APPENDIX C
GEOTECHNICAL REPORT

REPORT
GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

for

KADE Development

March, 2019

BAGG Engineers

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March 15, 2019
BAGG Job No. DEROY-01-00

KADE Development
1125 Executive Circle, Suite 220
Irving, TX 75038
Attention: Mr. Deven Roy, Managing Director

Report
Geotechnical Engineering Investigation
Proposed Hotel Development
292 Stockton Avenue
San Jose, California
APN: 259-28-028

Dear Mr. Roy:

Transmitted herewith are the results of our geotechnical engineering investigation report addressing the proposed hotel development at the above-referenced property in San Jose, California. The following report summarizes the results of our subsurface exploration and laboratory testing, which formed the basis of our conclusions and analyses, and presents recommendations related to the geotechnical engineering aspects of the proposed construction on the subject property.

Additionally, our services included environmental characterization of the site subsurface soil and groundwater. Soil and groundwater samples were obtained during our subsurface exploration at the subject site and were submitted for testing in a State-Certified analytical laboratory. The results of our environmental profiling services are presented in this report, as well.

Thank you for the opportunity to perform these services. Please do not hesitate to contact us, should you have any questions or comments.

Very truly yours,
BAGG Engineers

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REPORT

GEOTECHNICAL ENGINEERING INVESTIGATION
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REPORT
GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
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For KADE Development

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering investigation performed for the proposed hotel development located at 292 Stockton Avenue in San Jose, California. The attached Plate 1, Vicinity Map, shows the general location of the site, and Plate 2, Site Plan, depicts the existing site layout as well as the approximate location of the borings and Cone Penetration Tests (CPTs) advanced at the site as part of this investigation. The attached Plate 3, Site Development Plan, depicts the layout of the proposed hotel building and associated site improvements, as well as the approximate locations of the exploratory borings and CPTs advanced by BAGG at the site. This report was prepared in accordance with the scope of services outlined in our Proposal Number 17-279R, dated November 16, 2017.

A summary of the laboratory tests, evaluations, and our recommendations for site preparation and support of the proposed hotel building and the associated site improvements are presented in the following sections of this report.

2.0 SITE AND PROJECT DESCRIPTION

The subject site consists of a relatively flat, approximately 0.9 acre, rectangular-shaped parcel located within the central portion of the Santa Clara Valley, approximately 7¼ miles southeast of the southern margin of the San Francisco Bay and approximately ¼ mile southwest of the Guadalupe River at its undercrossing with West Julian Street in San Jose, California. The site is

situated at the southeast corner of the intersections of Stockton Avenue and West Julian Street in the Autumn-Montgomery neighborhood of San Jose, California. The site is currently undeveloped; however, it is our understanding that the property was previously developed with a gasoline service station and subsequently with commercial/warehouse buildings. The site is bounded by West Julian Street to the northwest, Stockton Avenue to the southwest, the Southern Pacific Railroad (SPR) right of way to the northeast, and an existing commercial building to the southeast. The adjacent commercial building reportedly consists of a single-story above-grade structure with a single level basement supported on spread footings. The site location in relation to surrounding cultural features is shown on the attached Plate 1, Vicinity Map.

A concrete retaining wall is situated along the northwest side of the subject property, and forms a grade break between the site and the West Julian Street roadway. The West Julian Street roadway slopes downward, below the level of the site, toward the northeast where it crosses under the SPR right of way via Railroad Bridge. The site surface is about 14 feet above the roadway surface at the railroad undercrossing and at-grade with the roadway toward the southwest. A 12± foot wide sidewalk is situated between the retaining wall and the northwest property line. The site boundary conditions are shown on the attached Plate 2, Site Plan as well as the attached Plate 6, Idealized Subsurface Profile A-A,' and Plate 7, Idealized Subsurface Profiles B-B' thru D-D.'

It is our understanding that the proposed project will consist of constructing a nine-story hotel building (above-ground) with a three-level subterranean parking structure below. The proposed hotel building will likely have an elongated, irregular- to rectangular-shaped footprint as shown on Plate 3, Site Development Plan, with a maximum height of approximately 100 feet above the ground surface. The proposed subterranean parking structure will have a finish floor of approximately 38 feet below grade and may include lift stations to accommodate additional parking. Based on preliminary information provided by the project structural engineer, interior

and exterior column loads are anticipated to be on the order of about 1,600 and 1,100 kips, respectively, and the building's fundamental period of vibration will be on the order of about 1.5 ± 0.25 seconds.

A review of the Phase 1 Site Assessment, by Envirocare Associates, dated May 5, 2017, indicates that a gas station existed at the site between 1932 and 1954. No records of tank removal/abandonment were available. However, it is our understanding that a recent survey with ground penetrating radar (GPR) did not reveal the presence of any existing underground storage tanks at the site.

3.0 PURPOSE

The purpose of our investigation was to obtain geotechnical information regarding soil and groundwater conditions at the site in order to develop conclusions and geotechnical recommendations for design and construction of the proposed hotel development. Based on our understanding of the project, it was necessary for our report to present conclusions, opinions, and recommendations regarding:

- Geologic site conditions and seismicity of the project site, including distance to the active faults in the region, and probability of a major earthquake on relevant faults;
- Potential for liquefaction beneath the site, including potential settlements and/or lateral spreading as a result of the liquefaction;
- Seismic design parameters for the site per the 2016 edition of the California Building Code, including a site-specific ground motion hazard analysis;
- Specific soil conditions discovered by our borings, such as expansive, loose, saturated, collapsible, or soft and compressible surface and subsurface soils that may require special mitigation measures or impose restrictions on the project, including the thickness and consistency of any existing fill soils, and depth to groundwater as encountered;

- Criteria for site grading, earthwork, subgrade preparation, placement of fills and backfills, and trench backfill requirements, including the suitability of the excavated soils from the site for use as fill and backfill material;

- Criteria for the support of the proposed building, including allowable bearing pressures and lateral resistance (passive resistance and coefficient of friction) for deep foundations, spread footings and/or mat foundations with subgrade modulus, as appropriate;

- Lateral earth pressure acting on basement walls and site retaining walls, including active, at-rest, and passive pressures and criteria for their support;

- Criteria for the design of temporary shoring, including active, at-rest, and passive pressures and criteria for their support;

- Support requirements for the basement floors, concrete slabs-on-grade, and exterior flatwork;

- Estimate of post-construction total and differential settlements for the new building;

- General provisions for the control of surface drainage in areas surrounding the proposed structures;

- Screening of the site materials for environmental contaminants with respect to disposal of the soils to be excavated as part of the construction of the proposed subterranean parking garage; the results of our environmental profiling are presented in the accompanying Appendix A.

- Measurement of groundwater elevations at the time of our site investigation and installation of monitoring wells for use in recording future groundwater elevations; Well Completion Reports, required by the State of California, for the monitoring well installation are included in Appendix B. We also collected groundwater samples from the monitoring wells and tested them in a certified analytical laboratory to aid in evaluating disposal options for site dewatering during construction, as needed. The results of analytical tests performed on groundwater samples are presented in Appendix A.

4.0 SCOPE OF SERVICES

The scope of our services consisted of the following specific tasks:

1. Research and review pertinent geotechnical and geological maps and reports relevant to the site and vicinity.

2. Visit the site, mark the boring locations at least 72 hours in advance of the planned explorations, and notify Underground Service Alert to mark the known utilities entering to and/or within the site. Retain the services of an independent utility locating firm to confirm each CPT and boring location was clear with respect to underground utilities.

3. Obtain permits from the Santa Clara Valley Water District for the subsurface exploration conducted as a part of this investigation.

4. Perform four (4) Cone Penetration Tests (CPT) to maximum depths of 80 feet below the ground surface (bgs) with a 25-ton CPT rig, and drill, log, and sample ten (10) borings to depths ranging from approximately 3 to 45 feet bgs with a truck-mounted drilling rig equipped with 8-inch diameter hollow-stem augers. Advance the borings and CPTs under the direction of our project geologist who also obtained disturbed bulk, Standard Penetration Test (SPT), and relatively undisturbed brass ring and stainless steel liner samples from the borings at 3- to 5-foot vertical intervals for visual classification and laboratory testing. Backfill the CPTs and borings with cement grout per standard protocol. Store the drill cuttings in sealed and labeled 55-gal steel drums, left at the site at a location designated by the client representatives.

5. Perform a geotechnical laboratory testing program on the collected soil samples to evaluate the engineering characteristics of the subsurface materials. Tests included direct shear strength, classification, consolidation, and moisture-density measurements, as judged appropriate.

6. Perform analytical/inorganic tests on soil samples obtained from the upper 30 feet of the site for pre-disposal environmental profiling of the on-site soils to be excavated as part of the planned construction of the subterranean parking garage. Also, perform analytical/inorganic tests on samples of the drill cuttings for pre-disposal environmental profiling of the site soils, as required.

7. Obtain permits from the Santa Clara Valley Water District for the construction of two monitoring wells at the site.

8. Construct and develop two monitoring wells to depths of approximately 35 feet for use in monitoring the groundwater levels at the site.

9. Obtain samples of the groundwater encountered in the monitoring wells for analytical/inorganic testing for pre-disposal environmental profiling of the groundwater which is expected to be pumped and disposed of as part of construction dewatering operations.

10. Using the information from the CPTs, borings and laboratory tests, perform engineering analyses to develop conclusions, opinions, and recommendations oriented towards the above-noted purpose of the investigation.

11. Prepare one electronic (pdf) copy of a final report summarizing our findings and recommendations and including a vicinity map, site plan, site development plan, cross sections, an area geologic map, a regional fault map, boring and CPT logs, and laboratory test results.

5.0 FIELD EXPLORATION AND LABORATORY TESTING

Subsurface conditions at the site were explored by drilling two test borings, B-1 and B-2, to respective depths of approximately 45- and 46½-feet on December 7, 2017 at the approximate locations shown on the attached Plate 2, Site Plan. The borings were advanced with a truck mounted drilling rig equipped with hollow stem augers and wireline attached to a 140-lb hammer. One of our geologists technically directed the exploration, maintained a continuous log of the borings, and obtained relatively undisturbed ring and disturbed Standard Penetration Test samples for geotechnical laboratory testing, and visual examination in accordance with Plate 8, Unified Soil Classification System. Samples of the subsurface soils were also collected in laboratory clean, stainless steel, liners at 3- to 5-foot intervals, stored on ice and transported under a chain of custody to a State-Certified Analytical Laboratory (McCampbell Analytical in Pittsburg, California) for analytical testing.

Subsurface conditions at the site were also explored on February 6, 2018 by advancing four CPTs to depths of 42 to 80 feet bgs at the approximate locations shown on the attached Plate 2, Site Plan. CPT-1 through CPT-3 were each advanced to depths of approximately 80 feet bgs; however, CPT-4 hit refusal conditions in dense sand at 42 feet bgs. Measurements of the shear wave velocity were obtained during the advancement of the CPTs at approximately 5 foot vertical intervals.

On February 14, 2018, two monitoring wells, MW-1 and MW-2, were installed to help obtain more stable groundwater level readings. The boreholes used for construction of the piezometers were drilled using a truck-mounted drilling rig with 8-inch outer diameter hollow stem augers. Details pertaining to the construction of the piezometers are included in the attached Appendix B, DWR-188 Well Completion Reports.

On February 15, 2018, eight additional borings (Boring B-2B and Borings EB-1 thru EB-7) were advanced at the site in order to obtain additional soil samples for geotechnical and geo-environmental analysis. The borings were advanced with a truck mounted drilling rig equipped with hollow stem augers and wireline attached to a 140-lb hammer. In order to assess the lateral extent of the near-surface contamination at the site, samples of the upper approximately 4 feet of in-situ soil at the site were collected in laboratory clean, stainless steel, liners and transported under a chain of custody to McCampbell Analytical in Pittsburg, California for analytical testing. A summary of the analytical information obtained at the site is provided in the following Section 8.0, Environmental Profiling. The analytical reports are included in the attached Appendix A, Analytical Reports by McCampbell Analytical.

The graphical representation of the materials encountered in the borings, and the results of our laboratory tests, as well as explanatory/illustrative data are attached, as follows:

- Plate 8, Unified Soil Classification System, illustrates the general features of the soil classification system used on the boring logs.

- Plate 9, Soil Terminology, lists and describes the soil engineering terms used on the boring logs.

- Plate 10, Boring Log Notes, describes general and specific conditions that apply to the boring logs.

- Plates 11A & 11B, Key to Symbols, describes various symbols used on the boring logs.

- Plates 12-A through 21, Boring Logs, describe the subsurface materials encountered, show the depths and blow counts for the samples, and summarize results of the strength tests, classification tests and moisture density data.

- Plates 22 through 25, Cone Penetrometer Tests, presents the information obtained from the four cone penetrometer tests advanced at the site as a part of this investigation.

- Plate 26, Atterberg Limits, summarizes and plots the results of the Atterberg Limits tests performed on selected samples, which were performed to classify the soils as well as obtain an indication of their expansive potential.

- Plate 27, Consolidation Test Data, presents information pertaining to the compressibility of the selected soil sample.

- Appendix A, Analytical Reports by McCampbell Analytical, provides the results of the analytical testing conducted on samples of the subsurface soil and groundwater encountered during the subsurface explorations.

- Appendix B, DWR-188 Well Completion Reports, provides information pertaining to the construction of the two piezometers installed at the site.

Selected undisturbed samples from the borings were tested in direct shear to evaluate the strength characteristics of the subsurface materials. Direct shear tests were performed at natural (field) moisture contents and under artificially saturated conditions, while under various surcharge pressures. A consolidation test was performed on a selected sample of the subsurface soils to aid in estimating the post-construction settlements and related differential settlements for the new hotel building. The moisture content and dry density of several undisturbed samples were measured to aid in correlating their engineering properties.

Additionally, Atterberg Limits tests were performed on clayey samples of the site materials to help define the expansion characteristics and aid in the soil classification to be used as a part of an analysis of the liquefaction potential at the site. We also performed gradation tests and washes over #200 sieve to help in the classification of the granular soil samples collected from the borings, as necessary, for evaluation of their liquefaction potential. The results of our laboratory strength tests, consolidation tests, classification tests, and moisture-density data are summarized on the boring logs, as well as the plates described above.

6.0 GEOLOGY AND SEISMICITY

6.1 Geology

A review of the "Quaternary Geology of the Santa Clara Valley, Santa Clara, Alameda, and San Mateo Counties, California: A Digital Database," USGS Open-File Report 94-231, compiled by E.J. Helley, R.W. Graymer, G.A. Phelps, P.K. Showalter, and C.M. Wentworth, 1994, indicates the surficial geology in the vicinity of the east portion of the site consists of "Floodbasin Deposits (Holocene)," and the surficial geology in the vicinity of the west portion of the site consists of "Alluvial Fan Deposits (Holocene)." The surficial geologic units in the vicinity of the site are described as:

> ***Qhb***- "Floodbasin Deposits (Holocene): Organic-rich clay to very fine silty-clay deposits occupying the lowest topographic positions between Holocene levee deposits or Holocene floodplain deposits."
>
> ***Qhaf***- "Alluvial Fan Deposits (Holocene): Brown or tan, medium dense to dense gravelly sand or sandy gravel that grades upward to sandy or silty clay. Near the distal fan edges, deposits are typically brown, medium dense gravelly sand or clayey gravel that grades upward to sandy or silty clay. Alluvial fan surfaces typically have slopes toward the basin of about 0.5% to 0.9% (5 to 9 m/km) but may be as high as 1.0% (10 m/km). The Qhaf surface displays striking channel ridges in places.

Plate 4, Geologic Map, shows the mapped regional geologic setting of the site and vicinity, as shown by Helley, et al., 1994.

According to the Seismic Hazard Zone Report 058 (SHZR 058) for the San Jose West 7.5-Minute Quadrangle, Santa Clara County, California (State of CA Department of Conservation, 2002), the surficial units in the site area consist of Holocene alluvial fan deposits which reportedly consist of 44% lean clay (CL), 14% silt (ML), 13% silty sand (SM), and 29% other soil types. In addition, SHZR 058 indicates that the Holocene alluvial fan deposits have a moderate susceptibility for seismically induced liquefaction when the depth to groundwater is between 10 and 30 feet below the ground surface.

According to the above-referenced Seismic Hazard Zone Report, the depth to the historical groundwater high in the vicinity of the project site is approximately 10 feet. Review of the California Geological Survey map of "Earthquake Zones of Required Investigation, San Jose West Quadrangle," dated February 7, 2002, indicates the project site lies within an area designated as a liquefaction hazard zone.

6.2 Seismic Setting

The site and the San Francisco Bay Area lie within the Coast Ranges geomorphic province, a series of discontinuous northwest trending mountain ranges, ridges, and intervening valleys characterized by complex folding and faulting. These faults are in a zone that extends eastward from off the Pacific Coast through the San Francisco Bay area to the western side of the Great Valley. This region has one of the highest rates of seismic moment release per square mile of any urban area in the United States. It is emerging from the stress shadow of the 1906 San Francisco Earthquake and future large earthquakes are considered a certainty.

Three of the major northwest-trending earthquake faults included in the San Andreas fault system extending through the Bay Area include the San Andreas fault, the Hayward fault, and the Calaveras fault, respectively located approximately 18 km southwest, 9.0 km northeast, and 14 km northeast of the site. The predominant fault in this system is the San Andreas Fault. This fault generated an earthquake of Magnitude 7.0+ on the San Francisco Peninsula in 1838, and

the great San Francisco Earthquake of 1906, with an estimated Moment Magnitude of 7.8. The Magnitude 6.9, Loma Prieta earthquake in 1989 was also generated by the San Andreas Fault.

