/14/2018 10:39
Silver	ND	0.50	1	07/14/2018 10:39
Thallium	ND	0.50	1	07/14/2018 10:39
Vanadium	**29**	0.50	1	07/14/2018 10:39
Zinc	**35**	5.0	1	07/14/2018 10:39

Surrogates	REC (%)	Limits	
Terbium	101	70-130	07/14/2018 10:39

Analyst(s): DB

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3050B
Date Prepared:	7/11/18	**Analytical Method:**	SW6020
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-8	**1807490-003A**	**Soil**	**07/10/2018 11:50**	**ICP-MS2 184SMPL.D**	**161336**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	07/14/2018 10:46
Arsenic	**6.3**	0.50	1	07/14/2018 10:46
Barium	**160**	5.0	1	07/14/2018 10:46
Beryllium	ND	0.50	1	07/14/2018 10:46
Cadmium	ND	0.25	1	07/14/2018 10:46
Chromium	**43**	0.50	1	07/14/2018 10:46
Cobalt	**9.3**	0.50	1	07/14/2018 10:46
Copper	**21**	0.50	1	07/14/2018 10:46
Lead	**7.3**	0.50	1	07/14/2018 10:46
Mercury	ND	0.050	1	07/14/2018 10:46
Molybdenum	**1.3**	0.50	1	07/14/2018 10:46
Nickel	**46**	0.50	1	07/14/2018 10:46
Selenium	ND	0.50	1	07/14/2018 10:46
Silver	ND	0.50	1	07/14/2018 10:46
Thallium	ND	0.50	1	07/14/2018 10:46
Vanadium	**38**	0.50	1	07/14/2018 10:46
Zinc	**45**	5.0	1	07/14/2018 10:46

Surrogates	REC (%)	Limits	
Terbium	107	70-130	07/14/2018 10:46

Analyst(s): DB

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3050B
Date Prepared:	7/11/18	**Analytical Method:**	SW6020
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-7	**1807490-004A**	**Soil**	**07/10/2018 12:20**	**ICP-MS2 185SMPL.D**	**161336**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	07/14/2018 10:52
Arsenic	**4.1**	0.50	1	07/14/2018 10:52
Barium	**110**	5.0	1	07/14/2018 10:52
Beryllium	ND	0.50	1	07/14/2018 10:52
Cadmium	ND	0.25	1	07/14/2018 10:52
Chromium	**32**	0.50	1	07/14/2018 10:52
Cobalt	**7.8**	0.50	1	07/14/2018 10:52
Copper	**14**	0.50	1	07/14/2018 10:52
Lead	**5.2**	0.50	1	07/14/2018 10:52
Mercury	ND	0.050	1	07/14/2018 10:52
Molybdenum	ND	0.50	1	07/14/2018 10:52
Nickel	**38**	0.50	1	07/14/2018 10:52
Selenium	ND	0.50	1	07/14/2018 10:52
Silver	ND	0.50	1	07/14/2018 10:52
Thallium	ND	0.50	1	07/14/2018 10:52
Vanadium	**29**	0.50	1	07/14/2018 10:52
Zinc	**33**	5.0	1	07/14/2018 10:52

Surrogates	REC (%)	Limits	
Terbium	97	70-130	07/14/2018 10:52

Analyst(s): DB

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3050B
Date Prepared:	7/11/18	**Analytical Method:**	SW6020
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-5	1807490-005A	Soil	07/10/2018 12:55	ICP-MS2 160SMPL.D	161336

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	07/17/2018 02:02
Arsenic	**4.7**	0.50	1	07/17/2018 02:02
Barium	**110**	5.0	1	07/17/2018 02:02
Beryllium	ND	0.50	1	07/17/2018 02:02
Cadmium	ND	0.25	1	07/17/2018 02:02
Chromium	**33**	0.50	1	07/17/2018 02:02
Cobalt	**8.4**	0.50	1	07/17/2018 02:02
Copper	**13**	0.50	1	07/17/2018 02:02
Lead	**5.1**	0.50	1	07/17/2018 02:02
Mercury	**0.066**	0.050	1	07/17/2018 02:02
Molybdenum	**0.54**	0.50	1	07/17/2018 02:02
Nickel	**36**	0.50	1	07/17/2018 02:02
Selenium	ND	0.50	1	07/17/2018 02:02
Silver	ND	0.50	1	07/17/2018 02:02
Thallium	ND	0.50	1	07/17/2018 02:02
Vanadium	**30**	0.50	1	07/17/2018 02:02
Zinc	**38**	5.0	1	07/17/2018 02:02

Surrogates	REC (%)	Limits	
Terbium	99	70-130	07/17/2018 02:02

Analyst(s): ND

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3050B
Date Prepared:	7/11/18	**Analytical Method:**	SW6020
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-4	**1807490-006A**	**Soil**	**07/10/2018 13:15**	**ICP-MS2 161SMPL.D**	**161336**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	07/17/2018 02:08
Arsenic	**4.0**	0.50	1	07/17/2018 02:08
Barium	**110**	5.0	1	07/17/2018 02:08
Beryllium	ND	0.50	1	07/17/2018 02:08
Cadmium	ND	0.25	1	07/17/2018 02:08
Chromium	**31**	0.50	1	07/17/2018 02:08
Cobalt	**7.7**	0.50	1	07/17/2018 02:08
Copper	**13**	0.50	1	07/17/2018 02:08
Lead	**4.6**	0.50	1	07/17/2018 02:08
Mercury	**0.051**	0.050	1	07/17/2018 02:08
Molybdenum	ND	0.50	1	07/17/2018 02:08
Nickel	**35**	0.50	1	07/17/2018 02:08
Selenium	ND	0.50	1	07/17/2018 02:08
Silver	ND	0.50	1	07/17/2018 02:08
Thallium	ND	0.50	1	07/17/2018 02:08
Vanadium	**29**	0.50	1	07/17/2018 02:08
Zinc	**33**	5.0	1	07/17/2018 02:08

Surrogates	REC (%)	Limits	
Terbium	101	70-130	07/17/2018 02:08

Analyst(s): ND

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3050B
Date Prepared:	7/11/18	**Analytical Method:**	SW6020
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2	**1807490-007A**	**Soil**	**07/10/2018 13:55**	**ICP-MS2 191SMPL.D**	**161336**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	07/14/2018 11:29
Arsenic	**5.2**	0.50	1	07/14/2018 11:29
Barium	**150**	5.0	1	07/14/2018 11:29
Beryllium	ND	0.50	1	07/14/2018 11:29
Cadmium	ND	0.25	1	07/14/2018 11:29
Chromium	**37**	0.50	1	07/14/2018 11:29
Cobalt	**8.9**	0.50	1	07/14/2018 11:29
Copper	**18**	0.50	1	07/14/2018 11:29
Lead	**6.3**	0.50	1	07/14/2018 11:29
Mercury	ND	0.050	1	07/14/2018 11:29
Molybdenum	ND	0.50	1	07/14/2018 11:29
Nickel	**41**	0.50	1	07/14/2018 11:29
Selenium	ND	0.50	1	07/14/2018 11:29
Silver	ND	0.50	1	07/14/2018 11:29
Thallium	ND	0.50	1	07/14/2018 11:29
Vanadium	**35**	0.50	1	07/14/2018 11:29
Zinc	**39**	5.0	1	07/14/2018 11:29

Surrogates	REC (%)	Limits	
Terbium	106	70-130	07/14/2018 11:29

Analyst(s): DB

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3050B
Date Prepared:	7/11/18	**Analytical Method:**	SW6020
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1	**1807490-008A**	**Soil**	**07/10/2018 14:15**	**ICP-MS2 192SMPL.D**	**161336**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	07/14/2018 11:35
Arsenic	**4.3**	0.50	1	07/14/2018 11:35
Barium	**120**	5.0	1	07/14/2018 11:35
Beryllium	ND	0.50	1	07/14/2018 11:35
Cadmium	ND	0.25	1	07/14/2018 11:35
Chromium	**35**	0.50	1	07/14/2018 11:35
Cobalt	**8.1**	0.50	1	07/14/2018 11:35
Copper	**17**	0.50	1	07/14/2018 11:35
Lead	**5.1**	0.50	1	07/14/2018 11:35
Mercury	ND	0.050	1	07/14/2018 11:35
Molybdenum	ND	0.50	1	07/14/2018 11:35
Nickel	**37**	0.50	1	07/14/2018 11:35
Selenium	ND	0.50	1	07/14/2018 11:35
Silver	ND	0.50	1	07/14/2018 11:35
Thallium	ND	0.50	1	07/14/2018 11:35
Vanadium	**32**	0.50	1	07/14/2018 11:35
Zinc	**35**	5.0	1	07/14/2018 11:35