While the subject site is not within any of the Alquist-Priolo Earthquake Fault Zones designated by the California Geological Survey, the Hayward fault is believed to be the principal seismic hazard to the site because of its activity rate and proximity to the site. The Working Group on California Earthquake Probabilities (2014) has estimated that the probability for a major earthquake (M_W 6.7 or greater) within 30 years on the Hayward fault is about 32 percent. They also predict the probability of a similar earthquake on the nearby Peninsula section of the San Andreas fault is about 9 percent and about 33 percent for a similar earthquake located anywhere on the Northern San Andreas fault; however, its greater distance from the site somewhat reduces its risk to the site. The Calaveras fault reportedly has a 25 percent probability of producing a Magnitude 6.7 or greater earthquake within 30 years.

Other significant regional faults are of greater distance, or have lesser probabilities of a major earthquake in the next 30 years or so. Of particular importance are the San Gregorio and Monte Vista-Shannon faults, located approximately 41 km and 8.5 km west and southwest of the project site, respectively. The San Gregorio Fault reportedly has a 5.4 percent probability and the Monte Vista-Shannon fault reportedly has a 1.4 percent probability for a magnitude 6.7 or greater within 30 years. The attached Plate 5, Regional Fault Map, shows the site location in relation to major active faults in the San Francisco Bay Area. The following Table 1 lists the faults nearest to the site and their probability of exceeding a moment magnitude of greater than or equal to 6.7 ($Mw \geq 6.7$) within the next 30 years.

Table 1
Significant Earthquake Scenarios

Fault	Approximate Distance to Site (kilometers)[1]	Location with Respect to Site	Probability of Mw≥6.7 within 30 Years[2]
Hayward –Rogers Creek	9.0	NE	32%
Monte Vista-Shannon	8.5	SW	1%
Calaveras	14	NE	25%
San Andreas (Entire)	18	SW	33%
San Andreas (Peninsula)	18	SW	9%
San Gregorio	42	SW	5%

[1] USGS Fault Files from Google Earth
[2]Working Group on California Earthquake Probabilities, 2014

7.0 GEOTECHNICAL SITE CONDITIONS

7.1 Surface Conditions

The exploration areas for this investigation were covered with approximately 6-inches of aggregate base. Beneath the aggregate base layer, the borings encountered approximately 3½- to 5-feet of fill soils consisting of very stiff to hard, lean to fat, clay with sand, sandy clay and sandy clay with gravel.

7.2 Subsurface Conditions

The soil borings advanced at the site revealed soil conditions that are generally consistent with the mapped Holocene alluvial fan and flood basin deposits and consist of interlayered deposits of lean to fat clay, silty clay, sandy silt, silty sand, clayey sand, silty sand with gravel, and well-graded gravel with sand which generally grade laterally from west to east to finer-grained facies.

The soil borings revealed the presence of stiff to very stiff lean clay underlain by medium dense to dense silty sand and well-graded gravel with sand at the planned lowest basement elevations.

For more information regarding the subsurface soil conditions, we refer you to Plates 6 and 7, Idealized Subsurface Profiles and Plates 12A through 21, Boring Logs.

7.3 Groundwater

Groundwater was encountered at a depth of approximately 15 feet in each of the borings (B-1 and B-2) drilled for this investigation. Upon completion of the borings, the groundwater level was measured at approximately 20 feet below the existing ground surface (bgs) in Boring B-1 and at 21 feet bgs in Boring B-2. A subsequent groundwater measurement was conducted in Boring B-1 approximately four hours after completion of the boring. The measurement indicated the static groundwater elevation, in the vicinity of Boring B-1, at the time of the subsurface exploration was approximately 15½ feet bgs.

Additionally, two monitoring wells, MW-1 and MW-2, were installed at the approximate locations shown on the attached Plate 2, Site Plan. Subsequent groundwater level measurements conducted on February 15, 2018 revealed the depth to groundwater was approximately 13.7 and 13.2 feet below the ground surface in monitoring wells MW-1 and MW-2, respectively.

According to the Seismic Hazard Zone Report for the San Jose West 7.5-Minute Quadrangle, Santa Clara County, California (California Department of Conservation Seismic Hazard Zone Report 058, dated 2002) the depth to the historically highest groundwater level recorded in the vicinity of the project site is approximately 10 feet.

It should be noted that groundwater levels typically fluctuate due to seasonal variations in rainfall and hydrological variations such as groundwater pumping or recharge, and/or other factors not evident at the time of exploration. Due to the interbedded and interfingering nature of alluvial sediments, it is also likely that fluctuations in the groundwater level and/or perched water conditions may occur across the site.

8.0 ENVIRONMENTAL PROFILING

8.1 In-situ Soils

Samples of the upper approximately 31 feet of in-situ soils encountered in Borings B-1 and B-2 were obtained in laboratory clean containers and transported under a chain of custody to McCampbell Analytical in Pittsburg, California for analytical testing. The samples from similar depth intervals were then composited in the laboratory and the following testing protocol was conducted to provide a preliminary screening of the site soils to aid in coordinating the future disposal of site soil spoils during the construction phase.

The analytical testing protocol on the soil samples was as follows:

- → Organochlorine Pesticides + PCBs (EPA 8081A/8082)
- → Volatile Organic Compounds or VOC's (EPA 8260B)
- → Semi-Volatile Organic Compounds or SVOC's (EPA 8270C) w/ GPC Cleanup
- → Gasoline Range Volatile Hydrocarbons as Gasoline with BTEX and MTBE (EPA 8021B/8015Bm)
- → Total Extractable Petroleum Hydrocarbons as Diesel & Motor Oil (EPA 8015B) w/ Silica Gel Cleanup
- → CAM/CCR 17 Metals (EPA 6020)
- → Waste Extraction tests (CA WET & TCLP), as required.

The results of the above-referenced analytical testing are summarized in the following sections of this report and are also attached in Appendix A.

Organochlorine Pesticides & PCBs:

Trace concentrations of DDE were detected in the composite sample from the upper 2 feet of the site. The detected concentration of 0.00011 mg/kg is well below the Tier 1 Environmental Screening Level (ESL) of 0.33 mg/kg set by the Regional Water Quality Control Board (RWQCB) for the protection of urban terrestrial habitats as well as the direct exposure human health risk levels (RWQCB, 2019).

Organochlorine Pesticides & PCBs were not detected at or above the laboratory reporting limits in any of the other samples tested.

Volatile Organic Compounds (VOCs):

Volatile Organic Compounds were not detected at or above the laboratory reporting limits in any of the samples tested.

Semi-Volatile Organic Compounds (SVOCs):

Benzo (a) anthracene, benzo (b) fluoranthene, benzo (a) pyrene, indeno (1,2,3-cd) pyrene, and dibenzo (a,h) anthracene were detected in the composite sample from the upper 2 feet of the site at concentrations below the respective Tier 1 ESLs (RWQCB, 2019).

2-chlorophenol was detected at a concentration of 0.0065 mg/kg in the composite sample from a depth of approximately 21 feet. The detected concentration is below the Tier 1 ESL of 0.012 mg/kg which is based on the potential for soil contamination leaching to groundwater used as a source of drinking water (RWQCB, 2019).

Gasoline Range Volatile Hydrocarbons as Gasoline with BTEX and MTBE:

Gasoline Range Hydrocarbons were not detected at or above the laboratory method detection limits in any of the samples tested.

Total Extractable Hydrocarbons w/ Silica Gel Cleanup:

Total Petroleum Hydrocarbons as Diesel and Motor Oil were not detected at or above the laboratory method detection limits in any of the samples tested.

CAM/CCR 17 Metals:

The concentration of arsenic detected in the samples evaluated ranged from 2.8 mg/kg to 15 mg/kg. The detected concentrations exceed the RWQCB screening levels for direct exposure

human health risk at residential sites (0.067 mg/kg and 0.26 mg/kg) as well as those set for construction workers (0.98 mg/kg and 2.0 mg/kg) (RWQCB, 2019).

According to *Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region* (Duverge, D.J., 2011), background arsenic concentrations in Holocene alluvial soils of the urbanized San Francisco Bay Region have a mean arsenic concentration of 5.1 mg/kg and a proposed upper estimate of background concentration of 11.0 mg/kg. The concentrations of arsenic detected in the samples tested, with the exception of the samples from depths of approximately 16 feet and 30 feet, are below the mean arsenic concentration for the region. The concentration of arsenic detected in the sample collected at a depth of approximately 30 feet is within the statistical range of values obtained from the above referenced study, and the concentration of arsenic detected in the sample collected from a depth of approximately 16 feet is outside of the statistical range of values but less than the maximum concentration detected as part of the above referenced study.

The concentration of vanadium detected in the samples ranged from 25 mg/kg to 58 mg/kg which exceed the RWQCB Tier 1 ESL of 18 mg/kg set for the protection of urban terrestrial habitats. However, the detected concentrations are below the screening levels set for direct exposure human health risks (RWQCB, 2019).

The detected concentration of nickel (90 mg/kg) in the composite sample from a depth of approximately 21 feet exceeds the RWQCB Tier 1 ESL of 86 mg/kg. The Tier 1 ESL is based on the non-cancerous risk to human health from direct exposure to nickel contaminated soils by construction workers (RWQCB, 2019).

The concentration of chromium detected in the samples collected from depths of approximately 6, 11, 21 and 30 feet were found to be in excess of 10 times the Soluble Threshold Limit Concentration (STLC) regulatory level listed in Title 22, Division 4.5 of the

California Code of Regulations (CCR Title 22) and therefore warranted the implementation of waste extraction tests to determine the concentration of soluble chromium. Waste extraction tests (CA WET) conducted on the above-referenced samples indicate the soils are not considered to be a state regulated hazardous toxic waste since the concentration of soluble chromium in each of the samples was found to be below the STLC regulatory level of 5 mg/L (CCR Title 22).

The concentration of lead detected in the composite sample from the upper approximately 2 feet of the site was found to be in excess of 10 times the STLC regulatory level (CCR Title 22) and in excess of 20 times the toxicity characteristic regulatory level listed in Title 40, Part 261 of the Federal Code of Regulations (FCR Title 40). The results of the CA WET indicate the near surface soils at the site contain a concentration of soluble lead (7.1 mg/L) in excess of the STLC regulatory level of 5 mg/L and are therefore considered to be a hazardous waste in the state of California. However, soluble lead was not detected using the Toxicity Characteristic Leaching Procedure (TCLP). Therefore, based on the above-referenced analytical data, the shallow soils at the site are considered to be a non-RCRA hazardous toxic waste.

Furthermore, the detected concentration of lead (170 mg/kg) in the composite sample from the upper 2 feet of the site exceeds the Tier 1 ESL of 32 mg/kg set for the protection of urban terrestrial habitats as well as the direct exposure human health risk levels for residential sites (80 mg/kg and 82 mg/kg) and the non-cancer direct exposure human health risk level for construction workers of 160 mg/kg (RWQCB, 2019).

8.2 Near Surface In-situ Soils

In order to help define the approximate depth and lateral extent of lead contamination within the existing near surface soils, eight samples of the upper approximately 4 feet of in situ fill soils at the site were collected on February 15, 2018 and submitted to McCampbell Analytical for analytical testing.

The analytical testing protocol on the soil samples was as follows:

→ CAM/CCR 17 Metals (EPA 6020)
→ Waste Extraction tests (WET & TCLP), as required.

The results of the above-referenced analytical testing are summarized in the following sections of this report and are also attached in Appendix A.

CAM/CCR 17 Metals:

The concentration of arsenic detected in the samples ranged from 2.1 mg/kg to 9.4 mg/kg. The detected concentrations exceed the 2019 ESLs set by the Regional Water Quality Control Board for direct exposure human health risk at residential sites (0.067 mg/kg and 0.26 mg/kg) as well as those set for construction workers (0.98 mg/kg and 2.0 mg/kg). However, the concentrations of arsenic detected in the samples tested are within the statistical range of background arsenic concentrations for the region per the guidelines set forth by the above referenced study by Duverge, D.J. (2011).

The concentration of vanadium detected in the samples ranged from 20 mg/kg to 73 mg/kg which exceed the RWQCB Tier 1 ESL of 18 mg/kg set for the protection of urban terrestrial habitats. However, the detected concentrations are below the screening levels set for direct exposure human health risks (RWQCB, 2019).

The detected concentration of nickel (230 mg/kg) in the sample collected from a depth of approximately 2 feet in Boring B-2B exceeds the RWQCB Tier 1 ESL of 86 mg/kg for the direct exposure human health risk to construction workers (RWQCB, 2019). In addition, the detected concentration of 230 mg/kg is in excess of 10 times the STLC regulatory level listed in CCR Title 22. The results of a waste extraction test (CA WET) conducted on the above-referenced sample indicates the soil is not considered a hazardous toxic waste as the detected concentration of

soluble nickel (2.0 mg/L) was found to be below the STLC regulatory level of 20 mg/L (CCR Title 22).

The concentrations of chromium and mercury detected in the samples from Borings B-2B and EB-2 collected from depths of approximately 2 and 3 feet, respectively, were found to be in excess of 10 times the STLC regulatory level (CCR Title 22). Waste extraction tests (CA WET) conducted on the above-referenced samples indicate the soils are not considered to be a state regulated hazardous toxic waste since the respective concentrations of soluble chromium and mercury in each of the samples was found to be below the respective STLC regulatory levels of 5 mg/L and 0.2 mg/L (CCR Title 22). In addition, the concentrations of chromium and mercury detected in the sample obtained from Boring B-2B were found to be in excess of 20 times the respective toxicity characteristic regulatory levels (FCR Title 40). The results of the Toxicity Characteristic Leaching Procedure (TCLP) indicate the soils are not considered as a federally regulated hazardous toxic waste as the concentration of soluble chromium and mercury was found to be below the respective TCLP regulatory levels of 5 mg/L and 0.2 mg/L (FCR Title 40).

The concentration of lead detected in the samples obtained from the upper approximately 3 feet of the site in Borings EB-1, EB-2, EB-5 and EB-6 were found to be in excess of 10 times the STLC regulatory level listed in CCR Tile 22. The results of the waste extraction tests (CA WET) indicate the near surface soils encountered in Borings EB-1 and EB-2 contain a concentration of soluble lead (5.6 and 5.2 mg/L, respectively) in excess of the STLC regulatory level of 5 mg/L and are therefore considered to constitute a hazardous waste in the State of California. In addition, the concentration of lead detected in the samples obtained from Borings EB-1 and EB-5 was found to be in excess of 20 times the toxicity characteristic regulatory level listed in FCR Title 40. Concentrations of soluble lead below the toxicity characteristic regulatory level of 5 mg/L were detected using the TCLP on the above-referenced samples from Boring EB-1 and EB-5. Based on the above-referenced analytical data the shallow soils on the northeastern portion of

the site are considered to be a non-RCRA hazardous toxic waste due to the elevated concentration of lead.

The concentrations of lead detected in the samples from Borings B-2B, EB-1, EB-2, EB-5, and EB-6 exceed the RWQCB Tier 1 ESL of 32 mg/kg set for the protection of urban terrestrial habitats. In addition, the detected concentration of lead in the samples from Borings EB-1 and EB-5 (160 mg/kg and 110 mg/kg, respectively) exceed the direct exposure human health risk levels for residential sites (80 mg/kg and 82 mg/kg) and the detected concentration of 160 mg/kg in the sample from Boring EB-1 is equal to the non-cancer direct exposure human health risk level for construction workers of 160 mg/kg (RWQCB, 2019).

8.3 Groundwater

Groundwater samples were collected on February 15, 2018 following the construction and development of two monitoring wells (MW-1 and MW-2) at the site on February 14, 2018. The samples were transported under a chain of custody to McCampbell Analytical in Pittsburg, California and the following testing protocol was conducted to provide a preliminary screening of the groundwater to aid in coordinating the future treatment and/or disposal during construction related dewatering of the site.

The analytical testing protocol on the soil samples was as follows:

→ Organochlorine Pesticides + PCBs (EPA 8081A/8082)
→ Volatile Organic Compounds or VOC's (EPA 8260B)
→ Semi-Volatile Organic Compounds or SVOC's (EPA 8270C)
→ Gasoline Range Volatile Hydrocarbons as Gasoline with BTEX and MTBE (EPA 8021B/8015Bm)
→ Total Extractable Petroleum Hydrocarbons as Diesel & Motor Oil (EPA 8015B) w/ Silica Gel Cleanup
→ Dissolved CAM/CCR 17 Metals (EPA 200.8)

The results of the above-referenced analytical testing are summarized in the following sections of this report and are also attached in Appendix A.

Organochlorine Pesticides & PCBs:

Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs) were not detected at or above the laboratory method reporting limits in either of the groundwater samples evaluated.

Volatile Organic Compounds (VOCs):

Acetone and 2-Butanone (a.k.a. methyl ethyl ketone) were detected in the samples collected from MW-1 and MW-2 at concentrations below the respective RWQCB Tier 1 ESLs.

The sample from MW-2 was diluted by a factor of ten and therefore the respective laboratory reporting levels were increased by a factor of ten. The analytical results received an analytical qualifier of "b1" indicating the sample contained more than 1% sediment by volume. Dilution may have been necessary due to interference from suspended sediment within the water sample.

Semi-Volatile Organic Compounds (SVOCs):

The concentrations of bis (2-ethylhexyl) phthalate, diethyl phthalate and phenol detected in the sample from MW-1 are below the respective Tier 1 ESLs.

The concentrations of benzo (b) fluoranthene, benzo (k) fluoranthene, 1,1-biphenyl, bis (2-ethylhexyl) phthalate, chrysene, diethyl phthalate, fluorene, 2-methylnaphthalene and phenol detected in the sample from MW-2 are below the respective Tier 1 ESLs.

The concentration of benzo (a) pyrene detected in the groundwater sample from MW-2 (0.015 µg/L) is in excess of the Tier 1 ESL of 0.014 µg/L set by the RWQCB for aquatic habitat goal levels in freshwater environments. The concentration of Benzo (a) pyrene is below the MCL Priority concentration of 0.2 µg/L.

Gasoline Range Volatile Hydrocarbons as Gasoline with BTEX and MTBE:

The concentration of total petroleum hydrocarbons as gasoline [TPH(g)] detected in the sample from MW-2 (330 µg/L) was found to be above the Tier 1 ESL of 100 µg/L established for odor/nuisance levels in drinking water. The detected concentration is below the MCL Priority of 760 µg/L.

The concentration of total petroleum hydrocarbons as gasoline [TPH(g)] detected in the sample from MW-1 (63 µg/L) is below the Tier 1 ESL of 100 µg/L.

Total Extractable Hydrocarbons w/ Silica Gel Clean-up:

Total petroleum hydrocarbons as diesel and motor oil were not detected at or above the laboratory reporting limits in either of the samples tested.

Dissolved CAM/CCR 17 Metals:

The concentration of selenium detected in the samples collected from MW-1 and MW-2 (240 µg/L and 340 µg/L, respectively) exceed both the Tier 1 ESL of 0.5 µg/L and MCL Priority of 50 µg/L. The Tier 1 ESL is based on aquatic habitat goal levels in saltwater aquatic habitats. In addition, the detected concentrations exceed the aquatic habitat goal levels in freshwater aquatic habitats of 5 µg/L.

All other detected analytes in the samples from MW-1 and MW-2 were found to be below the respective Tier 1 ESLs.

8.4 Summary

The samples of the upper fill soils encountered in Borings EB-1 and EB-2 as well as the composited soil samples from Borings B-1 and B-2 contain concentrations of soluble lead in excess of the STLC regulatory level (CCR Title 22) and therefore are classified as a non-RCRA hazardous toxic waste. In addition, the concentrations of lead detected in the composite

sample of the upper 2 feet of soil encountered in Borings B-1 and B-2 as well as the shallow samples obtained from Borings B-2B, EB-1, EB-2, EB-5 and EB-6 exceed the RWQCB Tier 1 ESL set for the protection of urban terrestrial habitats. The detected concentration of lead in samples EB-1 and EB-5 also exceed the direct exposure human health risk levels for residential sites and the detected concentration of lead in the sample from Boring EB-1 is equal to the non-cancer direct exposure human health risk level for construction workers of 160 mg/kg (RWQCB, 2019). Furthermore, the concentration of lead detected in the composite sample from the upper 2 feet of the site (Borings B-1 and B-2) exceeds the non-cancer direct exposure human health risk level for construction workers of 160 mg/kg (RWQCB, 2019).

The concentration of nickel detected in the sample collected from a depth of approximately 2 feet in Boring B-2B and the composite sample from a depth of approximately 21 feet in Borings B-1 and B-2 exceed the RWQCB Tier 1 ESL of 86 mg/kg for the direct exposure human health risk to construction workers (RWQCB, 2019). In addition, the concentration of arsenic detected in each of the soil samples evaluated exceeds the 2019 RWQCB screening levels for direct exposure human health risk to arsenic contaminated soils at residential sites as well as those for construction workers.

The concentration of vanadium detected in each of the soil samples evaluated as a part of this screening exceed the 2019 RQQCB Tier 1 ESLs for protection of urban terrestrial habitats, but below those designated for direct exposure human health risk.

Based on the above-referenced analytical data the shallow soils on the northeastern portion of the site are considered to be a non-RCRA hazardous toxic waste due to the elevated concentration of lead. Therefore, it is recommended that the existing approximately 4 to 5 foot thick sequence of fill soils on the northeast portion of the site be removed, transported and disposed of in accordance with the Department of Toxic Substance Control's (DTSC) guidelines for hazardous waste.

In addition, the analytical test results indicate the surficial soils at the site may contain areas with elevated concentrations of arsenic, lead and nickel which may pose a risk to human health. An industrial hygienist should be employed to develop a work plan for handling the shallow soils while reducing the potential for direct exposure to construction workers. The fill soils on the southwest portion of the site as well as the native soils below the upper fill soils are not considered to be hazardous waste and therefore may be disposed of at a local landfill. Due to the elevated concentrations of arsenic and vanadium detected in the surficial and subsurface soils, their reuse at other sites is not recommended due to the potential risks to the environment and/or human health.

The detected concentration of Benzo (a) pyrene in the sample from MW-2 and the concentrations of Selenium detected in the samples from MW-1 and MW-2 were found to be in excess of the respective the Tier 1 ESLs. The Tier 1 ESLs Benzo (a) pyrene and Selenium are both based on the substances serving as an ecotoxin for freshwater aquatic habitats. Groundwater ecological toxicity screening levels are based on criteria for surface water receptors and bioaccumulation toxicity data for human ingestion of seafood from contaminated surface water habitats. The implied point of compliance is near the edge of the surface water body where chemicals in groundwater begin to discharge or intermix with surface water. This approach does not consider dilution or attenuation of groundwater upon discharge to surface water because benthic organisms may be exposed to the full concentration of chemicals in groundwater prior to mixing with surface water. Therefore, the groundwater at the site should not be directly discharged into any waterbodies and/or the storm drain as it may have a direct effect on the ecosystems within the local watersheds and estuaries. Proper care should be taken when dealing with the groundwater at the site due to the possible effects on human health and the environment.

9.0 GEOHAZARD ANALYSIS

9.1 Historic Earthquakes

Plate 28, Map of Historical Earthquakes, shows earthquakes of magnitude 4 or larger within the site vicinity that have been recorded by the USGS/National Earthquake Information Center and the updated database of magnitude 4 and greater, compiled by the CGS Regional Geologic Hazard and Mapping Program. Plate 29, Table of Historic Earthquakes, lists significant earthquakes since 1769 that were within 50 kilometers of the site and of Magnitude 5 or higher. Earthquakes since 1911 were obtained from the ANSS Worldwide Earthquake Catalog as obtained from the Northern California Earthquake Data Center website while earthquakes prior to 1911 were obtained from the updated database of Magnitude 4 and greater, compiled by the CGS Regional Geologic Hazard and Mapping Program. These databases include a total of 5,724 earthquakes within a 2-degree window centered on the site. Of these, the closest was a Magnitude 4 earthquake located 4 km south of the site in 1904. The closest major earthquakes were Magnitudes 6.2 and 5.8 located about 10 km east southeast of the site in 1903 and 1891, respectively. The 1906 San Francisco earthquake was located about 66 km northwest of the site and the Magnitude 6.9 Loma Prieta Earthquake was located about 33 km south of the site. No accounts of surface disturbances were recorded in the immediate site vicinity during the 1906 “Great” San Francisco earthquake by Youd and Hoose (1978); however they mapped a sand boil near the Guadalupe River, roughly 3 km north of the site, which occurred during the 1868 Magnitude 7 earthquake in Hayward.

9.2 Site-Specific Ground Motion Hazard

Seismic design parameters are governed by the 2016 California Building Code, and generally use map-based values for the determination. Using the site coordinates 37.3340° North Latitude and 121.9051° West Longitude, the mapped S_S and S_1 acceleration values obtained are 1.50g and 0.60g, respectively. In accordance with CBC Section 1613A.3.5, the seismic design category is “D”. As discussed later in this report, our liquefaction analysis indicates there is a

potential for isolated pockets of sand to liquefy during a major earthquake, which classifies the site as Class "F". According to Chapter 20 of ASCE 7-10, this would require a site response analysis in accordance with Section 21.1, as the predominant period of the building is greater than 0.5 seconds.

As discussed later in Section 9.3 of this report, liquefaction within isolated pockets beneath the site should not materially affect the overall site response, and a site response analysis per Section 21.1 would not change the site response beyond the following site-specific ground motion hazard analysis. Nevertheless, we have provided a site-specific ground motion hazard analysis in accordance with ASCE 7-10, Section 21.2. This section allows the site-specific response spectra for the Risk Targeted Maximum Considered Earthquake (MCE_R) at any period to be the smaller of the probabilistic or the deterministic response spectra for the MCE_R developed in accordance with Section 21.2.1 and Section 21.2.2, respectively.

9.2.1 Site Classification

During our site investigation, shear velocity measurements were taken in each CPT, which reached maximum depths of 80 feet. The measured shear velocities, which are plotted on Plate 30, Measured Shear Velocity, indicate an average velocity of 218 to 239 m/sec at 80 feet. Numerical regression of the data vs depth indicates a definite increasing trend with depth. Extrapolating along that trend below 80 feet we estimate a V_{S30} between 234 and 253 m/sec at 100 feet. According to this information, the site can be classified as Class "D" and have used a V_{S30} value of 240 m/sec in our hazard analysis. For comparison, the CGS/Wills Site Classification Map (2006) indicates an inferred V_{S30} of 280 m/sec (using Site Data Application 1.3.1 from OpenSHA), which also corresponds to Site Class "D".

9.2.2 Probabilistic Ground Motions

The probabilistic MCE_R was evaluated using EZ-FRISK v 7.65, as licensed by Risk Engineering, Inc. (2015), using the 2008 USGS earthquake source model with background gridded earthquake

sources, and four Next Generation Attenuation (NGA) equations by Abrahamson - Silva; Boore - Atkinson; Campbell - Bozorgnia; and Chiou - Youngs. As described above under "Site Classification," we have assumed an average shear velocity within the top 30 meters of the site (V_{S30}) to be 240 m/sec.

A 250 km radius was employed for this analysis, resulting in 45 earthquake sources on adjacent active faults being found within the search radius using the 2008 U.S. Geological Survey fault sources and parameters, including gridded background sources. Our probabilistic seismic hazard analysis indicates there is a 2 percent chance of 0.96g being exceeded in 50 years. The uniform hazard spectra at two percent probability of being exceeded in 50 years predicted by each of the four NGA relationships and their average are all shown on Plate 31, Probabilistic Response Spectra.

The spectra thus obtained was multiplied by the risk coefficients C_{RS} and C_{R1} per Section 21.2.1.1, Method 1, of ASCE 7-10. The C_{RS} and C_{R1} values obtained from Figures 22-17 and 22-18, were 1.130 and 1.075, respectively. The resulting MCE_R is shown on Plates 33 and 34.

9.2.3 Deterministic Ground Motions

The deterministic MCE is defined as the mean plus one standard deviation (or the 84th percentile) of the largest, five percent damped, spectral response from all known active faults in the region. From a deterministic point of view, the San Andreas Fault is the dominant fault for shaking at the site at most periods of vibration from all NGA relationships. The Campbell - Bozorgnia NGA relationships, however, indicated the Monte Vista-Shannon controlled at short periods, while the Abrahamson – Silva and Boore – Atkinson relationships indicated some of the short period shaking was controlled by the Hayward-Rodgers Creek fault.

The maximum deterministic spectra values from the four NGA relationships and the average of the four are shown on Plate 32, Deterministic Response Spectra. However, Section 21.2.2 of

ASCE 7-10 also requires that the ordinates of the deterministic MCE_R cannot be lower than the response spectrum defined in Figure 21.2.1. As shown on Plate 32, the minimum allowed values govern at all periods less than about 0.8 seconds, while the deterministic values raise the site-specific above the code values above 0.8 seconds.

As can be seen from Plate 33, Design Response Spectra, which also compares the probabilistic and deterministic MCE_R spectra with the 2016 CBC spectra, the deterministic spectrum is lower at all periods. The recommended design spectrum is 2/3 of the minimum of the two values, and is shown on Plates 33 and 34. Using the values listed on Plate 34, the seismic design acceleration parameters are as follows:

$$S_{DS} = 1.00 \qquad S_{D1} = 0.95$$

The deaggregation of the hazard from PGA equal to 0.60g is shown on Plate 35. (Bins with less than 0.1 percent contribution have been blanked out.) Based on the 2008 USGS fault model, the most prominent contributor to shaking at the site, or the most probable cause of the shaking, is a magnitude 6.5 to 6.75 earthquake located about 15 km from the site. The USGS Unified Hazard Tool using the Conterminous U.S. 2014 (earthquake.usgs.gov/hazards/interactive/index.php), however, indicates the modal hazard is a Magnitude 6.9 at about 12 km.

9.3 Liquefaction Potential

Soil liquefaction is a condition where saturated granular soils near the ground surface undergo a substantial loss of strength due to increased pore water pressure resulting from cyclic stress applications induced by earthquakes or other vibrations. In the process, the soil acquires mobility sufficient to permit both vertical and horizontal movements, if not confined. Soils most susceptible to liquefaction are loose, uniformly graded, fine-grained, sands, and loose silts with very low cohesion. In general, liquefaction hazards are most severe in the upper 50 feet of the soil profile. In the deeper deposits, the greater overburden soils tend to isolate the ground

surface from the impact of any liquefaction in deeper soils, and the overburden pressure tends to limit shear strains that occur during liquefaction.

The liquefaction analysis of the granular soil layers encountered in our borings was performed using the procedures by Boulanger and Idriss (2014). The liquefaction analysis for the granular soil layers encountered in our CPTs was performed using the procedures by Idriss and Boulanger (2008), Boulanger and Idriss (2014), and Moss et al, (2006). A groundwater level of 10 feet was assumed in the analysis in accordance with the shallowest recorded groundwater depth per the Seismic Hazard Zone Report 058.

The Peak Ground Acceleration (PGA) at the site using the USGS website for U.S. Seismic Design Maps (http://earthquake.usgs.gov/designmaps/us/application.php) using the procedures recommended in ASCE Standard 7-10 indicates the Maximum Considered Earthquake Geometric Mean PGA for this site is 0.5g. However, we used the higher value of 0.6g as obtained from our site-specific hazard analysis. We also used the slightly larger Magnitude 6.9 as obtained from the USGS Unified Hazard Tool, rather than the 6.75 obtained from our site-specific study.

Our evaluation concluded that there is a potential for the saturated medium dense granular soil layers encountered in the noted borings and CPTs to liquefy during a major earthquake event. The results of our liquefaction analysis indicate that during a design-level seismic event the ground surface settlement could be as much as of ¾ inch as listed in the table below. Below basement level, however, our analyses indicate no more than roughly ¼ inch of settlement.

Table 2
Liquefaction Hazard Analysis

Boring No	Boring/CPT Depth, ft.	Depth to First Liquefiable Layer, ft.	Estimated Settlements, in. Total Settlement	Settlement below basement level	Liquefaction Potential Index (LPI)
B-1	45	--	0	0	0
B-2	45	11	0.75	0.27	1.5
CPT-1	80	42	0.1	0.1	<1
CPT-2	80	37	<0.1	<0.1	<1
CPT-3	80	--	0	0	0
CPT-4	42	41	0.15	0.15	<1

As can be seen in the CPT plots, the site contains significant dense sand layers that are not liquefiable. Careful examination of the CPT data shows that the liquefaction occurs in very thin layers or in the transition zones from clay to sand or sand to clay. In these conditions, the cone readings are influenced by the softer clay materials, and generally do not represent the true density of the sand layer. For this reason, we used the option for transition layer detection in the CLiq program. (Without this option, all settlements were still calculated to be less than ½ inch.) In CPT-04, a 10- to 12-inch layer of "liquefiable" sand was encountered within one foot of hitting refusal in dense sand. This was also the thickest zone of liquefiable material encountered in the four CPTs. In addition, as listed in Table 2 above, the Liquefaction Potential Index (LPI) was a maximum of 1½ in Boring B-2, which is indicative of low potential for liquefaction hazards at this site.

Because the potentially liquefiable zones are thin, localized, and not everywhere present, it is our opinion that performing a site response analysis in accordance with Section 21.1 of ASCE 7-10 is not warranted. If liquefaction does occur in isolated pockets, it would not materially affect the overall site response beyond the change already indicated by our site-specific hazard analysis. It should also be noted that liquefied soils would have the effect of lowering short period spectral accelerations – the exact opposite of raising the deterministic spectrum at periods less than 0.8 seconds as required by the code minimum allowed in this case. Liquefied

soils also tend to somewhat increase the spectral values at longer periods, just as the site-specific has raised the code values for this site.

9.4 Sand Boils

Sand Boils are a phenomenon where granular soil particles are carried by water escaping through cracks and fissures as excess pore pressures are dissipated. These transported soils can be carried to the ground surface, or they can be carried to accessible buried voids (e.g. basements, buried culverts and sewers, etc.) The surface expressions of sand boils are usually localized, and therefore can be locally differential and essentially impossible to predict. Figure 52 from Seed et. al. 2003, indicates there is little potential for surface manifestations of liquefaction, such as sand boils during a major earthquake, at this site. The Liquefaction Potential Index also indicate the likelihood of such phenomena are very low.