Surrogates	REC (%)	Limits	
Terbium	104	70-130	07/14/2018 11:35

Analyst(s): DB

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18	**Analytical Method:**	SW8021B/8015Bm
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-10	**1807490-001A**	**Soil**	**07/10/2018 10:45**	**GC7 07151824.D**	**161328**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	**11**	1.0	1	07/15/2018 18:36
MTBE	**---**	0.050	1	07/15/2018 18:36
Benzene	**---**	0.0050	1	07/15/2018 18:36
Toluene	**---**	0.0050	1	07/15/2018 18:36
Ethylbenzene	**---**	0.0050	1	07/15/2018 18:36
Xylenes	**---**	0.0050	1	07/15/2018 18:36

Surrogates	REC (%)	Limits	
2-Fluorotoluene	100	62-126	07/15/2018 18:36

Analyst(s): HD Analytical Comments: d7,d9

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9	**1807490-002A**	**Soil**	**07/10/2018 11:10**	**GC7 07151825.D**	**161328**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	07/15/2018 19:06
MTBE	**---**	0.050	1	07/15/2018 19:06
Benzene	**---**	0.0050	1	07/15/2018 19:06
Toluene	**---**	0.0050	1	07/15/2018 19:06
Ethylbenzene	**---**	0.0050	1	07/15/2018 19:06
Xylenes	**---**	0.0050	1	07/15/2018 19:06

Surrogates	REC (%)	Limits	
2-Fluorotoluene	77	62-126	07/15/2018 19:06

Analyst(s): HD

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18	**Analytical Method:**	SW8021B/8015Bm
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-8	**1807490-003A**	**Soil**	**07/10/2018 11:50**	**GC7 07151828.D**	**161328**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	07/15/2018 20:36
MTBE	---	0.050	1	07/15/2018 20:36
Benzene	---	0.0050	1	07/15/2018 20:36
Toluene	---	0.0050	1	07/15/2018 20:36
Ethylbenzene	---	0.0050	1	07/15/2018 20:36
Xylenes	---	0.0050	1	07/15/2018 20:36

Surrogates	REC (%)	Limits	
2-Fluorotoluene	77	62-126	07/15/2018 20:36

Analyst(s): HD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-7	**1807490-004A**	**Soil**	**07/10/2018 12:20**	**GC7 07151829.D**	**161328**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	07/15/2018 21:05
MTBE	---	0.050	1	07/15/2018 21:05
Benzene	---	0.0050	1	07/15/2018 21:05
Toluene	---	0.0050	1	07/15/2018 21:05
Ethylbenzene	---	0.0050	1	07/15/2018 21:05
Xylenes	---	0.0050	1	07/15/2018 21:05

Surrogates	REC (%)	Limits	
2-Fluorotoluene	73	62-126	07/15/2018 21:05

Analyst(s): HD

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18	**Analytical Method:**	SW8021B/8015Bm
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-5	1807490-005A	Soil	07/10/2018 12:55	GC7 07151831.D	161328

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	07/15/2018 22:05
MTBE	---	0.050	1	07/15/2018 22:05
Benzene	---	0.0050	1	07/15/2018 22:05
Toluene	---	0.0050	1	07/15/2018 22:05
Ethylbenzene	---	0.0050	1	07/15/2018 22:05
Xylenes	---	0.0050	1	07/15/2018 22:05

Surrogates	REC (%)	Limits	
2-Fluorotoluene	76	62-126	07/15/2018 22:05

Analyst(s): HD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-4	1807490-006A	Soil	07/10/2018 13:15	GC7 07151832.D	161328

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	07/15/2018 22:35
MTBE	---	0.050	1	07/15/2018 22:35
Benzene	---	0.0050	1	07/15/2018 22:35
Toluene	---	0.0050	1	07/15/2018 22:35
Ethylbenzene	---	0.0050	1	07/15/2018 22:35
Xylenes	---	0.0050	1	07/15/2018 22:35

Surrogates	REC (%)	Limits	
2-Fluorotoluene	75	62-126	07/15/2018 22:35

Analyst(s): HD

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW5030B
Date Prepared:	7/11/18	**Analytical Method:**	SW8021B/8015Bm
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2	1807490-007A	Soil	07/10/2018 13:55	GC7 07151816.D	161328

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	07/15/2018 14:33
MTBE	---	0.050	1	07/15/2018 14:33
Benzene	---	0.0050	1	07/15/2018 14:33
Toluene	---	0.0050	1	07/15/2018 14:33
Ethylbenzene	---	0.0050	1	07/15/2018 14:33
Xylenes	---	0.0050	1	07/15/2018 14:33

Surrogates	REC (%)	Limits	
2-Fluorotoluene	79	62-126	07/15/2018 14:33

Analyst(s): HD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1	1807490-008A	Soil	07/10/2018 14:15	GC19 07151814.D	161328

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	07/15/2018 14:04
MTBE	---	0.050	1	07/15/2018 14:04
Benzene	---	0.0050	1	07/15/2018 14:04
Toluene	---	0.0050	1	07/15/2018 14:04
Ethylbenzene	---	0.0050	1	07/15/2018 14:04
Xylenes	---	0.0050	1	07/15/2018 14:04

Surrogates	REC (%)	Limits	
2-Fluorotoluene	77	62-126	07/15/2018 14:04

Analyst(s): HD

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3550B
Date Prepared:	7/11/18	**Analytical Method:**	SW8015B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-10	**1807490-001A**	**Soil**	**07/10/2018 10:45**	**GC11B 07121817.D**	**161338**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**65**	20	20	07/12/2018 18:35
TPH-Motor Oil (C18-C36)	**520**	100	20	07/12/2018 18:35

Surrogates	REC (%)	Limits	
C9	97	74-123	07/12/2018 18:35

Analyst(s): JIS Analytical Comments: e7,e2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9	**1807490-002A**	**Soil**	**07/10/2018 11:10**	**GC6A 07161810.D**	**161338**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**1.4**	1.0	1	07/16/2018 17:58
TPH-Motor Oil (C18-C36)	**8.0**	5.0	1	07/16/2018 17:58

Surrogates	REC (%)	Limits	
C9	91	74-123	07/16/2018 17:58

Analyst(s): JIS Analytical Comments: e7,e2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-8	**1807490-003A**	**Soil**	**07/10/2018 11:50**	**GC39B 07131883.D**	**161338**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**6.3**	2.0	2	07/14/2018 18:48
TPH-Motor Oil (C18-C36)	**170**	10	2	07/14/2018 18:48

Surrogates	REC (%)	Limits	
C9	89	74-123	07/14/2018 18:48

Analyst(s): JIS Analytical Comments: e7,e2

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3550B
Date Prepared:	7/11/18	**Analytical Method:**	SW8015B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-7	1807490-004A	Soil	07/10/2018 12:20	GC39B 07121833.D	161338

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	07/12/2018 23:35
TPH-Motor Oil (C18-C36)	**6.7**	5.0	1	07/12/2018 23:35

Surrogates	REC (%)	Limits	
C9	92	74-123	07/12/2018 23:35

Analyst(s): JIS Analytical Comments: e7

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-5	1807490-005A	Soil	07/10/2018 12:55	GC11A 07121824.D	161338

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**3.3**	1.0	1	07/12/2018 20:31
TPH-Motor Oil (C18-C36)	**23**	5.0	1	07/12/2018 20:31

Surrogates	REC (%)	Limits	
C9	80	74-123	07/12/2018 20:31

Analyst(s): JIS Analytical Comments: e7,e2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-4	1807490-006A	Soil	07/10/2018 13:15	GC6A 07161814.D	161338

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	07/16/2018 19:16
TPH-Motor Oil (C18-C36)	**7.5**	5.0	1	07/16/2018 19:16

Surrogates	REC (%)	Limits	
C9	89	74-123	07/16/2018 19:16

Analyst(s): JIS Analytical Comments: e7

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Analytical Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Received:	7/10/18 15:43	**Extraction Method:**	SW3550B
Date Prepared:	7/11/18	**Analytical Method:**	SW8015B
Project:	16158; Plan 13-E. 14th Phase 2	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2	**1807490-007A**	**Soil**	**07/10/2018 13:55**	**GC6A 07121820.D**	**161355**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	07/12/2018 19:16
TPH-Motor Oil (C18-C36)	**17**	5.0	1	07/12/2018 19:16