9.5 Seismic Compaction

Granular soils, if they are medium dense or loose and non-saturated, can be subject to densification as a result of shaking caused by major seismic events. Seismic compaction of loose, non-saturated granular soils may result in minor settlements and differential settlements at the ground surface. The materials encountered in the borings advanced for this investigation include either primarily fine-grained soils or dense to very dense clayey and silty sands above the encountered groundwater table. The risk of seismic compaction at the site is considered to be very low.

9.6 Lateral Spreading

Although the site is situated within the liquefaction hazard zone, there are no open creek channels crossing or bordering the subject property. Furthermore, the site surface is relatively flat and no slopes exist within the property. The dominant drainage feature in the site area is Guadalupe River situated approximately 1,400 feet northeast of the subject parcel. Because of the relatively large distance of these features from the site, and because the shallow liquefiable

layers are not contiguous, it is our opinion that the potential for lateral spreading to occur within the subject property is very low.

9.7 Flooding

The closest main drainage corridor, the Guadalupe River, is located approximately ¼ mile east-northeast of the subject property. Review of the pertinent Flood Insurance Rate Map prepared by FEMA (Santa Clara County, California, and Incorporated Areas, Panel 234 of 830, Map Number 06085C0234H, dated May 18, 2009) indicates the subject property is situated within Zone D, which they defined as "Areas in which flood hazards are undetermined, but possible."

According to the above-referenced Flood Insurance Rate Map, the area encompassing the intersection of Stockton Avenue and the Alameda (approximately 0.1 miles southeast of the project site) is classified as Zone AO, defined as "flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined." The anticipated flood depth specified for the area classified as Zone AO is 1 foot.

According to the City of San Jose, the Santa Clara Valley Water District (SCVWD) is the public agency responsible for flood protection in Santa Clara County. The SCVWD has obtained, and made publicly available, LIDAR-based data sets indicating the top of bank elevations for the major drainage corridors within Santa Clara County. Review of the available data for the Guadalupe River in the vicinity of the project site indicates the top of bank elevations range from approximately 80 to 85 feet.

It is our understanding that the first floor of the proposed hotel will be situated at an elevation of 85½ feet, and therefore, will be at a relatively similar elevation as the highest portion of the bank for the nearby segment of the Guadalupe River and the nearby area classified as Zone AO.

Therefore, it is plausible that the proposed hotel building will be affected during a flood event which overtops the banks of the nearby Guadalupe River.

Based on the above-referenced information, while the potential for flooding at the site is considered to be relatively low, the potential for flooding at the site cannot be totally discounted and should be taken into consideration during the design of the project. If flooding were to occur at the site it is likely that the flood depth would be on the order of 1 foot or less.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 General

Based on our subsurface exploration conducted at the subject site, results of laboratory tests performed on soil samples from the site, and our research and reviews of available geologic and geotechnical literature from the site vicinity, it is our opinion that the proposed project is geotechnically feasible, provided the recommendations presented herein are incorporated into the project design and construction.

The primary geotechnical constraints associated with the subject project are listed as follows:

- Relatively heavy loads from a tall structure with relatively low bearing capacities of in-place soils at the proposed basement level.
- Presence of groundwater at shallow depths.
- Existing adjacent buildings, street areas and other improvements which will need to be preserved during the deep excavation for the subterranean garage structure and associated dewatering.
- Location of the site within the seismically active San Francisco Bay area and in the close proximity of active fault zones that include the San Andreas, Hayward, and Calaveras Faults.

- Location of the site within the "Liquefaction Hazard Zone" and the differential settlements resulting from liquefaction of underlying soil layers during a major seismic event.

The geotechnical recommendation presented herein are prepared to address these concerns. When the final development plans are available, they should be reviewed by this office prior to construction to confirm that the intent of our recommendations is reflected in the plans, and to confirm that our recommendations properly address the proposed project in its final form.

10.2 Shoring Design Pressures/Retaining Walls

The proposed project will require relatively high retaining walls/shoring system (slightly higher than 38 to 43 feet depending on the location of the planned parking lift pits and designed thickness of the concrete mat slab) which will need to be designed for at-rest pressures in order to minimize any movement of the adjacent retained areas which include city streets, railroad corridors, utility lines, and adjacent buildings.

The retaining walls/shoring system should be designed to be relatively water tight in order to help keep the excavation area dry during the construction phase. The retaining walls/shoring system should extend to a relatively impermeable soil layer, if feasible, in order to help keep the excavation area relatively dry.

Under static conditions, the retaining walls/shoring system should be designed to resist lateral earth pressures from adjoining natural materials and backfills. The retaining walls/shoring system supporting native soils and/or compacted fill material should be designed to support an equivalent fluid pressure of 75 pounds per cubic foot for level backfill conditions. The portions of the retaining walls below water table (assume depth of 10 feet bgs) should be designed to withstand an equivalent fluid pressure of 102 pcf. These pressures are based on restrained conditions. For unrestrained conditions respective values of 55 pcf and 89 pcf may be assumed.

The retaining walls/shoring system should also be designed to withstand surcharge pressures from the adjacent structures, seismic pressures, and miscellaneous other loads (such as construction equipment loads, traffic loads, and transient loads associated with the railroad corridor). The lateral surcharge pressure should be added at a rate of ½ the vertical surcharge. The seismic pressures on the retaining walls/shoring system may be simulated by an inverted triangular pressure distribution based on an equivalent fluid weight of 0.9H, where H is the height of the wall in feet. A 10-percent increase of the seismic pressure should be incorporated on the southeast side basement wall in consideration of the existing neighboring building,

The shoring/retaining wall system may be designed as soil mixed walls which are constructed in-situ using specialized auger equipment. The equipment typically consists of a number of mixing augers mounted in a side-by-side arrangement with overlaps between adjacent augers. As the mixing augers are advanced into the soil, cement grout is pumped through the mixing auger shafts and injected into the soil at the tip of the augers or through the mixing blades of the augers. During insertion, the soil and grout are continuously mixed. The mixing process is repeated during auger withdrawal. A panel of overlapping soil/cement columns remain in place after mixing is completed. These overlapping columns form a soil-cement wall after adequate curing.

The sequence of construction of soil mixed walls typically includes drilling a three- to five-hole pattern to form a primary panel. Upon completion of this primary panel, the equipment is moved along the alignment of the wall to the approximate position for constructing the next primary panel. The next step involves construction of a secondary panel to span the interval between the two adjacent primary panels. The secondary panels are positioned to establish wall continuity. The final step consists of installing structural members such as steel H-beams for reinforcement of the soil cement columns prior to curing. This sequence of steps is repeated until the soil mixed wall is completed. Wall construction produces excess spoils with a volume of approximately 20 to 30 percent of the completed wall volume.

Since the water table is relatively shallow and it is important to keep the excavation area relatively dry, the soil/cement mixture or, if needed, soil/cement/additive mixture should be adjusted so that the hydraulic conductivity of the mix is less than 1×10^{-6} cm/sec. Since the shoring/retention system will be relatively high, it may be economical to install ground anchors (tiebacks) to reduce the wall thickness and/or cost. The tiebacks are a structural system designed to transmit the lateral forces to the soil behind the wall face. The unbonded portion of the tiebacks should extend to a minimum of 5 feet beyond a plane inclined at an angle of 33 degrees from the face of the wall. The bonded length of the tieback should be designed for an allowable skin friction value of 500 psf. The tiebacks should be installed in clean holes with a minimum diameter of 8-inches. The tieback should be grouted in two stages with the first portion of the grout extending from the bottom of the hole to 5 feet from assumed failure plane (bonded portion of the tieback tendons). At this point, the tieback should be tested to at least 150 percent of the design loads. The design load should be held for a minimum of 10 minutes. If the total movement between 1 minute and 10 minute exceeds 0.04 inches, the test load shall be held for additional 50 minutes. Total movements during the additional 50-minute period should be recorded at 15 minutes, 20, 25, 30, 45, and 60 minutes. The test data should be submitted to the project Geotechnical Engineer who will determine if the tieback meets the design requirements.

The tiebacks should be locked off at 110 percent of the design load capacity. If the design load is not obtained, additional tiebacks should be installed at the location approved by the Geotechnical Engineer. After testing the tiebacks to the design load, grout should be poured into the remaining length of the hole. The holes drilled for the tiebacks should be dry and free of loose cuttings. If during drilling, caving conditions are encountered, adequate casing should be provided by the contractor. This casing should be removed in an approved satisfactory manner while the grout is being placed in the hole. We recommend that high strength grout be used in conjunction with clean, corrosion protected reinforcing steel tendons.

We note that tiebacks will need to be locally excluded for the upper 12 feet or so of shoring to avoid conflicting with the existing retaining wall along W. Julian Street roadway that creates the grade break between the site and the roadway. The contractor and the owner should make all efforts to receive necessary approvals for advancing tie-backs into the adjacent properties or under City streets. The Contractor should also confirm that the tiebacks would not interfere with the existing utility lines and alternate plans, as necessary, should be submitted to the project Geotechnical Engineer for review and approval prior to the installation of such engineering measures.

The shoring system should be designed by a licensed structural engineer experienced in the design of retaining systems, and installed by an experienced shoring specialty contractor. The shoring engineer should be responsible for the design of the shoring/retaining wall system in accordance with applicable regulatory requirements. BAGG should be allowed an opportunity to review the shoring plans and a representative from our office should observe its installation.

Following the installation of the shoring system and the completion of the excavation for the floor slab, the soil/cement shoring/retaining wall may need to be fine finished/cleaned and additional waterproofing/drainage collection system may need to be installed prior to installing final facing on the basement walls. Waterproofing, basement wall back drainage, and sump/pump systems should be designed, as-needed, per the basement shell designers.

10.3 Dewatering

Dewatering will be required to keep the excavation area dry even without any appreciable seepage from the surrounding areas, and to avoid disturbance or "blow-out" of the excavation bottom from hydrostatic pressures while the excavation is advanced. The dewatering system should be installed by an experienced contractor. Groundwater removed during dewatering should be disposed of in accordance with applicable state and local regulations. Dewatering within the excavation to 3 feet below the lowest level of excavation with a relatively water tight shoring system is not likely to cause settlement of the surrounding structures; however,

improvements within 50 feet of the excavation should be monitored to check for dewatering-induced settlement as a part of the construction monitoring program.

We understand that the completed basement structure will consist of a water-tight basement shell and that dewatering will be terminated so that groundwater can stabilize to its natural level. The termination of pumping should not take place until there are adequate structural loads on the shell to resist hydrostatic uplift.

10.4 Underpinning

The existing building southeast of the site will be very near the excavation for the underground garage; therefore, it will be necessary to underpin the adjacent structure or design the shoring system to withstand the surcharge pressures from the adjacent structure. A potential underpinning recommendation may consist of the following:

Where the excavation is adjacent to existing buildings or structures, the existing buildings/structures should be underpinned to a depth below the planned excavation for the subterranean parking garage. The buildings may be underpinned using slant-drilled piers. Slant-drilled piers should be designed as friction piers deriving their load bearing capacity through friction between the piers and surrounding soil. Frictional resistance between the slant-drilled pier and the alluvial soil at the site may be computed using an allowable skin friction of 700 pounds per square foot acting below the bottom of the basement excavation. Underpinning piers should also be designed to resist lateral earth pressures and influence of any adjacent footings not underpinned. The design of the underpinning system should be submitted to the project Geotechnical Engineer for review prior to actual construction.

Due to the proximity of the proposed excavation to the existing retaining wall accommodating the grade change between the subject property and the W. Julian Street undercrossing, it is recommended that the design of the existing retaining wall be evaluated to determine if the wall is capable of withstanding free-standing conditions. Temporary support may be required

to maintain the structural integrity of the existing retaining wall and to provide supplemental support for the existing railroad overcrossing above W. Julian Street. Temporary support may consist of underpinning or providing structural bracing for the existing retaining wall and railroad overcrossing. In addition, due to the proximity of the proposed excavation to the existing utility poles, it may be necessary to reroute or provide supplemental support for the existing utility poles and overhead utilities at the site. Supplemental recommendations can be provided on an as-needed basis as design drawings become available.

Based on our review of markings placed at the site by the Underground Service Alert providers, a sewer main exists along the northern portion of the site parallel to W. Julian Street and extends to the southeast (toward the access gate for the railroad tracks) across the northeastern portion of the site. The sewer main will likely need to be rerouted prior to initiating the excavation for the proposed subterranean parking garage.

10.5 Foundations

The site area is underlain by isolated pockets of potentially liquefiable soils, as well as relatively weak, compressible silt and clay; therefore, spread footing foundations are not deemed to be appropriate for the proposed development. It is our opinion that the most appropriate foundation system will be a concrete mat slab.

The construction of a 3-level underground parking garage will result in removal of approximately 3,000 psf of pressure; therefore, it is reasonable to assume that the proposed concrete mat foundation for the proposed hotel building can be designed for an average dead plus live allowable bearing pressure of 5,000 psf (net pressure of 2,000 psf). The concrete mat floor slab should be supported on a subgrade prepared in accordance with the guidelines provided in the following “Site Grading” section of this report and designed to spread load evenly over the subgrade. A ⅓ increase of the dead plus live allowable bearing pressure may be assumed in consideration of short term wind and seismic loading. A modulus of subgrade reaction of 35 pounds per cubic inch (pci) may be utilized in the design.

Typically, basement floors should be provided with a capillary moisture break layer and a vapor barrier. However, we understand that the basement substructure will be water-tight, and will be submerged 30 feet or so below the groundwater table throughout its lifetime. The water proofing necessary to achieve a water-tight condition should be specified by the basement structure designers.

10.6 Lateral Design

Lateral resistance may be obtained from passive earth pressures acting on the sides of foundation members which have been poured in neat excavations. The allowable passive resistance to wind or seismic loads can be taken as an equivalent fluid pressure of 350 pounds per cubic foot (triangular) above the groundwater table and 180 pounds per cubic foot below the groundwater table. For design purposes a groundwater elevation corresponding to 10 feet below the ground surface should be utilized. A frictional coefficient of 0.30 may be used between the bottom of footings or mat and the clayey soils. Additionally, a lateral friction resistance of 500 psf may be assumed to act between the sides of the basement wall and the adjacent soil in the direction parallel to the lateral load. Friction resistance may be used simultaneously and without reduction in conjunction with the passive resistance.

10.7 Settlements

We estimate that total post-construction static settlement of a mat foundation embedded to the approximate depth shown on Plate 2, will be approximately 3 inches with a 1-inch differential settlement acting over 25 feet. Additional seismic settlement at the basement level is estimated to be an additional ¼ inches. These settlement analyses are based on the bottom of the basement mat being 38 feet below the ground surface and a uniform 5,000 psf (2,000 psf net) bearing pressure acting on the underlying subgrade soils. Additionally, these settlements assume that the groundwater is allowed to stabilize to its natural level after the construction of the basement is completed, and adequate structural loads have been imposed on the basement structure to resist hydrostatic uplift.

10.8 Soil Improvement Measures

The settlements discussed above can be significantly reduced if soil cement columns or drilled displacement piles are utilized. If soil cement columns or drilled displacement piles are utilized, the size, spacing, and depths of these foundation members should be designed by a specialty foundation contractor with approval from BAGG Engineers. The soil/cement mixed columns should be 5 to 7 feet in diameter and extend to approximately 80 feet below the ground surface. From a preliminary standpoint, we estimate the soil/cement mixed columns can increase the allowable bearing pressure from 5,000 psf (2,000 psf net) to 6,500 psf (3,500 psf net) and the subgrade modulus from 35 pci to 50 pci.

The design of the soil cement columns and/or drilled displacement piles should be performed by a design-build specialty foundation contractor because of the patented equipment and installation techniques. The foundation contractors should be provided with the anticipated foundation loads and asked to provide the design of the foundation system. The foundation contractors should be prequalified based on their experience in working with similar soils, adjacent buildings and streets, urban environment, and in a deep excavation. Preference should be given to the specialty contractors who can install a water proof shoring system and the foundation system. BAGG should be allowed to provide their opinion about the selection of the specialty foundation contractor. Once selected, BAGG should be allowed to review and approve the foundation design provided by the Contractor.

Once selected, the Contractor may want to perform additional site investigations to refine their design assumptions. Additional subsurface data collected by the Contractor should be shared with BAGG. Prior to the installation of the foundation system, pilot studies will be required to evaluate the suitability of the equipment proposed to be used at the site, the proposed installation process, and the load bearing capacity of the proposed foundation system. BAGG should be allowed to prepare a plan for the pilot study detailing the QA/QC process and collect independent data for evaluation and approval.

10.9 Site Grading

Site grading will consist primarily of excavation and off haul for the basement, along with minor site grading and earthwork around the site perimeter for driveway approaches and conforming to the grades of surrounding properties. Existing pavements, old foundations, and other obstructions, that may interfere with the shoring should be removed. Some of the depressions created by the removal of these obstructions may have to be backfilled. Therefore, if needed, the depressions should be backfilled with engineered fill compacted in thin lifts (with a loose fill thickness of less than 8-inches). Prior to placing fill, the top 8 inches of the bottom of the depression should be scarified, moisture conditioned to slightly above optimum moisture content and compacted to a minimum of 90 percent relative compaction. The fill material should be approved by our field representative and should also be placed in thin layers, at a slightly above optimum moisture content and compacted to a minimum of 90 percent relative compaction.