Surrogates	REC (%)	Limits	
C9	93	74-123	07/12/2018 19:16

Analyst(s): JIS Analytical Comments: e7

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1	**1807490-008A**	**Soil**	**07/10/2018 14:15**	**GC39B 07121811.D**	**161355**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**8.0**	5.0	5	07/12/2018 16:26
TPH-Motor Oil (C18-C36)	**120**	25	5	07/12/2018 16:26

Surrogates	REC (%)	Limits	
C9	89	74-123	07/12/2018 16:26

Analyst(s): JIS Analytical Comments: e7,e2

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161298
Date Analyzed:	7/11/18 - 7/12/18	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161298

QC Summary Report for SW8082

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Aroclor1016	ND	0.050	-	-	-
Aroclor1221	ND	0.050	-	-	-
Aroclor1232	ND	0.050	-	-	-
Aroclor1242	ND	0.050	-	-	-
Aroclor1248	ND	0.050	-	-	-
Aroclor1254	ND	0.050	-	-	-
Aroclor1260	ND	0.050	-	-	-
PCBs, total	ND	0.050	-	-	-
Surrogate Recovery					
Decachlorobiphenyl	0.0526		0.050	105	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aroclor1016	0.164	0.167	0.15	109	112	70-130	2.10	20
Aroclor1260	0.163	0.167	0.15	109	111	70-130	2.26	20
Surrogate Recovery								
Decachlorobiphenyl	0.0501	0.0488	0.050	100	98	70-130	2.63	20

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161304
Date Analyzed:	7/12/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161304

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Acetone	ND	0.10	-	-	-
tert-Amyl methyl ether (TAME)	ND	0.0050	-	-	-
Benzene	ND	0.0050	-	-	-
Bromobenzene	ND	0.0050	-	-	-
Bromochloromethane	ND	0.0050	-	-	-
Bromodichloromethane	ND	0.0050	-	-	-
Bromoform	ND	0.0050	-	-	-
Bromomethane	ND	0.0050	-	-	-
2-Butanone (MEK)	ND	0.020	-	-	-
t-Butyl alcohol (TBA)	ND	0.050	-	-	-
n-Butyl benzene	ND	0.0050	-	-	-
sec-Butyl benzene	ND	0.0050	-	-	-
tert-Butyl benzene	ND	0.0050	-	-	-
Carbon Disulfide	ND	0.0050	-	-	-
Carbon Tetrachloride	ND	0.0050	-	-	-
Chlorobenzene	ND	0.0050	-	-	-
Chloroethane	ND	0.0050	-	-	-
Chloroform	ND	0.0050	-	-	-
Chloromethane	ND	0.0050	-	-	-
2-Chlorotoluene	ND	0.0050	-	-	-
4-Chlorotoluene	ND	0.0050	-	-	-
Dibromochloromethane	ND	0.0050	-	-	-
1,2-Dibromo-3-chloropropane	ND	0.0040	-	-	-
1,2-Dibromoethane (EDB)	ND	0.0040	-	-	-
Dibromomethane	ND	0.0050	-	-	-
1,2-Dichlorobenzene	ND	0.0050	-	-	-
1,3-Dichlorobenzene	ND	0.0050	-	-	-
1,4-Dichlorobenzene	ND	0.0050	-	-	-
Dichlorodifluoromethane	ND	0.0050	-	-	-
1,1-Dichloroethane	ND	0.0050	-	-	-
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	-	-	-
1,1-Dichloroethene	ND	0.0050	-	-	-
cis-1,2-Dichloroethene	ND	0.0050	-	-	-
trans-1,2-Dichloroethene	ND	0.0050	-	-	-
1,2-Dichloropropane	ND	0.0050	-	-	-
1,3-Dichloropropane	ND	0.0050	-	-	-
2,2-Dichloropropane	ND	0.0050	-	-	-
1,1-Dichloropropene	ND	0.0050	-	-	-

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161304
Date Analyzed:	7/12/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161304

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
cis-1,3-Dichloropropene	ND	0.0050	-	-	-
trans-1,3-Dichloropropene	ND	0.0050	-	-	-
Diisopropyl ether (DIPE)	ND	0.0050	-	-	-
Ethylbenzene	ND	0.0050	-	-	-
Ethyl tert-butyl ether (ETBE)	ND	0.0050	-	-	-
Freon 113	ND	0.0050	-	-	-
Hexachlorobutadiene	ND	0.0050	-	-	-
Hexachloroethane	ND	0.0050	-	-	-
2-Hexanone	ND	0.0050	-	-	-
Isopropylbenzene	ND	0.0050	-	-	-
4-Isopropyl toluene	ND	0.0050	-	-	-
Methyl-t-butyl ether (MTBE)	ND	0.0050	-	-	-
Methylene chloride	ND	0.0050	-	-	-
4-Methyl-2-pentanone (MIBK)	ND	0.0050	-	-	-
Naphthalene	ND	0.0050	-	-	-
n-Propyl benzene	ND	0.0050	-	-	-
Styrene	ND	0.0050	-	-	-
1,1,1,2-Tetrachloroethane	ND	0.0050	-	-	-
1,1,2,2-Tetrachloroethane	ND	0.0050	-	-	-
Tetrachloroethene	ND	0.0050	-	-	-
Toluene	ND	0.0050	-	-	-
1,2,3-Trichlorobenzene	ND	0.0050	-	-	-
1,2,4-Trichlorobenzene	ND	0.0050	-	-	-
1,1,1-Trichloroethane	ND	0.0050	-	-	-
1,1,2-Trichloroethane	ND	0.0050	-	-	-
Trichloroethene	ND	0.0050	-	-	-
Trichlorofluoromethane	ND	0.0050	-	-	-
1,2,3-Trichloropropane	ND	0.0050	-	-	-
1,2,4-Trimethylbenzene	ND	0.0050	-	-	-
1,3,5-Trimethylbenzene	ND	0.0050	-	-	-
Vinyl Chloride	ND	0.0050	-	-	-
Xylenes, Total	ND	0.0050	-	-	-

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161304
Date Analyzed:	7/12/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161304

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Surrogate Recovery					
Dibromofluoromethane	0.128		0.12	103	87-127
Toluene-d8	0.169		0.12	135	93-141
4-BFB	0.0135		0.012	108	84-137
Benzene-d6	0.0908		0.10	91	67-131
Ethylbenzene-d10	0.116		0.10	116	78-153
1,2-DCB-d4	0.0808		0.10	81	63-109

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161304
Date Analyzed:	7/12/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161304

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acetone	0.865	0.887	1	87	89	48-156	2.45	20
tert-Amyl methyl ether (TAME)	0.0388	0.0395	0.050	78	79	56-115	1.94	20
Benzene	0.0441	0.0456	0.050	88	91	63-131	3.27	20
Bromobenzene	0.0462	0.0475	0.050	92	95	66-127	2.91	20
Bromochloromethane	0.0436	0.0454	0.050	87	91	64-124	4.05	20
Bromodichloromethane	0.0402	0.0415	0.050	80	83	64-120	3.18	20
Bromoform	0.0341	0.0345	0.050	68	69	48-92	1.05	20
Bromomethane	0.0416	0.0445	0.050	83	89	25-163	6.84	20
2-Butanone (MEK)	0.159	0.166	0.20	80	83	51-133	4.30	20
t-Butyl alcohol (TBA)	0.150	0.153	0.20	75	76	52-129	1.89	20
n-Butyl benzene	0.0701	0.0738	0.050	140	148	83-200	5.19	20
sec-Butyl benzene	0.0675	0.0701	0.050	135	140	81-199	3.71	20
tert-Butyl benzene	0.0537	0.0553	0.050	107	111	79-178	2.95	20
Carbon Disulfide	0.0438	0.0458	0.050	88	92	64-136	4.48	20
Carbon Tetrachloride	0.0459	0.0476	0.050	92	95	66-140	3.61	20
Chlorobenzene	0.0462	0.0476	0.050	92	95	73-116	2.97	20
Chloroethane	0.0385	0.0396	0.050	77	79	35-147	2.76	20
Chloroform	0.0448	0.0461	0.050	90	92	65-130	2.83	20
Chloromethane	0.0371	0.0392	0.050	74	78	30-137	5.38	20
2-Chlorotoluene	0.0522	0.0538	0.050	105	108	75-152	2.92	20
4-Chlorotoluene	0.0506	0.0524	0.050	101	105	71-148	3.31	20
Dibromochloromethane	0.0406	0.0416	0.050	81	83	61-106	2.37	20
1,2-Dibromo-3-chloropropane	0.0117	0.0119	0.020	58	60	36-120	2.03	20
1,2-Dibromoethane (EDB)	0.0412	0.0419	0.050	82	84	67-118	1.69	20
Dibromomethane	0.0388	0.0398	0.050	77	80	61-116	2.72	20
1,2-Dichlorobenzene	0.0386	0.0406	0.050	77	81	59-106	5.21	20
1,3-Dichlorobenzene	0.0486	0.0501	0.050	97	100	75-129	3.03	20
1,4-Dichlorobenzene	0.0458	0.0480	0.050	92	96	66-127	4.70	20
Dichlorodifluoromethane	0.0220	0.0235	0.050	44	47	13-74	6.19	20
1,1-Dichloroethane	0.0462	0.0479	0.050	92	96	65-134	3.43	20
1,2-Dichloroethane (1,2-DCA)	0.0427	0.0442	0.050	85	89	57-131	3.59	20
1,1-Dichloroethene	0.0446	0.0462	0.050	89	92	62-127	3.55	20
cis-1,2-Dichloroethene	0.0454	0.0468	0.050	91	94	66-130	3.12	20
trans-1,2-Dichloroethene	0.0463	0.0478	0.050	93	96	60-131	3.09	20
1,2-Dichloropropane	0.0426	0.0440	0.050	85	88	63-127	3.39	20
1,3-Dichloropropane	0.0428	0.0438	0.050	86	88	68-124	2.36	20
2,2-Dichloropropane	0.0462	0.0477	0.050	92	95	63-150	3.12	20
1,1-Dichloropropene	0.0462	0.0478	0.050	92	96	67-134	3.34	20