Any fill placed at the base of the excavation for the proposed subterranean parking garage, associated lift pits or beneath any at-grade portions of the proposed building should be compacted to a minimum of 95 percent relative compaction.

The on-site material may be used as fill soil provided it is free of organics and other deleterious materials and should be non-hazardous. Where concrete rubble is present, pieces larger than 3 inches in greatest dimensions should be removed.

Grading around the perimeter of the building will be required to conform to existing sidewalks and driveways. A site grading plan was not available when this report was prepared, but the grading will likely consist of clearing and grubbing, reworking the upper portion of the native soils, and preparation of the subgrade to receive new pavements and flat work.

As used in this report, the term “compact” and its derivatives mean that all on-site soils should be compacted to a minimum of 90 percent of the maximum dry density, at a moisture content

of at least 2 percent over optimum, as determined by ASTM Test Method D1557. Imported, non-expansive fills, should be compacted to a minimum of 90 percent relative compaction at a moisture content that is slightly over optimum. Pavement subgrades and the basement subgrade should be compacted to not less than 95 percent relative compaction at above optimum moisture content.

The following grading procedures should be followed for preparation of the areas to receive concrete slabs or pavements:

- Strip and remove any bushes, vegetation, roots, organically contaminated topsoil, abandoned underground utilities, and other debris from the site surface. Stockpile the strippings for disposal at an off-site location.

- Scarify the over-excavated surfaces within the exposed subgrades to depth of 6 to 8 inches.

- Thoroughly moisture condition the scarified surfaces to a moisture content that is at least 2 percent over optimum, and re-compact as specified above. Further excavate as necessary any area still containing weak and/or yielding (pumping) soils, as determined in the field by the Geotechnical Engineer.

- Place fill on the over-excavated surfaces and in the holes/depressions created by the above actions in uniformly moisture conditioned and compacted lifts not exceeding 8 inches in loose thickness. Rocks or cobbles larger than 4 inches in maximum dimensions should not be allowed to remain within the foundation areas, unless they can be crushed in-place by the construction equipment.

The on-site soils are suitable for engineered fill provided they are free of organics, debris and rock fragments greater than 3 inch size. Imported fill soils if needed, should be predominately granular in nature and should be free of organics, debris, or rocks over 3 inches in size, and should be approved by the Geotechnical Engineer before importing to the site. As a general guide of acceptance, imported soils should have a Plasticity Index less than 15, and an R-value of at least 20, and fines content between 15 and 60 percent. All aspects of site grading including clearing/stripping, demolition, pad preparation, and placement of fills or backfills should be performed under the observation of BAGG's field representatives.

It must be the Contractor's responsibility to select equipment and procedures that will accomplish the grading as described above. The Contractor must also organize his work in such a manner that one of our field representatives can observe and test the grading operations, including clearing, excavation, compaction of fill and backfill, and compaction of subgrades.

10.10 Slabs-on-Grade and Exterior Flatwork

All concrete slabs should be constructed on a well compacted and moisture conditioned soil subgrade. The slab should be reinforced as per the project Structural Engineer's recommendations. The subgrade should be approved by the Geotechnical Engineer immediately before the slab is poured.

The concrete slab can be placed directly on the prepared subgrade. The top 12-inches of the soil subgrade should also be compacted to a minimum of 95 percent relative compaction in vehicular areas, and 90 percent relative compaction in non-vehicular areas, at a moisture content previously recommended.

For at-grade, concrete-slabs-on-grade, where moisture on the slab surface would be undesirable, a minimum 4 inches of approved, clean, free draining angular gravel should be placed beneath the concrete slab. The base course is intended to serve as a capillary break; however, moisture may accumulate in the base course zone. Therefore, a vapor barrier with a thickness of at least 15 mil (such as, Stegowrap or an approved equivalent) should be placed on the gravel base if moisture protection and a dry floor slab are desirable. The vapor barrier should be installed and sealed per the manufacturer's recommendations.

At the basement subgrade level, subgrade compaction criteria should be as specified above. The under-slab aggregate and water proofing should be specified per the designers of the proposed water-tight basement shell.

10.11 Flexible Pavements

Due to the clayey nature of the on-site near surface soils, an R-Value = 5 was assumed for the design of alternate asphaltic concrete pavement sections. Alternate asphaltic concrete pavement sections were developed using the assumed R-Value = 5 and Traffic Indices of 4.5, 6.0, 7.0, and 8.0. The recommended pavement sections utilizing both aggregate base and subbase are tabulated below. Generally, a Traffic Index of 4.5 is appropriate for automobile parking stalls, whereas a Traffic Index of 6.0 would be appropriate for heavily-used automobile driveways with only occasional use by heavy trucks (such as once a week or so by garbage trucks), and Traffic Indices of 7.0 or higher are used where the pavement would be subject to more frequent truck traffic such as daily use by delivery trucks.

The pavement sections presented below have been calculated using the design method described in the Caltrans Highway Design Manual (Topic 633, July 2008) with the added safety factors. The method characterizes the subgrade soil conditions with laboratory R-value tests, and characterizes the traffic loading conditions with a Traffic Index.

Table 3
Summary of Asphaltic Concrete Pavement Sections
(Estimated Subgrade R-value=5)

Pavement Component	TI=4.5		TI=5.0		TI=6.0		TI=7.0		TI=8.0	
Asphaltic Concrete (AC) in Inches	2½	2½	3	3	3½	3½	4	4	5	5
Class II Aggregate Base (R_{Min}=78)	10	4	10	4	12½	4	16	5	18	6
Class II Aggregate Subbase or Recycled AB (R_{Min}=50)	--	6	--	7	--	10	--	12	--	14
Total Thickness in Inches	12½	12½	13	14	16	17½	20	21	23	25

Asphalt pavements should be supported on a subgrade that has been prepared as recommended under “Site Grading”. All materials and construction procedures, including placement and compaction of pavement components, should be performed in conformance with the latest edition of the Caltrans Standard Specifications, except that compaction should

be performed in accordance with ASTM Test Method D1557, and at moisture contents specified under the Site Grading section of this report.

10.12 Rigid Pavements

Where Portland Cement Concrete (rigid) Pavements are to be used (recommended in garbage dump box storage areas), they should be supported on a subgrade that has been prepared as recommended under "Site Grading". Concrete pavements exposed to as much as 10 commercial trucks a day (TI= 7.0), should consist of 6½ inches of concrete with a compressive strength of 3,400 psi (MR=550 psi) supported on at least 6 inches of Class II Aggregate Base material compacted to a minimum of 95 percent relative compaction.

As a minimum, concrete pavements should be reinforced with deformed bars in both directions to control cracking, and joints should be provided in both directions within the pavement designed to prevent formation of irregular cracks.

Where traffic can drive over the edge of the concrete pavement, such as at transition to AC paving, the Portland Cement Association suggests the thickened edge should be increased by 20 percent, or about 1¼ inches in this case, and tapered back to normal slab thickness over a distance of 10 times the slab thickness, or in about 5 feet.

10.13 Drainage

Site drainage should be considered an integral part of the proposed project. The surface of the adjacent pavements should be graded to facilitate runoff drainage into catch basins or area drains. Any area where surface run-off becomes concentrated should be provided with a catch basin. The collected runoff from the catch basins should be discharged in a manner that will not cause erosion or saturation of soils in the vicinity of building walls or foundations.

10.14 Utility Trench Backfill

Vertical trenches deeper than 5 feet will require temporary shoring. Where shoring is not used, the sides should be sloped or benched, with a maximum slope of 1:1 (horizontal:vertical) if the trench exposes clayey soils, and 1½:1 if the material is granular and sandy in nature. The trench spoils should not be placed closer than 3 feet or one-half of the trench depth (whichever is greater) from the trench sidewalls. All work associated with trenching must conform to the State of California, Division of Industrial Safety requirements. Based on our borings and laboratory results, it is our opinion most of the fill soils at the site can be classified as a type "C" soil.

The utility lines should be properly bedded and shaded with granular material, such as, sand or pea gravel. As a general rule, the bedding layer should be 2 to 4 inches thick. The bedding and shading layers should be compacted using a vibratory compactor. The contractor should use extreme caution with the vibratory compactor on the shading layer because excessive vibrations and/or imbalanced shading materials could result in dislodging the pipe and loosening of the joints.

The utility trenches may then be backfilled with on-site soils. Backfill soils should be free of debris, roots and other organic matter, and rocks or lumps exceeding 3 inches in greatest dimension. The fill material should be uniformly moisture conditioned to the proper moisture content and compacted in lifts per the recommendations included in the "Site Grading" section of this report. Trench jetting should not be allowed.

In order to avoid accumulation of surface water in the utility trenches not otherwise covered by a slab or pavement, the top 12-inches of the utility trench backfill should consist of uniformly moisture conditioned, and compacted, native clayey soil with low permeability. It would be advisable to construct an impermeable backfill plug where the utility pipes slope toward the building line. The plug may consist of clayey soil or flowable fill (for description, see below).

The intent is to prevent the utility trenches upslope of the proposed building from acting as a conduit to seepage and runoff, and lead the runoff to beneath the building. BAGG Engineers should be given an opportunity to observe the trench backfill operations and perform field compaction tests to evaluate the moisture content and relative compaction of the fill materials.

Alternatively, the utility trenches may be backfilled with flowable fill (a cementitious slurry consisting of a mixture of fine aggregate or filler, water, and cementitious material(s)) capable of filling all voids in irregular excavations and hard to reach places. The flowable fill is a self-leveling material that hardens in a matter of hours without the need for compaction in layers. Flowable fill is sometimes referred to as controlled density fill (CDF), controlled low strength material (CLSM), and lean concrete slurry. A 2-sack flowable fill material is considered to be acceptable for the subject project.

10.15 Corrosion Potential

A sample of near surface soil from the project site was tested for corrosion potential at Cooper Testing Labs. The results of chemical analyses, pH, and resistivity at 100% saturation are attached on Plate 36, Corrosion Test Results. The following table also presents the summary of the test results and our preliminary screening of the corrosivity of the soil sample tested.

Table 4
Corrosion Test Results

Analysis/Test	Boring B-2 @ 5½'	Corrosivity Classification
Resistivity @ 100% saturation	1,580 Ohm-cm	mildly to moderately corrosive[1]
pH	7.9	neutral
ORP (Redox)	526 mV	moderately corrosive[2]
Chloride	12 mg/kg	negligible[3]
Sulfate	133 mg/kg	moderately corrosive[4]
Moisture Content (%)	16.1	N.A.

[1] National Association of Corrosion Engineers (NACE) Corrosion Basics, page 191.
[2] Standard Method 2580B.
[3] For metals encased in concrete, extrapolated from CTM 372.
[4] For metals encased in concrete, ACI-318, Building Code Requirements for Reinforced Concrete.

The upper soils have been identified as moderately corrosive in terms of resistivity and redox; corrosive effects to concrete and masonry materials will be moderate, while the effects would be noticeable with metals in direct contact with the soil subgrade. Based on the laboratory test results, the site materials are also moderately corrosive in terms of the sulfate content; corrosive effects to concrete and masonry materials as well as on metals in direct contact with the soil subgrade will be moderate.

Subsurface conditions are not the only factors that may cause corrosion; design and construction practice may also be primary causes for failure. A review of plans and specifications for underground structures may be conducted by a qualified corrosion engineer prior to installation, if desired.

10.16 Plan Review

It is recommended that the Geotechnical Engineer (BAGG Engineers) be retained to review the final grading, foundation, and drainage plans. This review is to assess general suitability of the earthwork, foundation, and drainage recommendations contained in this report and to verify the appropriate implementation of our recommendations into the project plans and specifications.

10.17 Observation and Testing

It is recommended that the Geotechnical Engineer (BAGG Engineers) be retained to provide observation and testing services during site grading, excavation, backfilling, and foundation construction phases of work. This is intended to verify that the work in the field is performed as recommended and in accordance with the approved plans and specifications, as well as verify that subsurface conditions encountered during construction are similar to those anticipated during the design phase. Changed or unanticipated soil conditions may warrant revised recommendations. For this reason, BAGG cannot accept responsibility or liability for the recommendations in this report if we are not given the opportunity to observe and test site grading and foundation construction.

11.0 CLOSURE

This report has been prepared in accordance with generally-accepted engineering practices. The recommendations presented in this report are based on our understanding of the proposed construction as described herein, and upon the soil conditions encountered in the borings and CPTs advanced for this investigation.

The conclusions and recommendations contained in this report are based on subsurface conditions revealed by widely scattered borings, CPTs, and a review of available geotechnical and geologic literature pertaining to the project site. It is not uncommon for unanticipated

conditions to be encountered during site earthwork and/or foundation installation and it is not possible for all such variations to be found by a field exploration program appropriate for this type of project. The recommendations contained in this report are therefore contingent upon the review of the final grading, drainage, and foundation plans by this office, and upon geotechnical observation and testing by BAGG of all pertinent aspects of site grading, including demolition, placement of fills and backfills, and foundation construction.

Soil conditions and standards of practice change with time. Therefore, we should be consulted to update this report, if the construction does not commence within 18 months from the date that this report is submitted. Additionally, the recommendations of this report are only valid for the proposed development as described herein. If the proposed project is modified, our recommendations should be reviewed and approved or modified by this office in writing.

The following references and plates are attached and complete this report:

Attached Plates:

Plate 1	Vicinity Map
Plate 2	Site Plan
Plate 3	Site Development Plan
Plate 4	Geologic Map
Plate 5	Regional Fault Map
Plate 6	Idealized Subsurface Profile A-A'
Plate 7	Idealized Subsurface Profiles B-B' thru D-D'
Plate 8	Unified Soil Classification System
Plate 9	Soil Terminology
Plate 10	Boring Log Notes
Plates 11A & 11B	Key to Symbols
Plates 12-A through 21	Boring Logs
Plates 22 through 25	Cone Penetrometer Test Results
Plate 26	Atterberg Limits Test Results
Plate 27	Consolidation Test Data
Plate 28	Map of Historic Earthquakes
Plate 29	Table of Historic Earthquakes
Plate 30	Measured Shear Velocity
Plate 31	Probabilistic Response Spectra

Plate 32	Deterministic Response Spectra
Plate 33	Design Response Spectra
Plate 34	Design Response Spectra Data
Plate 35	Hazard Deaggregation
Plate 36	Corrosion Test Results

Appendix A	Analytical Reports by McCampbell Analytical
Appendix B	DWR-188 Well Completion Reports

ASCE document titled "Important Information About Your Geotechnical Engineering Report"

12.0 REFERENCES

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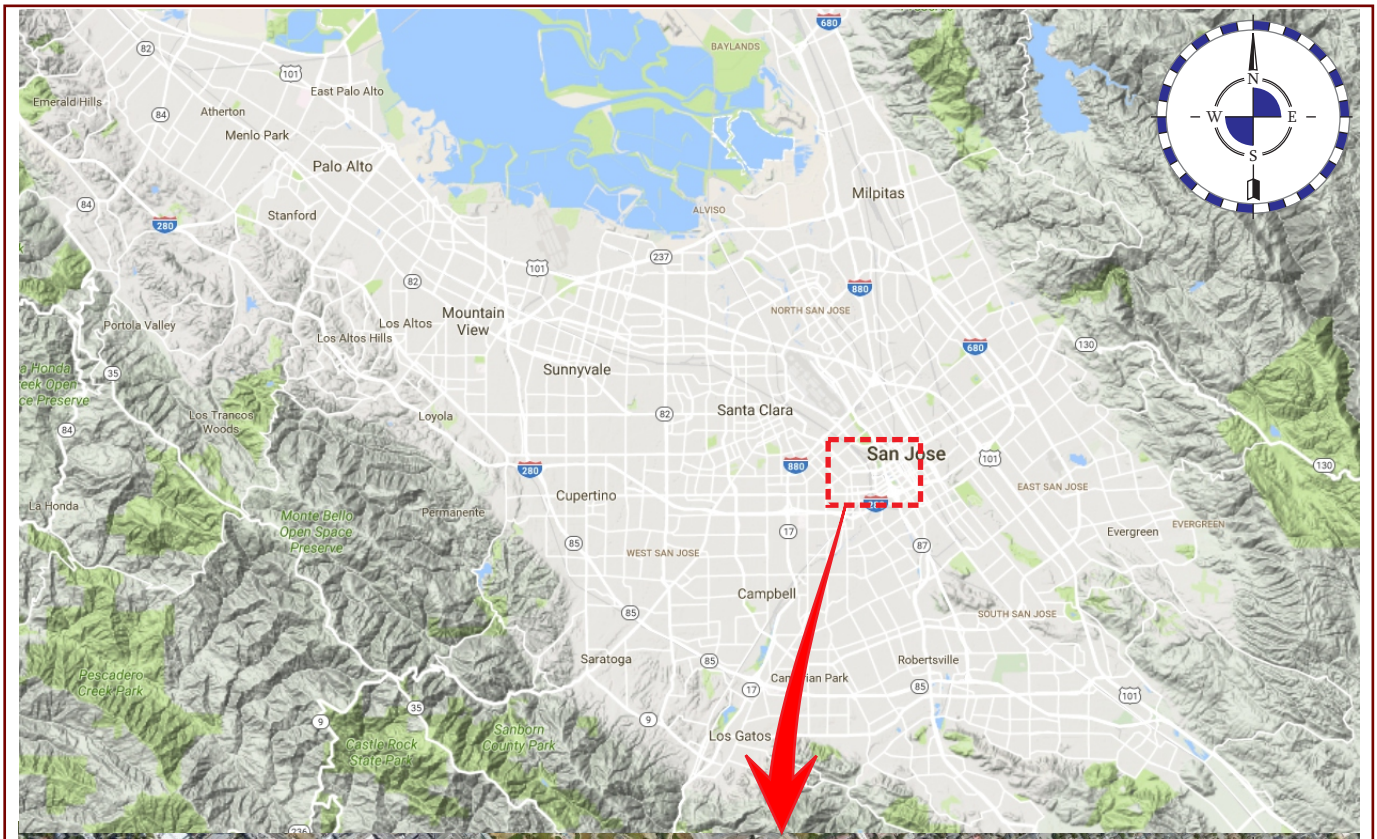
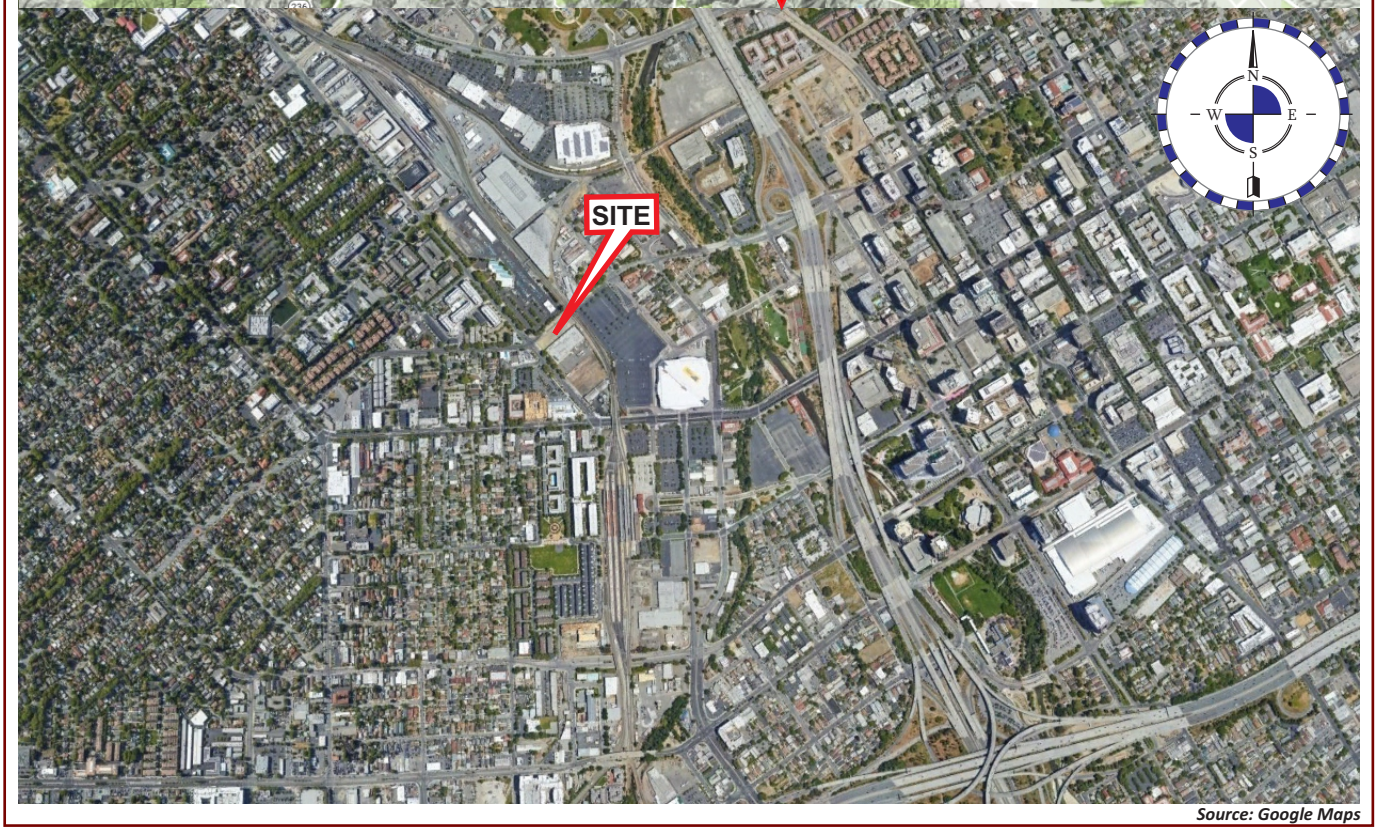




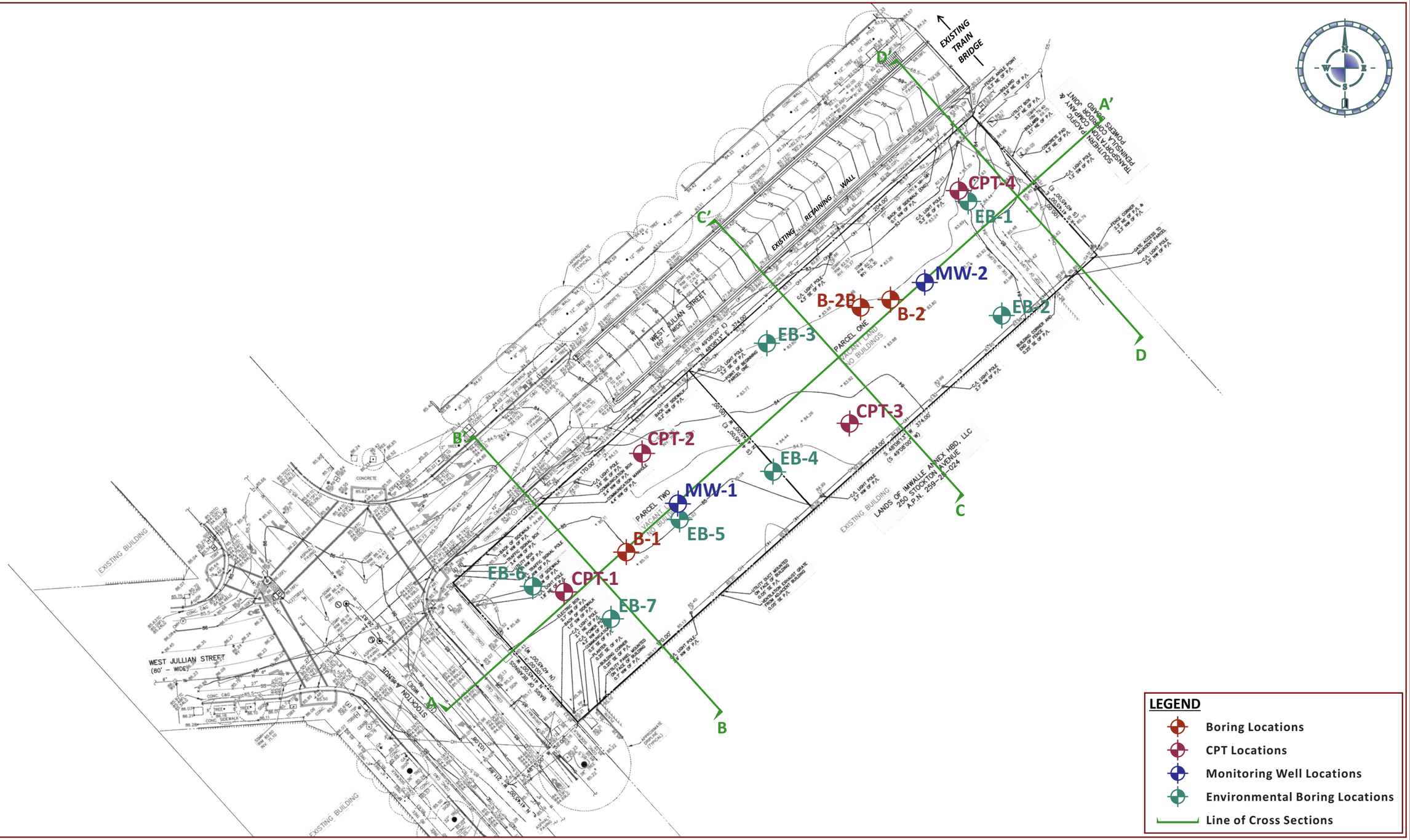
Source: Google Maps

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

VICINITY MAP

DATE:	JOB NUMBER:	PLATE
March, 2019	DEROY-01-00	1

BYGG ENGINEERS



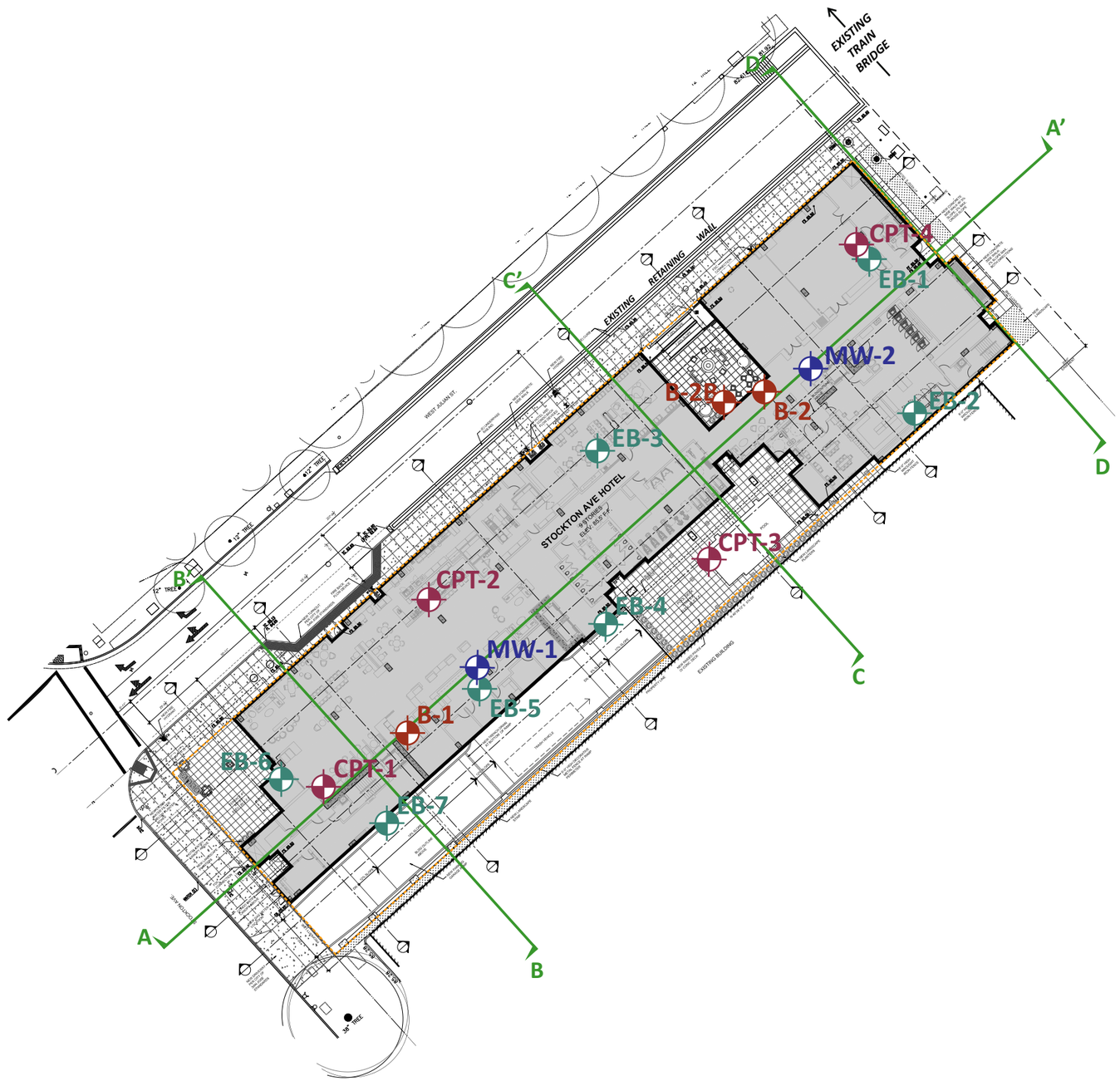
Base: *ALTA/NSPS Land Title Survey, 292 Stockton Avenue, San Jose, Santa Clara County,* by Dains Land Surveying, project no. 17-734, dated 01/15/18.

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAGG ENGINEERS

SITE PLAN

JOB NUMBER:	SCALE:	DATE:	PLATE
DEROY-01-00	1" ≈ 50'	March, 2019	2



LEGEND

- Boring Locations
- CPT Locations
- Monitoring Well Locations
- Environmental Boring Locations
- Line of Cross Sections
- Footprint of Subterranean Parking

Base: *Stockton Ave Hotel Project, 292 Stockton Avenue, San Jose, CA,* Sheet X-49, by Architectural Dimensions, job no. KD002, dated 5/25/18.

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
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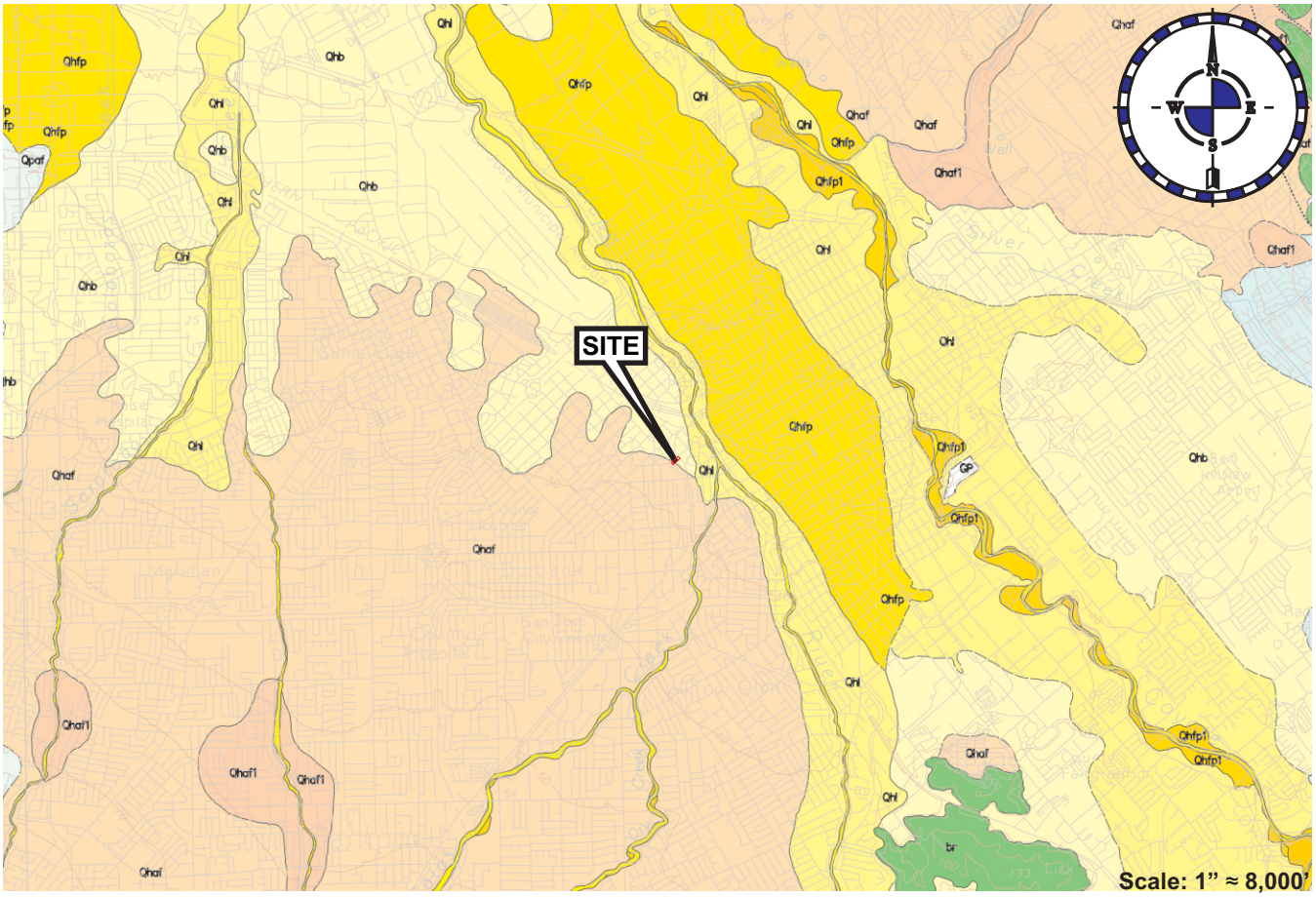
BAGG ENGINEERS

SITE DEVELOPMENT PLAN

JOB NUMBER:	SCALE:	DATE:	PLATE
DEROY-01-00	1" ≈ 50'	March, 2019	3



LEGEND

Qhsc **Stream Channel Deposits** (Holocene) – Poorly- to well-sorted sandy silt, silty sand, sand, or sandy gravel with minor cobbles and boulders. Many stream channels are presently lined with concrete or riprap. Engineering works such as diversion dams, drop structures, energy dissipaters, and percolation ponds also modify the original water course.

Qhl **Natural Levee Deposits** (Holocene) – Loose, moderate- to well-sorted sandy or clayey silt grading to sandy or silty clay. Levee deposits are generally well drained.