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161304
Date Analyzed:	7/12/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161304

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
cis-1,3-Dichloropropene	0.0465	0.0478	0.050	93	96	65-138	2.76	20
trans-1,3-Dichloropropene	0.0437	0.0451	0.050	87	90	66-124	3.20	20
Diisopropyl ether (DIPE)	0.0415	0.0431	0.050	83	86	58-129	3.77	20
Ethylbenzene	0.0492	0.0511	0.050	98	102	73-145	3.78	20
Ethyl tert-butyl ether (ETBE)	0.0412	0.0426	0.050	82	85	62-125	3.31	20
Freon 113	0.0392	0.0404	0.050	78	81	55-116	2.93	20
Hexachlorobutadiene	0.0664	0.0680	0.050	133	136	75-178	2.37	20
Hexachloroethane	0.0576	0.0590	0.050	115	118	75-152	2.39	20
2-Hexanone	0.0300	0.0301	0.050	60	60	41-113	0	20
Isopropylbenzene	0.0535	0.0562	0.050	107	112	67-172	4.89	20
4-Isopropyl toluene	0.0660	0.0693	0.050	132	139	88-171	4.84	20
Methyl-t-butyl ether (MTBE)	0.0405	0.0417	0.050	81	83	58-122	3.07	20
Methylene chloride	0.0429	0.0445	0.050	86	89	57-140	3.61	20
4-Methyl-2-pentanone (MIBK)	0.0305	0.0311	0.050	61	62	42-117	1.87	20
Naphthalene	0.0223	0.0221	0.050	45	44	29-65	0.551	20
n-Propyl benzene	0.0613	0.0635	0.050	123	127	85-174	3.49	20
Styrene	0.0423	0.0443	0.050	85	89	63-126	4.77	20
1,1,1,2-Tetrachloroethane	0.0466	0.0476	0.050	93	95	68-131	2.12	20
1,1,2,2-Tetrachloroethane	0.0339	0.0347	0.050	68	69	45-121	2.36	20
Tetrachloroethene	0.0526	0.0534	0.050	105	107	65-150	1.52	20
Toluene	0.0463	0.0484	0.050	93	97	72-135	4.35	20
1,2,3-Trichlorobenzene	0.0270	0.0271	0.050	54	54	35-80	0	20
1,2,4-Trichlorobenzene	0.0359	0.0357	0.050	72	71	45-103	0.400	20
1,1,1-Trichloroethane	0.0454	0.0468	0.050	91	94	67-137	3.08	20
1,1,2-Trichloroethane	0.0400	0.0406	0.050	80	81	67-117	1.31	20
Trichloroethene	0.0478	0.0490	0.050	96	98	62-135	2.35	20
Trichlorofluoromethane	0.0411	0.0431	0.050	82	86	56-124	4.72	20
1,2,3-Trichloropropane	0.0402	0.0400	0.050	80	80	58-133	0	20
1,2,4-Trimethylbenzene	0.0522	0.0540	0.050	104	108	78-161	3.37	20
1,3,5-Trimethylbenzene	0.0548	0.0570	0.050	110	114	85-170	4.05	20
Vinyl Chloride	0.0344	0.0361	0.050	69	72	32-142	4.82	20
Xylenes, Total	0.145	0.151	0.15	97	101	70-137	4.36	20

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161304
Date Analyzed:	7/12/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161304

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Surrogate Recovery								
Dibromofluoromethane	0.132	0.130	0.12	105	104	87-127	0.881	20
Toluene-d8	0.166	0.165	0.12	132	132	93-141	0	20
4-BFB	0.0145	0.0142	0.012	116	114	84-137	1.52	20
Benzene-d6	0.0913	0.0919	0.10	91	92	67-131	0.649	20
Ethylbenzene-d10	0.113	0.114	0.10	113	114	78-153	1.46	20
1,2-DCB-d4	0.0813	0.0815	0.10	81	81	63-109	0	20

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/16/18	**BatchID:**	161551
Date Analyzed:	7/16/18	**Extraction Method:**	SW5030B
Instrument:	GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161551

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Acetone	ND	0.10	-	-	-
tert-Amyl methyl ether (TAME)	ND	0.0050	-	-	-
Benzene	ND	0.0050	-	-	-
Bromobenzene	ND	0.0050	-	-	-
Bromochloromethane	ND	0.0050	-	-	-
Bromodichloromethane	ND	0.0050	-	-	-
Bromoform	ND	0.0050	-	-	-
Bromomethane	ND	0.0050	-	-	-
2-Butanone (MEK)	ND	0.020	-	-	-
t-Butyl alcohol (TBA)	ND	0.050	-	-	-
n-Butyl benzene	ND	0.0050	-	-	-
sec-Butyl benzene	ND	0.0050	-	-	-
tert-Butyl benzene	ND	0.0050	-	-	-
Carbon Disulfide	ND	0.0050	-	-	-
Carbon Tetrachloride	ND	0.0050	-	-	-
Chlorobenzene	ND	0.0050	-	-	-
Chloroethane	ND	0.0050	-	-	-
Chloroform	ND	0.0050	-	-	-
Chloromethane	ND	0.0050	-	-	-
2-Chlorotoluene	ND	0.0050	-	-	-
4-Chlorotoluene	ND	0.0050	-	-	-
Dibromochloromethane	ND	0.0050	-	-	-
1,2-Dibromo-3-chloropropane	ND	0.0040	-	-	-
1,2-Dibromoethane (EDB)	ND	0.0040	-	-	-
Dibromomethane	ND	0.0050	-	-	-
1,2-Dichlorobenzene	ND	0.0050	-	-	-
1,3-Dichlorobenzene	ND	0.0050	-	-	-
1,4-Dichlorobenzene	ND	0.0050	-	-	-
Dichlorodifluoromethane	ND	0.0050	-	-	-
1,1-Dichloroethane	ND	0.0050	-	-	-
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	-	-	-
1,1-Dichloroethene	ND	0.0050	-	-	-
cis-1,2-Dichloroethene	ND	0.0050	-	-	-
trans-1,2-Dichloroethene	ND	0.0050	-	-	-
1,2-Dichloropropane	ND	0.0050	-	-	-
1,3-Dichloropropane	ND	0.0050	-	-	-
2,2-Dichloropropane	ND	0.0050	-	-	-
1,1-Dichloropropene	ND	0.0050	-	-	-

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/16/18	**BatchID:**	161551
Date Analyzed:	7/16/18	**Extraction Method:**	SW5030B
Instrument:	GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161551