Qhfp1 & Qhfp2 **Alluvial Terrace Deposits** (Holocene) – Qhfp1 and Qhfp2 are the first and second erosional terraces, respectively, cut into Qhfp and Qhl deposits. Deposits are generally less than 1 meter thick and consist of rounded gravel and historic artifacts in a clayey silt matrix.

Qhfp **Floodplain Deposits** (Holocene) – Medium to dark-gray, dense, sandy to silty clay. Lenses of coarser material (silt, sand, and pebble) may be locally present.

Qhb **Floodbasin Deposits** (Holocene) – Organic-rich clay to very fine silty-clay deposits occupying the lowest topographic positions between Holocene levee deposits or Holocene floodplain deposits

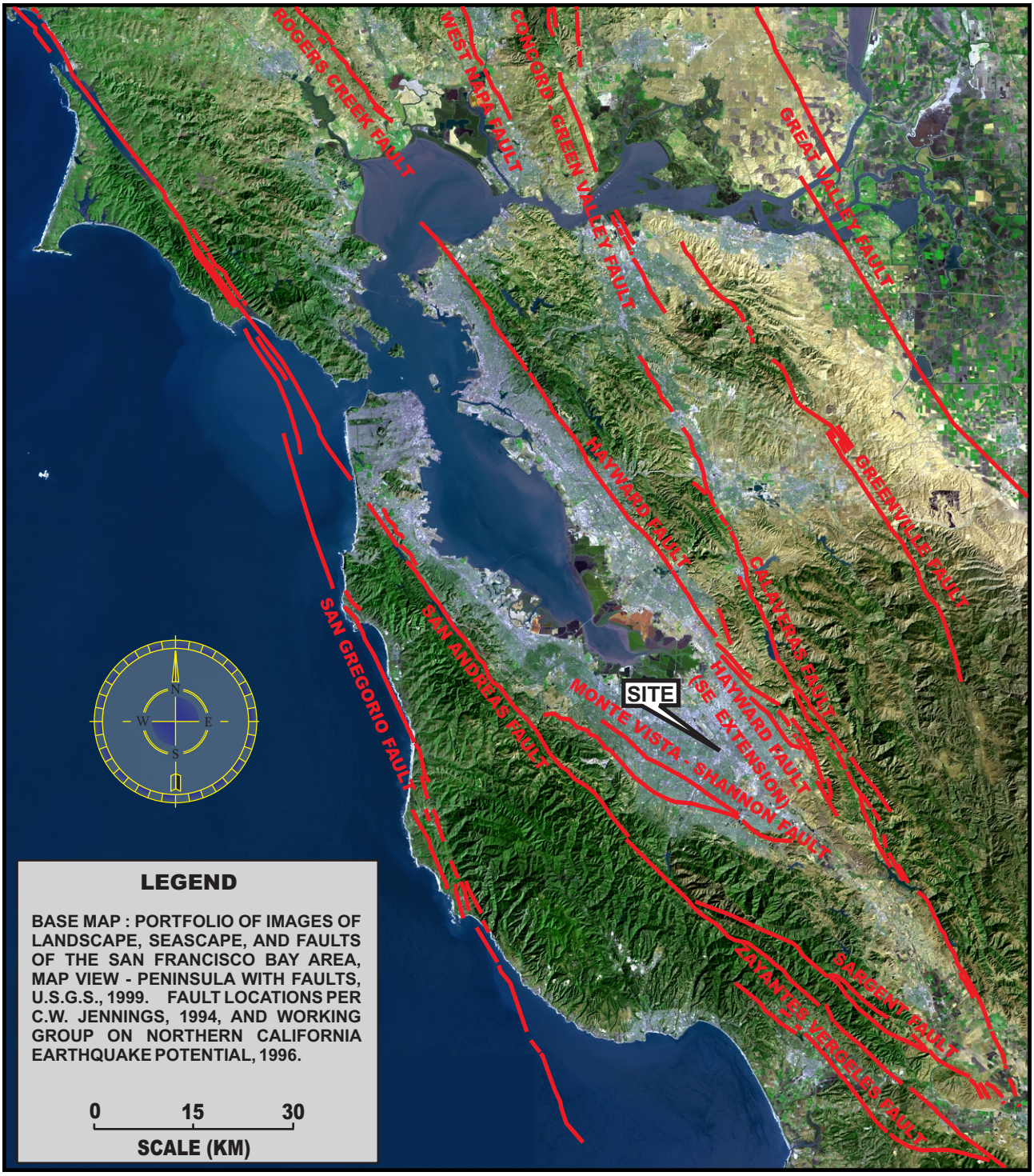
Qhaf **Alluvial Fan Deposits** (Holocene) – Brown or tan, medium dense to dense gravelly sand or sandy gravel that grades upward to sandy or silty clay. Near the distal fan edges, deposits are typically brown, medium dense gravelly sand or clayey gravel that grades upward to sandy or silty clay.

Qpaf1 **Alluvial Terrace Deposits** (Pleistocene) – Crudely-bedded, clast-supported, gravels, cobbles, and boulders with a sandy matrix. Clasts as much as 35 cm intermediate diameter are present. Coarse sand lenses may be locally present. Qpaf1 deposits are cut into Qpaf alluvial fan deposits a few meters and lie up to several meters above Holocene deposits.

Reference: *Quaternary Geology of the Santa Clara Valley, Santa Clara, Alameda, and San Mateo Counties, California: A Digital Database, USGS Open-File Report 94-231, by E.J. Helley, R.W. Graymer, G.A. Phelps, P.K. Showalter, and C.M. Wentworth, 1994*

GEOTECHNICAL ENGINEERING INVESTIGATION **PROPOSED HOTEL DEVELOPMENT** **292 STOCKTON AVENUE** **SAN JOSE, CALIFORNIA** **APN: 259-28-028**	**GEOLOGIC MAP**		
	DATE: March, 2019	JOB NUMBER: DEROY-01-00	PLATE 4

BvGG ENGINEERS



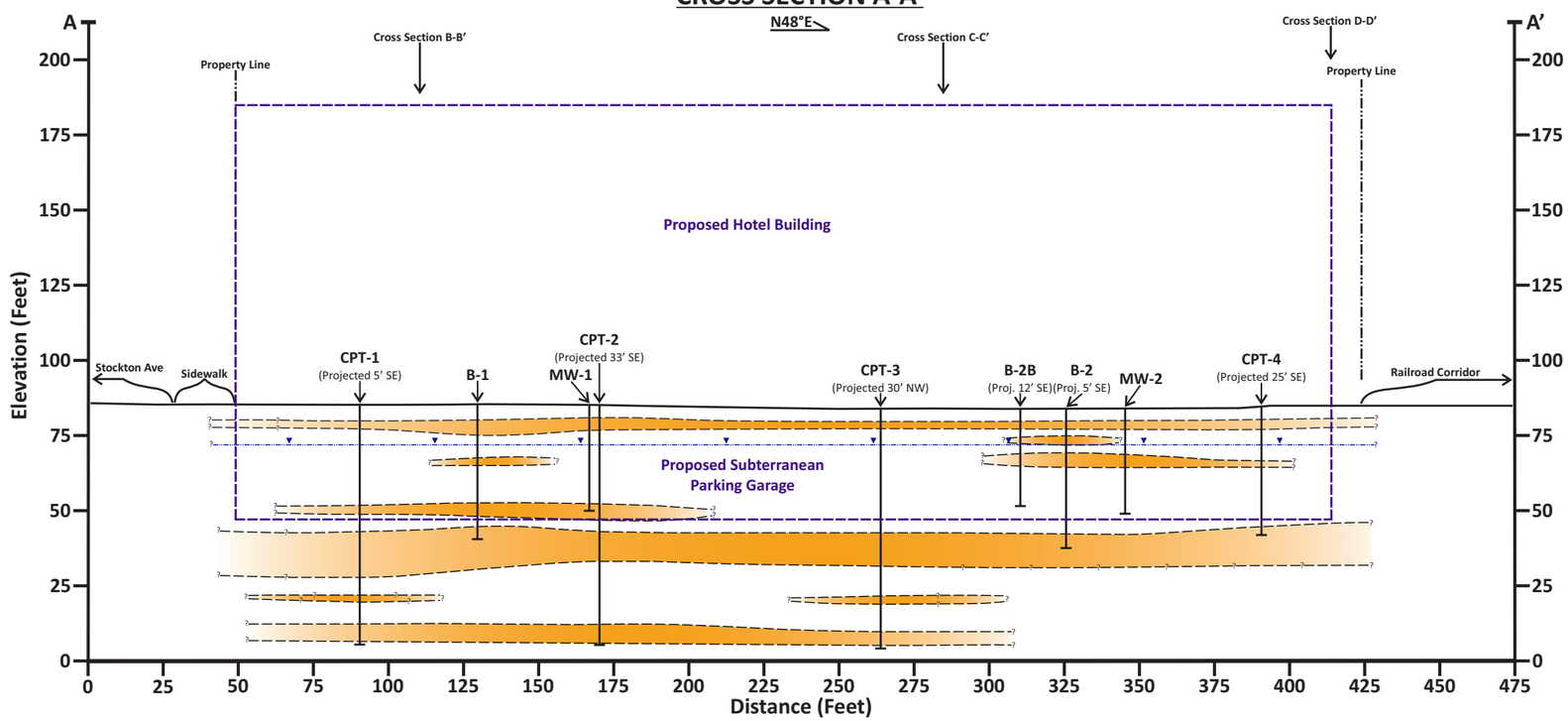
GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

REGIONAL FAULT MAP

DATE:	JOB NUMBER:	PLATE
March, 2019	DEROY-01-00	5

BVGG ENGINEERS

CROSS SECTION A-A'



Legend

- Existing Grade
- Geologic Contact - Approximate
- Geologic Contact - Inferred
- Predominantly Stiff to Very Stiff Clayey Soils
- Predominantly Medium Dense to Dense Granular Soils
- Groundwater Elevation - February, 2018
- B-1 Boring Location - Approximate
- Proposed Structures

Note: Elevations based on *ALTA/NSPS Land Title Survey, 292 Stockton Avenue, San Jose, Santa Clara County,* by Dains Land Surveying, project no. 17-734, dated 01/15/18.
Building locations based on *Stockton Ave Hotel Project, 292 Stockton Avenue, San Jose, CA,* Sheets X-44.1 thru X-44.9 & X-49, by Architectural Dimensions, job no. KD002, dated 5/23/18 & 5/25/18.

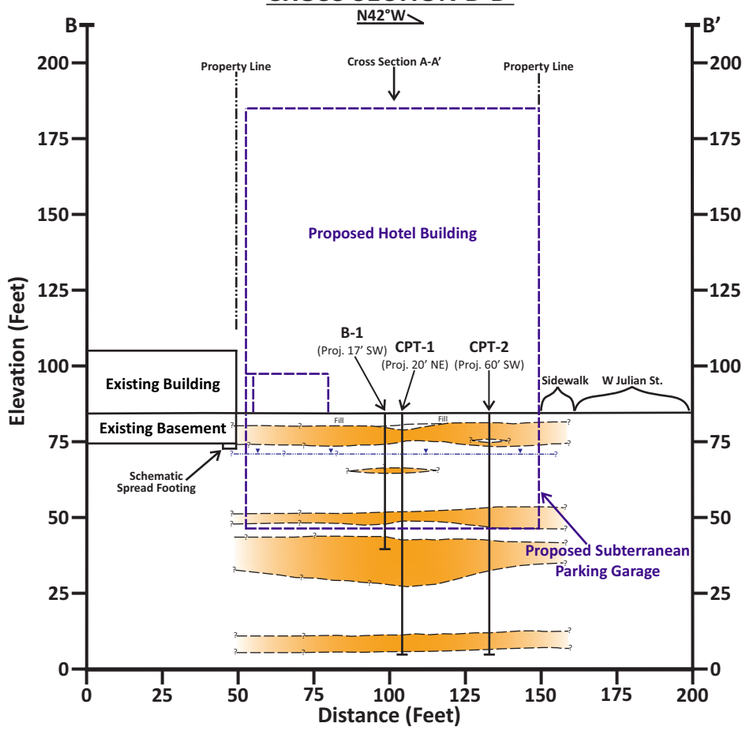
GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BYGG ENGINEERS

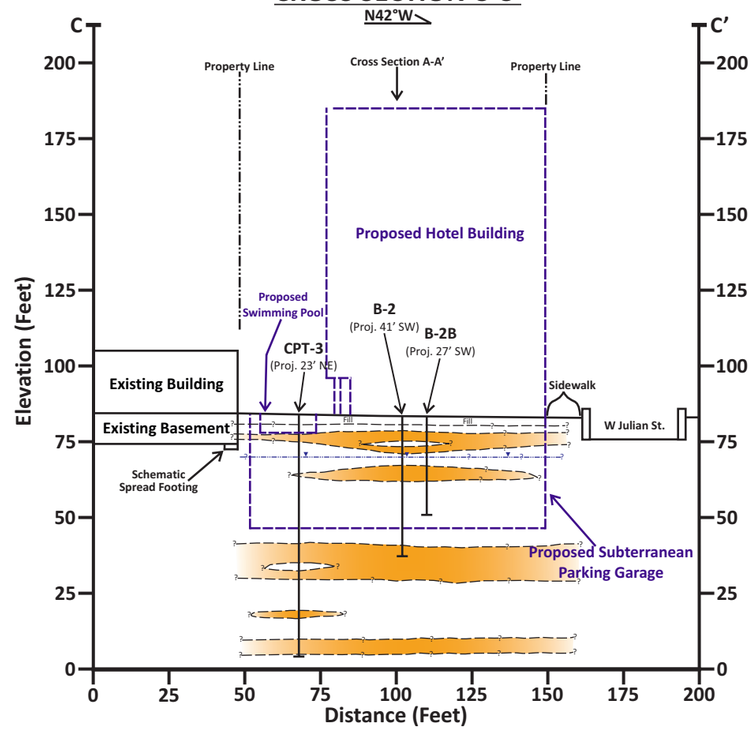
IDEALIZED SUBSURFACE PROFILE A-A'

JOB NUMBER:	SCALE:	DATE:	PLATE
DEROY-01-00	1" ≈ 50'	March, 2019	6

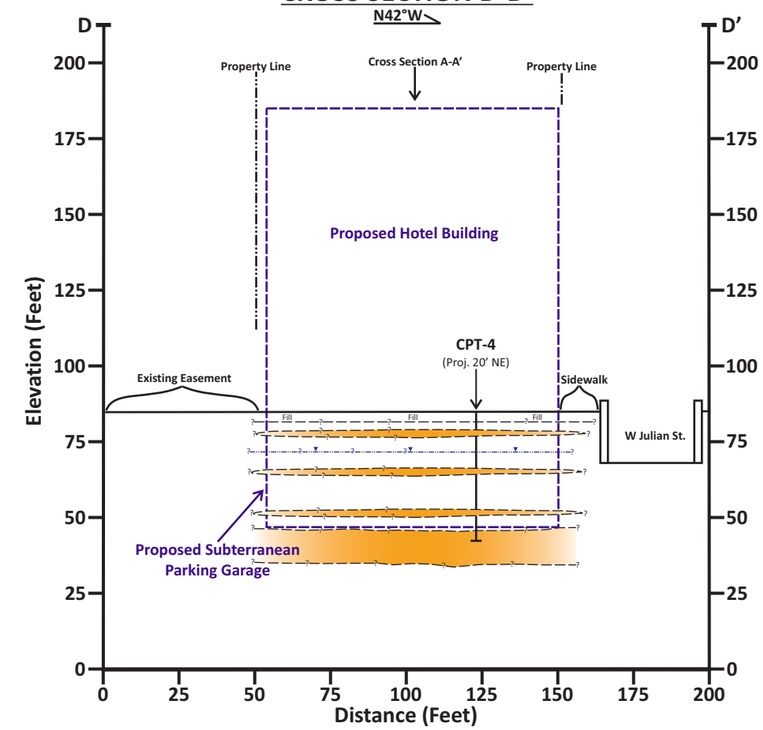
CROSS SECTION B-B'



CROSS SECTION C-C'



CROSS SECTION D-D'



Legend

- Existing Grade
- Geologic Contact - Approximate
- Geologic Contact - Inferred
- Predominantly Stiff to Very Stiff Clayey Soils
- Predominantly Medium Dense to Dense Granular Soils
- Groundwater Elevation - February, 2018
- B-1 Boring Location - Approximate
- Proposed Structures
- Diagrammatic Underpinning Foundations

Note: Elevations based on *ALTA/NSPS Land Title Survey, 292 Stockton Avenue, San Jose, Santa Clara County,* by Dains Land Surveying, project no. 17-734, dated 01/15/18.
Building locations based on *Stockton Ave Hotel Project, 292 Stockton Avenue, San Jose, CA,* Sheets X-44.1 thru X-44.9 & X-49, by Architectural Dimensions, job no. KD002, dated 5/23/18 & 5/25/18.