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
cis-1,3-Dichloropropene	ND	0.0050	-	-	-
trans-1,3-Dichloropropene	ND	0.0050	-	-	-
Diisopropyl ether (DIPE)	ND	0.0050	-	-	-
Ethylbenzene	ND	0.0050	-	-	-
Ethyl tert-butyl ether (ETBE)	ND	0.0050	-	-	-
Freon 113	ND	0.0050	-	-	-
Hexachlorobutadiene	ND	0.0050	-	-	-
Hexachloroethane	ND	0.0050	-	-	-
2-Hexanone	ND	0.0050	-	-	-
Isopropylbenzene	ND	0.0050	-	-	-
4-Isopropyl toluene	ND	0.0050	-	-	-
Methyl-t-butyl ether (MTBE)	ND	0.0050	-	-	-
Methylene chloride	ND	0.0050	-	-	-
4-Methyl-2-pentanone (MIBK)	ND	0.0050	-	-	-
Naphthalene	ND	0.0050	-	-	-
n-Propyl benzene	ND	0.0050	-	-	-
Styrene	ND	0.0050	-	-	-
1,1,1,2-Tetrachloroethane	ND	0.0050	-	-	-
1,1,2,2-Tetrachloroethane	ND	0.0050	-	-	-
Tetrachloroethene	ND	0.0050	-	-	-
Toluene	ND	0.0050	-	-	-
1,2,3-Trichlorobenzene	ND	0.0050	-	-	-
1,2,4-Trichlorobenzene	ND	0.0050	-	-	-
1,1,1-Trichloroethane	ND	0.0050	-	-	-
1,1,2-Trichloroethane	ND	0.0050	-	-	-
Trichloroethene	ND	0.0050	-	-	-
Trichlorofluoromethane	ND	0.0050	-	-	-
1,2,3-Trichloropropane	ND	0.0050	-	-	-
1,2,4-Trimethylbenzene	ND	0.0050	-	-	-
1,3,5-Trimethylbenzene	ND	0.0050	-	-	-
Vinyl Chloride	ND	0.0050	-	-	-
Xylenes, Total	ND	0.0050	-	-	-

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/16/18	**BatchID:**	161551
Date Analyzed:	7/16/18	**Extraction Method:**	SW5030B
Instrument:	GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161551

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Surrogate Recovery					
Dibromofluoromethane	0.140		0.12	112	87-127
Toluene-d8	0.158		0.12	126	93-141
4-BFB	0.0147		0.012	117	84-137
Benzene-d6	0.0990		0.10	99	67-131
Ethylbenzene-d10	0.104		0.10	104	78-153
1,2-DCB-d4	0.0761		0.10	76	63-109

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/16/18	**BatchID:**	161551
Date Analyzed:	7/16/18	**Extraction Method:**	SW5030B
Instrument:	GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161551

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acetone	0.942	0.926	1	94	93	48-156	1.71	20
tert-Amyl methyl ether (TAME)	0.0358	0.0357	0.050	72	71	56-115	0.152	20
Benzene	0.0414	0.0409	0.050	83	82	63-131	1.04	20
Bromobenzene	0.0370	0.0365	0.050	74	73	66-127	1.28	20
Bromochloromethane	0.0381	0.0382	0.050	76	76	64-124	0	20
Bromodichloromethane	0.0356	0.0356	0.050	71	71	64-120	0	20
Bromoform	0.0303	0.0302	0.050	61	60	48-92	0.380	20
Bromomethane	0.0455	0.0454	0.050	91	91	25-163	0	20
2-Butanone (MEK)	0.197	0.196	0.20	98	98	51-133	0	20
t-Butyl alcohol (TBA)	0.171	0.162	0.20	85	81	52-129	5.15	20
n-Butyl benzene	0.0552	0.0544	0.050	110	109	83-200	1.35	20
sec-Butyl benzene	0.0582	0.0582	0.050	116	116	81-199	0	20
tert-Butyl benzene	0.0467	0.0471	0.050	93	94	79-178	0.966	20
Carbon Disulfide	0.0408	0.0400	0.050	82	80	64-136	1.96	20
Carbon Tetrachloride	0.0386	0.0382	0.050	77	76	66-140	1.09	20
Chlorobenzene	0.0397	0.0392	0.050	79	79	73-116	0	20
Chloroethane	0.0451	0.0441	0.050	90	88	35-147	2.25	20
Chloroform	0.0387	0.0386	0.050	77	77	65-130	0	20
Chloromethane	0.0351	0.0370	0.050	70	74	30-137	5.43	20
2-Chlorotoluene	0.0457	0.0459	0.050	91	92	75-152	0.325	20
4-Chlorotoluene	0.0436	0.0445	0.050	87	89	71-148	2.07	20
Dibromochloromethane	0.0346	0.0345	0.050	69	69	61-106	0	20
1,2-Dibromo-3-chloropropane	0.0130	0.0124	0.020	65	62	36-120	4.92	20
1,2-Dibromoethane (EDB)	0.0378	0.0377	0.050	76	75	67-118	0.125	20
Dibromomethane	0.0380	0.0381	0.050	76	76	61-116	0	20
1,2-Dichlorobenzene	0.0342	0.0345	0.050	69	69	59-106	0	20
1,3-Dichlorobenzene	0.0422	0.0427	0.050	84	85	75-129	1.27	20
1,4-Dichlorobenzene	0.0422	0.0427	0.050	84	85	66-127	1.27	20
Dichlorodifluoromethane	0.0177	0.0167	0.050	35	33	13-74	5.83	20
1,1-Dichloroethane	0.0418	0.0415	0.050	84	83	65-134	0.829	20
1,2-Dichloroethane (1,2-DCA)	0.0405	0.0405	0.050	81	81	57-131	0	20
1,1-Dichloroethene	0.0392	0.0386	0.050	78	77	62-127	1.53	20
cis-1,2-Dichloroethene	0.0408	0.0409	0.050	82	82	66-130	0	20
trans-1,2-Dichloroethene	0.0395	0.0393	0.050	79	79	60-131	0	20
1,2-Dichloropropane	0.0397	0.0396	0.050	79	79	63-127	0	20
1,3-Dichloropropane	0.0396	0.0397	0.050	79	79	68-124	0	20
2,2-Dichloropropane	0.0395	0.0392	0.050	79	78	63-150	0.663	20
1,1-Dichloropropene	0.0423	0.0416	0.050	85	83	67-134	1.63	20

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/16/18	**BatchID:**	161551
Date Analyzed:	7/16/18	**Extraction Method:**	SW5030B
Instrument:	GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161551

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
cis-1,3-Dichloropropene	0.0424	0.0426	0.050	85	85	65-138	0	20
trans-1,3-Dichloropropene	0.0415	0.0418	0.050	83	84	66-124	0.724	20
Diisopropyl ether (DIPE)	0.0413	0.0410	0.050	83	82	58-129	0.572	20
Ethylbenzene	0.0448	0.0448	0.050	90	90	73-145	0	20
Ethyl tert-butyl ether (ETBE)	0.0394	0.0394	0.050	79	79	62-125	0	20
Freon 113	0.0338	0.0330	0.050	68	66	55-116	2.46	20
Hexachlorobutadiene	0.0440	0.0436	0.050	88	87	75-178	0.734	20
Hexachloroethane	0.0504	0.0495	0.050	101	99	75-152	1.77	20
2-Hexanone	0.0316	0.0316	0.050	63	63	41-113	0	20
Isopropylbenzene	0.0540	0.0540	0.050	108	108	67-172	0	20
4-Isopropyl toluene	0.0489	0.0483	0.050	98	97	88-171	1.30	20
Methyl-t-butyl ether (MTBE)	0.0395	0.0392	0.050	79	79	58-122	0	20
Methylene chloride	0.0437	0.0427	0.050	87	85	57-140	2.34	20
4-Methyl-2-pentanone (MIBK)	0.0318	0.0313	0.050	64	63	42-117	1.59	20
Naphthalene	0.0201	0.0192	0.050	40	38	29-65	4.58	20
n-Propyl benzene	0.0499	0.0506	0.050	100	101	85-174	1.36	20
Styrene	0.0379	0.0386	0.050	76	77	63-126	1.81	20
1,1,1,2-Tetrachloroethane	0.0386	0.0391	0.050	77	78	68-131	1.41	20
1,1,2,2-Tetrachloroethane	0.0374	0.0360	0.050	75	72	45-121	3.73	20
Tetrachloroethene	0.0353	0.0350	0.050	71	70	65-150	0.843	20
Toluene	0.0424	0.0418	0.050	85	84	72-135	1.31	20
1,2,3-Trichlorobenzene	0.0210	0.0206	0.050	42	41	35-80	1.98	20
1,2,4-Trichlorobenzene	0.0268	0.0261	0.050	54	52	45-103	2.61	20
1,1,1-Trichloroethane	0.0403	0.0395	0.050	81	79	67-137	1.93	20
1,1,2-Trichloroethane	0.0380	0.0381	0.050	76	76	67-117	0	20
Trichloroethene	0.0347	0.0350	0.050	69	70	62-135	0.768	20
Trichlorofluoromethane	0.0345	0.0338	0.050	69	68	56-124	2.14	20
1,2,3-Trichloropropane	0.0410	0.0403	0.050	82	81	58-133	1.69	20
1,2,4-Trimethylbenzene	0.0469	0.0467	0.050	94	93	78-161	0.421	20
1,3,5-Trimethylbenzene	0.0485	0.0478	0.050	97	96	85-170	1.41	20
Vinyl Chloride	0.0383	0.0395	0.050	77	79	32-142	3.05	20
Xylenes, Total	0.119	0.120	0.15	79	80	70-137	1.11	20

(Cont.)

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/16/18	**BatchID:**	161551
Date Analyzed:	7/16/18	**Extraction Method:**	SW5030B
Instrument:	GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161551

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Surrogate Recovery								
Dibromofluoromethane	0.140	0.140	0.12	112	112	87-127	0	20
Toluene-d8	0.152	0.152	0.12	122	121	93-141	0.372	20
4-BFB	0.0143	0.0144	0.012	114	115	84-137	0.622	20
Benzene-d6	0.0944	0.0925	0.10	94	93	67-131	2.01	20
Ethylbenzene-d10	0.100	0.0982	0.10	101	98	78-153	2.29	20
1,2-DCB-d4	0.0815	0.0807	0.10	82	81	63-109	0.961	20

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161336
Date Analyzed:	7/12/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161336

QC Summary Report for Metals

Analyte	MB Result	RL			
Antimony	ND	0.50	-	-	-
Arsenic	ND	0.50	-	-	-
Barium	ND	5.0	-	-	-
Beryllium	ND	0.50	-	-	-
Cadmium	ND	0.25	-	-	-
Chromium	ND	0.50	-	-	-
Cobalt	ND	0.50	-	-	-
Copper	ND	0.50	-	-	-
Lead	ND	0.50	-	-	-
Mercury	ND	0.050	-	-	-
Molybdenum	ND	0.50	-	-	-
Nickel	ND	0.50	-	-	-
Selenium	ND	0.50	-	-	-
Silver	ND	0.50	-	-	-
Thallium	ND	0.50	-	-	-
Vanadium	ND	0.50	-	-	-
Zinc	ND	5.0	-	-	-

(Cont.)

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161336
Date Analyzed:	7/12/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161336

QC Summary Report for Metals

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Antimony	51.4	50.3	50	103	101	75-125	2.20	20
Arsenic	51.8	50.6	50	104	101	75-125	2.36	20
Barium	525	510	500	105	102	75-125	3.05	20
Beryllium	54.8	53.2	50	110	106	75-125	3.04	20
Cadmium	51.1	50.0	50	102	100	75-125	2.22	20
Chromium	52.4	50.9	50	105	102	75-125	2.96	20
Cobalt	49.1	47.9	50	98	96	75-125	2.56	20
Copper	51.9	50.3	50	104	101	75-125	3.17	20
Lead	49.6	48.4	50	99	97	75-125	2.35	20
Mercury	1.22	1.23	1.25	97	98	75-125	0.980	20
Molybdenum	51.0	49.8	50	102	100	75-125	2.32	20
Nickel	53.3	51.9	50	107	104	75-125	2.57	20
Selenium	50.0	49.5	50	100	99	75-125	1.03	20
Silver	50.2	48.9	50	100	98	75-125	2.67	20
Thallium	48.1	46.9	50	96	94	75-125	2.48	20
Vanadium	51.9	50.0	50	104	100	75-125	3.87	20
Zinc	516	504	500	103	101	75-125	2.27	20

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161328
Date Analyzed:	7/14/18 - 7/15/18	**Extraction Method:**	SW5030B
Instrument:	GC7	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Soil	**Unit:**	mg/Kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161328

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	1.0	-	-	-
MTBE	ND	0.050	-	-	-
Benzene	ND	0.0050	-	-	-
Toluene	ND	0.0050	-	-	-
Ethylbenzene	ND	0.0050	-	-	-
Xylenes	ND	0.0050	-	-	-
Surrogate Recovery					
2-Fluorotoluene	0.0847		0.10	85	75-134

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	0.626	0.632	0.60	104	105	82-118	1.03	20
MTBE	0.101	0.103	0.10	101	103	61-119	1.89	20
Benzene	0.103	0.105	0.10	103	105	77-128	2.20	20
Toluene	0.0982	0.100	0.10	98	100	74-132	2.16	20
Ethylbenzene	0.100	0.102	0.10	100	102	84-127	1.69	20
Xylenes	0.308	0.313	0.30	103	104	86-129	1.61	20
Surrogate Recovery								
2-Fluorotoluene	0.0837	0.0842	0.10	84	84	75-134	0	20

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161338
Date Analyzed:	7/11/18 - 7/12/18	**Extraction Method:**	SW3550B
Instrument:	GC9b	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161338

QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	1.0	-	-	-
TPH-Motor Oil (C18-C36)	ND	5.0	-	-	-
Surrogate Recovery					
C9	21.2		25	85	72-122

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	41.8	42.8	40	104	107	75-128	2.50	30
Surrogate Recovery								
C9	21.2	21.2	25	85	85	72-122	0	30

(Cont.)

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Quality Control Report

Client:	Bellicci & Associates	**WorkOrder:**	1807490
Date Prepared:	7/11/18	**BatchID:**	161355
Date Analyzed:	7/12/18	**Extraction Method:**	SW3550B
Instrument:	GC6A	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	16158; Plan 13-E. 14th Phase 2	**Sample ID:**	MB/LCS/LCSD-161355 1807490-007AMS/MSD

QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	1.0	-	-	-
TPH-Motor Oil (C18-C36)	ND	5.0	-	-	-
Surrogate Recovery					
C9	21.5		25	86	72-122

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	50.5	50.0	40	126	125	75-128	1.11	30
Surrogate Recovery								
C9	23.1	21.3	25	92	85	72-122	8.11	30

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	49.1	51.4	40	ND	123	129	71-134	4.73	30
Surrogate Recovery									
C9	23.3	23.9	25		93	96	78-126	2.63	30

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1807490 **ClientCode: BACC** **QuoteID: 8059**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☐ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☐ Detection Summary ☑ Dry-Weight

Report to:
Daniel Leary
Bellicci & Associates
2290 Diamond Boulevard
Concord, CA 94520
(925) 681-4880 FAX:
Email: daniel@bellecci.com
cc/3rd Party:
PO:
Project: 16158; Plan B-E. 14th Phase 2

Bill to:
Daniel Leary
Bellicci & Associates
2290 Diamond Boulevard
Concord, CA 94520
daniel@bellecci.com

Requested TAT: 5 days;

Date Received: **07/10/2018**
Date Logged: **07/11/2018**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1807490-001	B-10	Soil	7/10/2018 10:45	☐	A	A	A	A	A							
1807490-002	B-9	Soil	7/10/2018 11:10	☐	A	A	A	A	A							
1807490-003	B-8	Soil	7/10/2018 11:50	☐	A	A	A	A	A							
1807490-004	B-7	Soil	7/10/2018 12:20	☐	A	A	A	A	A							
1807490-005	B-5	Soil	7/10/2018 12:55	☐	A	A	A	A	A							
1807490-006	B-4	Soil	7/10/2018 13:15	☐	A	A	A	A	A							
1807490-007	B-2	Soil	7/10/2018 13:55	☐	A	A	A	A	A							
1807490-008	B-1	Soil	7/10/2018 14:15	☐	A	A	A	A	A							

Test Legend:

1	8082_PCB_S	2	8260B_S	3	CAM17MS_TTLC_S	4	G-MBTEX_S
5	TPH(DMO)_S	6		7		8	
9		10		11		12	

Project Manager: Christine Askari **Prepared by: Agustina Venegas**

The following SampIDs: 001A, 002A, 003A, 004A, 005A, 006A, 007A, 008A contain testgroup Multi Range_S.

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: BELLICCI & ASSOCIATES
Client Contact: Daniel Leary
Contact's Email: daniel@bellecci.com

Project: 16158; Plan B-E. 14th Phase 2
Comments:

Work Order: 1807490
QC Level:
Date Logged: 7/11/2018

☐WaterTrax ☐WriteOn ☐EDF ☐Excel ☐Fax ☐Email ☐HardCopy ☐ThirdParty ☑J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1807490-001A	B-10	Soil	Multi-Range TPH(g,d,mo)	4 / (4:1)	Acetate Liner	☐	7/10/2018 10:45	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8082 (PCBs Only)			☐		5 days		☐	
1807490-002A	B-9	Soil	Multi-Range TPH(g,d,mo)	4 / (4:1)	Acetate Liner	☐	7/10/2018 11:10	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8082 (PCBs Only)			☐		5 days		☐	
1807490-003A	B-8	Soil	Multi-Range TPH(g,d,mo)	4 / (4:1)	Acetate Liner	☐	7/10/2018 11:50	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8082 (PCBs Only)			☐		5 days		☐	
1807490-004A	B-7	Soil	Multi-Range TPH(g,d,mo)	4 / (4:1)	Acetate Liner	☐	7/10/2018 12:20	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8082 (PCBs Only)			☐		5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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WORK ORDER SUMMARY

Client Name: BELLICCI & ASSOCIATES
Client Contact: Daniel Leary
Contact's Email: daniel@bellecci.com

Project: 16158; Plan B-E. 14th Phase 2
Comments:

Work Order: 1807490
QC Level:
Date Logged: 7/11/2018

☐WaterTrax ☐WriteOn ☐EDF ☐Excel ☐Fax ☐Email ☐HardCopy ☐ThirdParty ☑J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1807490-005A	B-5	Soil	Multi-Range TPH(g,d,mo)	4 / (4:1)	Acetate Liner	☐	7/10/2018 12:55	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8082 (PCBs Only)			☐		5 days		☐	
1807490-006A	B-4	Soil	Multi-Range TPH(g,d,mo)	4 / (4:1)	Acetate Liner	☐	7/10/2018 13:15	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8082 (PCBs Only)			☐		5 days		☐	
1807490-007A	B-2	Soil	Multi-Range TPH(g,d,mo)	4 / (4:1)	Acetate Liner	☐	7/10/2018 13:55	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8082 (PCBs Only)			☐		5 days		☐	
1807490-008A	B-1	Soil	Multi-Range TPH(g,d,mo)	4 / (4:1)	Acetate Liner	☐	7/10/2018 14:15	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8082 (PCBs Only)			☐		5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

1807190 MAI Work Order # ~~1807428~~

6

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CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD X | Quote # 8059
J-Flag / MDL | ESL | Cleanup Approved | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | EQuIS

Report To: Bill To:
Company: Bellecci & Associates
Email: daniel@bellecci.com
Alt Email: Tele:
Project Name: Plan 13 - E. 14th Phase 2 Project #: 16158
Project Location: E 14th Street San Leandro PO #
Sampler Signature:

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative
B-10	07/10/18	10:45	4	Soil	
B-9	07/10/18	11:10	4	Soil	
B-8	07/10/18	11:50	4	Soil	
B-7	07/10/18	12:20	4	Soil	
B-5	07/10/18	12:55	4	Soil	
B-4	07/10/18	1:15	4	Soil	
B-2	07/10/18	1:55	4	Soil	
B-1	07/10/18	2:15	4	Soil	
	07/10/18			Soil	
	07/10/18			Soil	

Analysis Requested

TPH Multi-Range	(VOCs) 8260B	(PCBs) 8082	CAM 17 Metals 6020
X	X	X	X

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.
Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Bellecci & Associates	07/10/18	3:43		7/10/18	1543

Comments / Instructions
Composite 4 to 1.

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 7.3 °C Initials WET

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Sample Receipt Checklist

Client Name:	**Bellicci & Associates**	Date and Time Received:	**7/10/2018 15:43**
Project:	**16158; Plan B-E. 14th Phase 2**	Date Logged:	**7/11/2018**
		Received by:	Agustina Venegas
WorkOrder №:	**1807490** Matrix: Soil	Logged by:	Agustina Venegas
Carrier:	Client Drop-In		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐	
Chain of custody signed when relinquished and received?	Yes	☑	No	☐	
Chain of custody agrees with sample labels?	Yes	☑	No	☐	
Sample IDs noted by Client on COC?	Yes	☑	No	☐	
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐	
Sampler's name noted on COC?	Yes	☐	No	☑	
COC agrees with Quote?	Yes	☑	No	☐	NA ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA ☑
Shipping container/cooler in good condition?	Yes	☑	No	☐	
Samples in proper containers/bottles?	Yes	☑	No	☐	
Sample containers intact?	Yes	☑	No	☐	
Sufficient sample volume for indicated test?	Yes	☑	No	☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA ☐
Samples Received on Ice?	Yes	☑	No	☐	
(Ice Type: WET ICE)					
Sample/Temp Blank temperature	Temp: 3.3°C				NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes	☐	No	☐	NA ☑
Sample labels checked for correct preservation?	Yes	☑	No	☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA ☑
UCMR Samples:					
pH tested and acceptable upon receipt (200.8: ≤2; 525.3: ≤4; 530: ≤7; 541: <3; 544: <6.5 & 7.5)?	Yes	☐	No	☐	NA ☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L)?	Yes	☐	No	☐	NA ☑

Comments:

EXHIBIT D-1

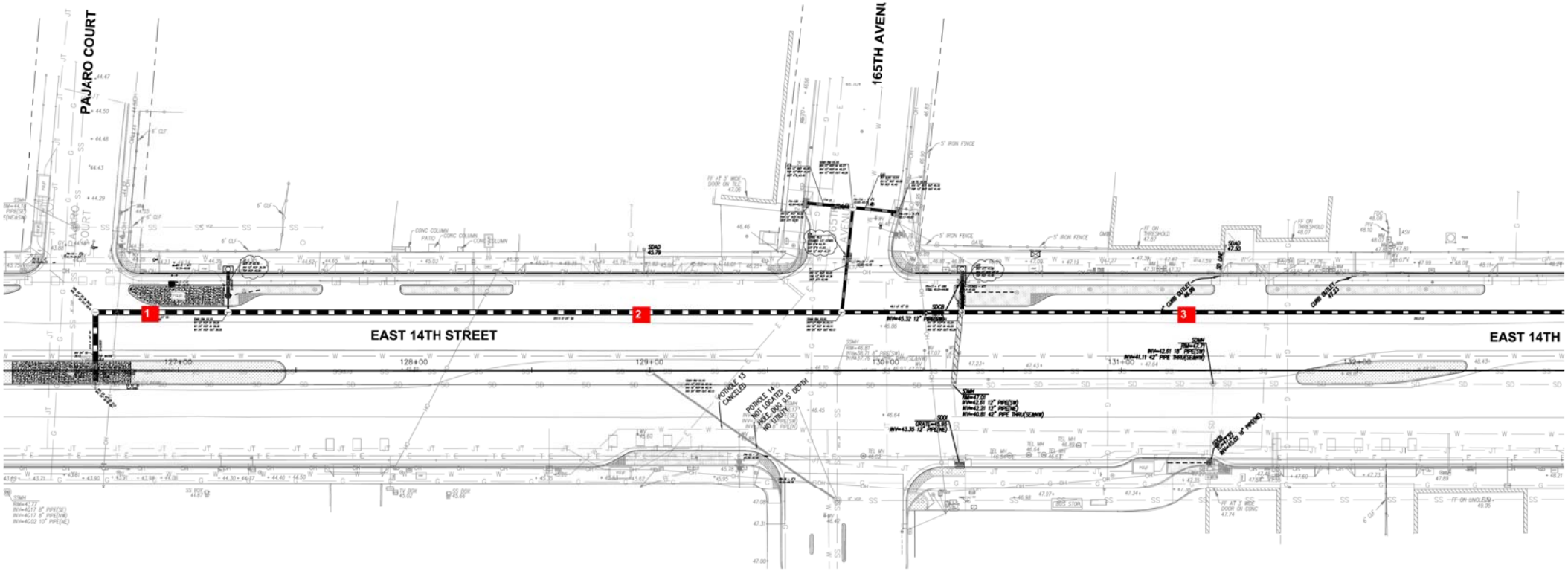

PAJARO COURT
165TH AVENI
EAST 14TH STREET
EAST 14TH
1
2
3
127+00
128+00
129+00
130+00
131+00
132+00

EXHIBIT D-1

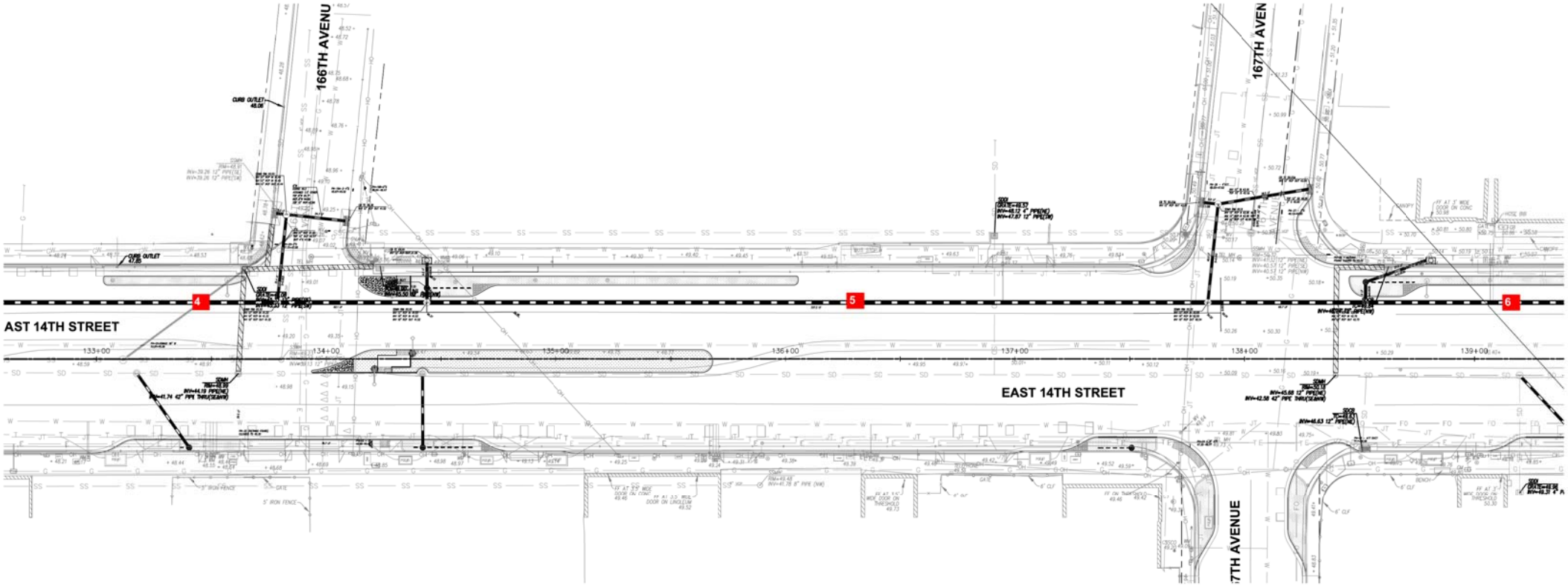

166TH AVENU
167TH AVEN
AST 14TH STREET
EAST 14TH STREET
4
5
6
133+00
134+00
135+00
136+00
137+00
138+00
139+00
7TH AVENUE

EXHIBIT D-1

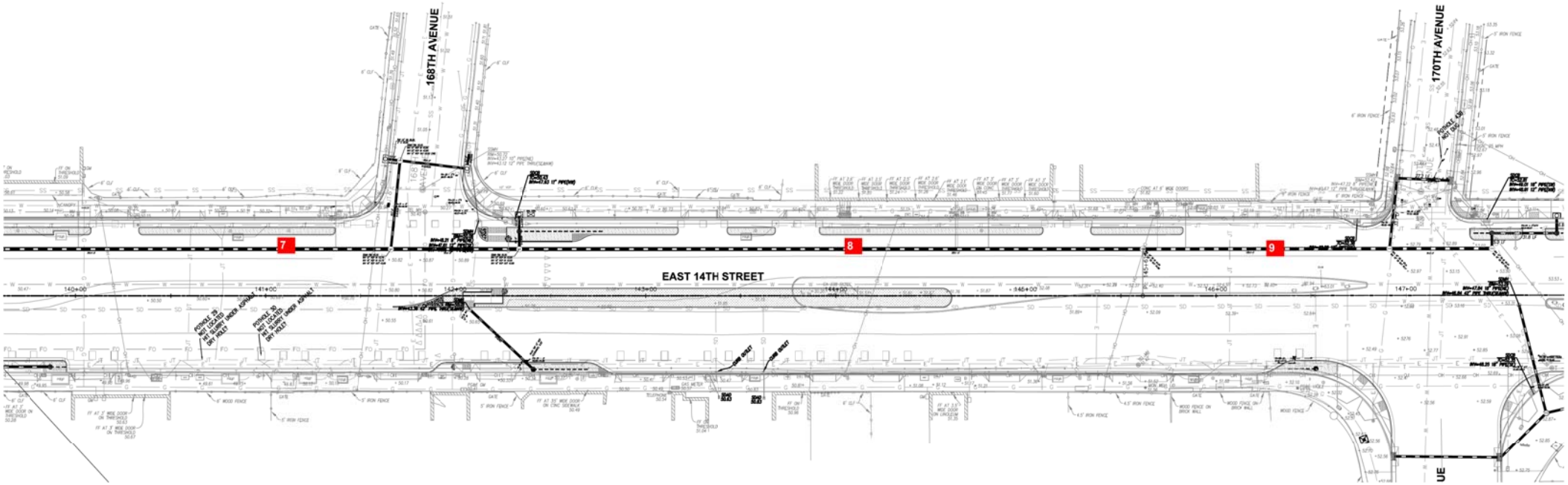
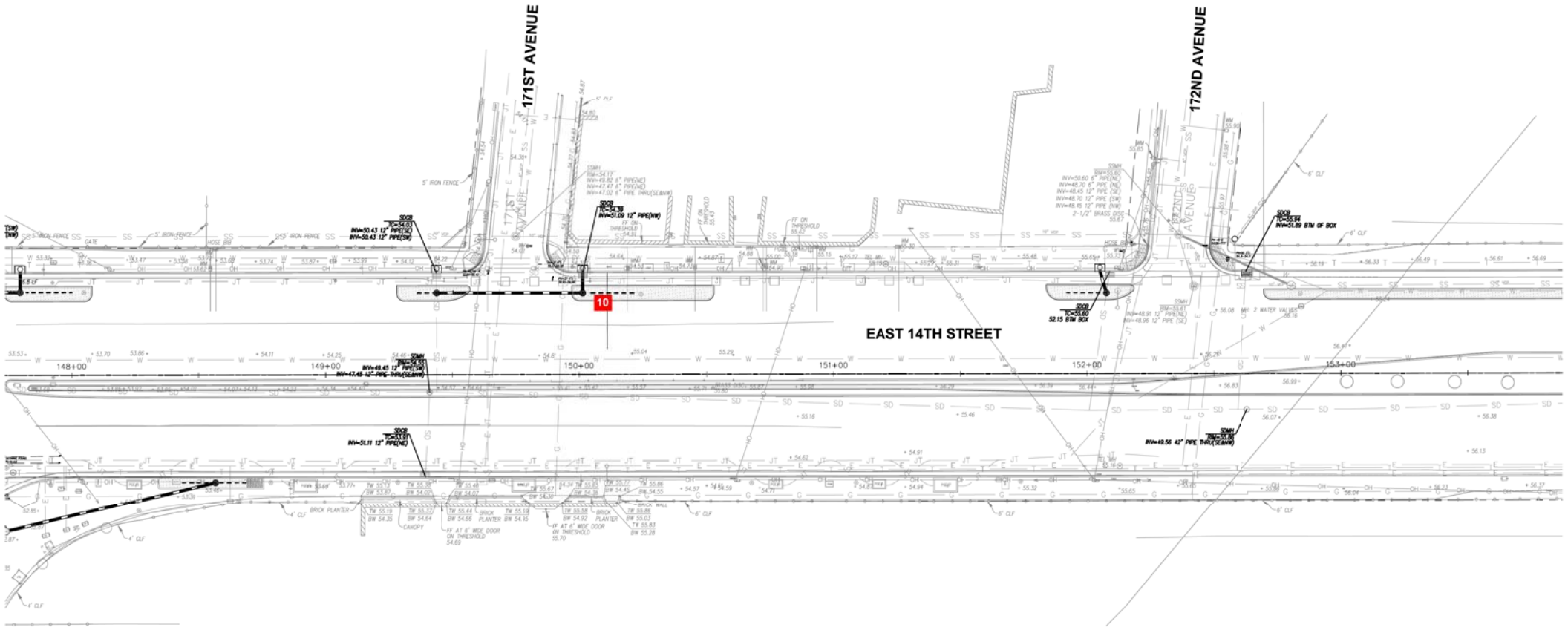

168TH AVENUE
170TH AVENUE
EAST 14TH STREET
7
8
9
140+00
141+00
142+00
143+00
144+00
145+00
146+00
147+00

EXHIBIT D-1


171ST AVENUE
172ND AVENUE
EAST 14TH STREET
148+00
149+00
150+00
151+00
152+00
153+00
10