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAGG ENGINEERS

IDEALIZED SUBSURFACE PROFILES B-B' THRU D-D'

JOB NUMBER:	SCALE:	DATE:	PLATE
DEROY-01-00	1" ≈ 50'	March, 2019	7

COARSE-GRAINED SOILS

LESS THAN 50% FINES*

GROUP SYMBOLS	ILLUSTRATIVE GROUP NAMES	MAJOR DIVISIONS
GW	Well graded gravel Well graded gravel with sand	**GRAVELS** More than half of coarse fraction is larger than No. 4 sieve size
GP	Poorly graded gravel Poorly graded gravel with sand	
GM	Silty gravel Silty gravel with sand	
GC	Clayey gravel Clayey gravel with sand	
SW	Well graded sand Well graded sand with gravel	**SANDS** More than half of coarse fraction is smaller than No. 4 sieve size
SP	Poorly graded sand Poorly graded sand with gravel	
SM	Silty sand Silty sand with gravel	
SC	Clayey sand Clayey sand with gravel	

NOTE: Coarse-grained soils receive dual symbols if:
(1) their fines are CL-ML (e.g. SC-SM or GC-GM) or
(2) they contain 5-12% fines (e.g. SW-SM, GP-GC, etc.)

FINE-GRAINED SOILS

MORE THAN 50% FINES*

GROUP SYMBOLS	ILLUSTRATIVE GROUP NAMES	MAJOR DIVISIONS
CL	Lean clay Sandy lean clay with gravel	**SILTS AND CLAYS** liquid limit less than 50
ML	Silt Sandy silt with gravel	
OL	Organic clay Sandy organic clay with gravel	
CH	Fat clay Sandy fat clay with gravel	**SILTS AND CLAYS** liquid limit more than 50
MH	Elastic silt Sandy elastic silt with gravel	
OH	Organic clay Sandy organic clay with gravel	
PT	Peat Highly organic silt	**HIGHLY ORGANIC SOIL**

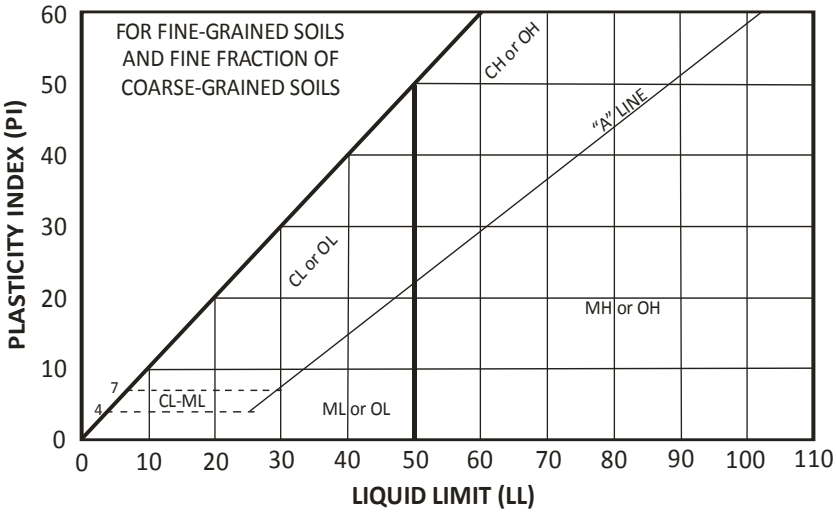
NOTE: Fine-grained soils receive dual symbols if their limits in the hatched zone on the Plasticity Chart(L-M)

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	ABOVE 12 in.
COBBLES	3 in. to 12 in.
GRAVEL	No. 4 to 3 in.
Coarse	¾ in to 3 in.
Fine	No. 4 to ¾ in.
SAND	No. 200 to No.4
Coarse	No. 10 to No. 4
Medium	No. 40 to No. 10
Fine	No. 200 to No. 40
*FINES:	BELOW No. 200

NOTE: Classification is based on the portion of a sample that passes the 3-inch sieve.

PLASTICITY CHART



Reference: ASTM D 2487-06, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

GENERAL NOTES: The tables list 30 out of a possible 110 Group Names, all of which are assigned to unique proportions of constituent soils. Flow charts in ASTM D 2487-06 aid assignment of the Group Names. Some general rules for fine grained soils are: less than 15% sand or gravel is not mentioned; 15% to 25% sand or gravel is termed "with sand" or "with gravel", and 30% to 49% sand or gravel is termed "sandy" or "gravelly". Some general rules for coarse-grained soils are: uniformly-graded or gap-graded soils are "Poorly" graded (SP or GP); 15% or more sand or gravel is termed "with sand" or "with gravel", 15% to 25% clay and silt is termed clayey and silty and any cobbles or boulders are termed "with cobbles" or "with boulders".

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL TYPES (Ref 1)

Boulders: particles of rock that will not pass a 12-inch screen.
Cobbles: particles of rock that will pass a 12-inch screen, but not a 3-inch sieve.
Gravel: particles of rock that will pass a 3-inch sieve, but not a #4 sieve.
Sand: particles of rock that will pass a #4 sieve, but not a #200 sieve.
Silt: soil that will pass a #200 sieve, that is non-plastic or very slightly plastic, and that exhibits little or no strength when dry.
Clay: soil that will pass a #200 sieve, that can be made to exhibit plasticity (putty-like properties) within a range of water contents, and that exhibits considerable strength when dry.

MOISTURE AND DENSITY

Moisture Condition: an observational term; dry, moist, wet, or saturated.
Moisture Content: the weight of water in a sample divided by the weight of dry soil in the soil sample, expressed as a percentage.
Dry Density: the pounds of dry soil in a cubic foot of soil.

DESCRIPTORS OF CONSISTENCY (Ref 3)

Liquid Limit: the water content at which a soil that will pass a #40 sieve is on the boundary between exhibiting liquid and plastic characteristics. The consistency feels like soft butter.
Plastic Limit: the water content at which a soil that will pass a #40 sieve is on the boundary between exhibiting plastic and semi-solid characteristics. The consistency feels like stiff putty.
Plasticity Index: the difference between the liquid limit and the plastic limit, i.e. the range in water contents over which the soil is in a plastic state.

MEASURES OF CONSISTENCY OF COHESIVE SOILS (CLAYS) (Ref's 2 & 3)

Very Soft	N=0-1*	C=0-250 psf	Squeezes between fingers
Soft	N=2-4	C=250-500 psf	Easily molded by finger pressure
Medium Stiff	N=5-8	C=500-1000 psf	Molded by strong finger pressure
Stiff	N=9-15	C=1000-2000 psf	Dented by strong finger pressure
Very stiff	N=16-30	C=2000-4000 psf	Dented slightly by finger pressure
Hard	N>30	C>4000 psf	Dented slightly by a pencil point

***N**=blows per foot in the Standard Penetration Test. In cohesive soils, with the 3-inch-diameter ring sampler, 140-pound weight, divide the blow count by 1.2 to get N (Ref 4).

MEASURES OF RELATIVE DENSITY OF GRANULAR SOILS (GRAVELS, SANDS, AND SILTS) (Ref's 2 & 3)

Very Loose	N=0-4**	RD=0-30	Easily push a ½-inch reinforcing rod by hand
Loose	N=5-10	RD=30-50	Push a ½-inch reinforcing rod by hand
Medium Dense	N=11-30	RD=50-70	Easily drive a ½-inch reinforcing rod
Dense	N=31-50	RD=70-90	Drive a ½-inch reinforcing rod 1 foot
Very Dense	N>50	RD=90-100	Drive a ½-inch reinforcing rod a few inches

****N**=Blows per foot in the Standard Penetration Test. In granular soils, with the 3-inch-diameter ring sampler, 140-pound weight, divide the blow count by 2 to get N (Ref 4).

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Ref 1: ASTM Designation: D 2487-06, **Standard Classification of Soils for Engineering Purposes** (Unified Soil Classification System).

Ref 2: Terzaghi, Karl, and Peck, Ralph B., **Soil Mechanics in Engineering Practice,** John Wiley & Sons, New York, 2nd Ed., 1967, pp. 30, 341, and 347.

Ref 3: Sowers, George F., **Introductory Soil Mechanics and Foundations: Geotechnical Engineering,** Macmillan Publishing Company, New York, 4th Ed., 1979, pp. 80, 81, and 312.

Ref 4: Lowe, John III, and Zaccheo, Phillip F., **Subsurface Explorations and Sampling,** Chapter 1 in "Foundation Engineering Handbook," Hsai-Yang Fang, Editor, Van Nostrand Reinhold Company, New York, 2nd Ed, 1991, p. 39.

SOIL TERMINOLOGY

GENERAL NOTES FOR BORING LOGS:

The boring logs are intended for use only in conjunction with the text, and for only the purposes the text outlines for our services. The Plate "Soil Terminology" defines common terms used on the boring logs.

The plate "Unified Soil Classification System," illustrates the method used to classify the soils. The soils were visually classified in the field; the classifications were modified by visual examination of samples in the laboratory, supported, where indicated on the logs, by tests of liquid limit, plasticity index, and/or gradation. In addition to the interpretations for sample classification, there are interpretations of where stratum changes occur between samples, where gradational changes substantively occur, and where minor changes within a stratum are significant enough to log.

There may be variations in subsurface conditions between borings. Soil characteristics change with variations in moisture content, with exchange of ions, with loosening and densifying, and for other reasons. Groundwater levels change with seasons, with pumping, from leaks, and for other reasons. Thus boring logs depict interpretations of subsurface conditions only at the locations indicated, and only on the date(s) noted.

SPECIAL FIELD NOTES FOR THIS REPORT:

1. The borings were drilled on December 7, 2017 and February 15, 2018, with a truck-mounted drilling rig using hollow stem augers. The Cone Penetration Tests (CPTs) were conducted on February 6, 2018, with a 25 ton rig. The borings and CPTs were sealed with cement after completion.

2. The monitoring wells were developed on February 14, 2018, with the aid of a truck-mounted drilling rig using hollow stem augers.

3. The boring, CPT and Monitoring Well locations were approximately located by using a tape measure and/or pacing from known points on the site, as shown on Plates 2 and 3.

4. The soils' Group Names [e.g. SANDY LEAN CLAY] and Group Symbols [e.g. (CL)] were determined or estimated per ASTM D 2487-06, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System, see Plate 5). Other soil engineering terms used on the boring log are defined on Plate 6, Soil Terminology.

5. The "Blow Count" Column on the boring logs indicates the number of blows required to drive the sampler below the bottom of the boring, and the blow counts are given for each 6 inches of sampler penetration. The samples from the boring were driven with a 140-pound hammer.

6. Groundwater was encountered in the borings drilled for this investigation as indicated in the boring logs. The depth to groundwater was measured at 13.7 and 13.2 feet below the ground surface in Monitoring Wells MW-1 and MW-2, respectively, on February 15, 2018.

7. The shear strength values indicated on the boring logs are peak strength values.

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Class II Base
	Lean clay with sand
	Sandy moderate plasticity clay
	Silty Sand with Gravel
	Silty sand
	Lean Clay
	Sandy silty clay
	Sandy lean clay
	Clayey sand
	Well graded gravel with sand
	Sandy lean clay with gravel
	High plasticity (fat) clay
	Silty & clayey sand
	Poorly graded sand
	Moderate plasticity clay with sand
	Sandy fat clay
Misc. Symbols	
	Boring continues
	Water first encountered during drilling
	Water level at completion of boring
Soil Samplers	
	Modified California Sampler: 2.375" ID by 3" OD, split-barrel sampler driven w/ 140-pound hammer falling 30 inches (ASTM D3550)
	Standard Penetration Test: 1 3/8" ID by 2" OD, split-spoon sampler driven with 140-pound hammer falling 30" (ASTM D 1586-11)
	Undisturbed, thin-wall Shelby tube (ASTM D 1587-00)
Line Types	
_____	Denotes a sudden, or well identified strata change
_ _ _	Denotes a gradual, or poorly identified strata change

KEY TO SYMBOLS

Symbol	Description
<u>Laboratory Data</u>	
DSX	Direct shear test performed on a sample at an artifically increased moisture content (ASTM D3080).
DS	Direct shear test performed on a sample at natural moisture content (ASTM D3080).
Consol	Consolidation test performed using incremental loading (ASTM D2435)
PI	Plasticity Index established per ASTM D4318 Test Method.
LL	Liquid Limit established per ASTM D4318 Test Method.
% Fines	Percent soil particles finer than a No. 200 sieve (ASTM C117).
bgs	Below the ground surface
Nat.	Natural Water Content

BORING LOG

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: Southwest portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

JOB NO.: DEROY-01-00
DATE DRILLED: December 7, 2017
ELEVATION: 85± feet
LOGGED BY: EW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Aggregate Base	
								CL	LEAN CLAY WITH SAND: dark gray, very stiff to hard, slightly moist, well-graded sand, trace gravel	Fill
DSX	500	26.1	1200	19.1	97	2	16, 18, 22			Environmental Sample % Swell=0.4
						4	16, 21, 24	CL/ CH	SANDY MODERATE PLASTICITY CLAY: dark gray with gray-brown and yellow-brown mottling, hard, slightly moist, fine sand, few medium to coarse sand, trace gravel	
						6	18, 26, 31	SM	SILTY SAND WITH GRAVEL: yellow-brown, dense, dry to slightly moist, fine to medium sand, few coarse sand, few rounded to subrounded gravel	Native Environmental Sample
						8	9, 12, 14	SM	SILTY SAND: yellow-brown to brown, medium dense, moist, fine sand, trace clay	
DSX	1200	24.8	1000	23.4	98	10	10, 9, 13	CL	LEAN CLAY: brown with trace gray, stiff, moist	Environmental Sample
						12				

BORING LOG

JOB NAME: Proposed Hotel Development

JOB NO.: DEROY-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
								CL-ML	SANDY SILTY CLAY: brown with trace gray, very stiff, moist, fine sand, trace medium to coarse sand	
DSX	1800	17.7	1260	19.3	108	14	10, 12, 16			
				22.7		16	11, 16, 19		...very moist, fine sand	% Fines=67 PI=5, LL=25 Environmental Sample
						18	11, 16, 22	SM	SILTY SAND: light brown and gray, medium dense, very moist, fine sand	
				17.6		20	9, 14, 15			% Fines=41 Non-plastic fines
DS	2500	Nat.	1320	27.7	92			CL	LEAN CLAY: mottled brown and blue-gray, stiff, moist ...blue-gray	Environmental Sample
						22		CL	LEAN CLAY WITH SAND: blue-gray, stiff, moist, fine sand	
						24	11, 11, 10, 6, 6, 6	CL	LEAN CLAY: dark blue-gray, stiff to very stiff, moist, trace fine sand ...few fine sand	
						26		CL	SANDY LEAN CLAY: gray with light brown mottling, stiff, moist, fine sand	Environmental Sample

BORING LOG

JOB NAME: Proposed Hotel Development

JOB NO.: DEROY-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
								CL	LEAN CLAY: mottled yellow-brown and blue-gray, very stiff, moist	
DS	2800	Nat.	1290	27.3	93	28 30 32	9, 15, 18, 8, 9, 12		...blue-gray with trace yellow-brown mottling, stiff, trace fine sand	Environmental Sample
								SC	CLAYEY SAND: blue-gray, medium dense, very moist, fine sand	
DS	3000	Nat.	2060	21.2 22.5	105	34 36	7, 8, 11			% Fines=40 PI=9, LL=25
								CL	LEAN CLAY: mottled yellow-brown and blue-gray, very stiff, moist, trace fine sand	
						38 40	11, 14, 24	SM	SILTY SAND: mottled yellow-brown and blue-gray, medium	

BORING LOG

JOB NAME: Proposed Hotel Development

JOB NO.: DEROY-01-00

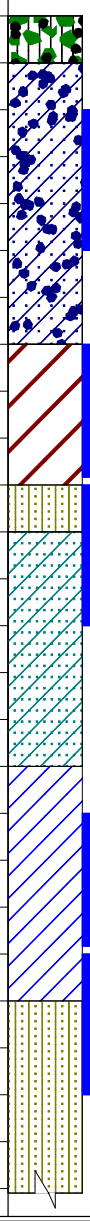
Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
									dense to dense, very moist, fine sand	
						42		GW	WELL-GRADED GRAVEL WITH SAND: gray-brown, very dense, wet, well-graded sand, subrounded fine gravel	
				8.6		44	30 35 42			% Fines=2
						46			The boring was terminated at approximately 45 feet bgs. Groundwater was encountered at approximately 16 feet bgs and measured at approximately 20 feet bgs after completion of the boring. Groundwater was subsequently measured at approximately 15½ feet bgs 3¾ hours after completion of the boring. The borehole was backfilled with cement grout.	
						48				
						50				
						52				
						54				

BORING LOG

Boring No. B-2
Page 1 of 4

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: Northeast portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

JOB NO.: DEROY-01-00
DATE DRILLED: December 7, 2017
ELEVATION: 83½± feet
LOGGED BY: EW



Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
									Aggregate Base	
								CL	SANDY LEAN CLAY WITH GRAVEL: dark gray and brown, hard, dry to slightly moist, well-graded sand, few gravel	Fill Environmental Sample
								CH	FAT CLAY: dark gray, very stiff, slightly moist, trace fine sand	Native
DSX	1000	32.9	920	24.9	84					PI=29, LL=55
								SM	SILTY SAND: brown and gray, medium dense, slightly moist, fine sand, trace clay	
								SC	CLAYEY SAND: mottled gray and yellow-brown, medium dense, moist, fine sand, trace sand size carbonate nodules	Environmental Sample
								CL	LEAN CLAY: mottled yellow-brown, orange- brown, and gray, stiff, moist, trace fine sand	
DSX	1200	25.6	920	24.5	98					
				26.6				SM	SANDY SILT: gray with trace light brown mottling, stiff, very moist, fine sand	% Fines=55 Environmental Sample

BORING LOG

JOB NAME: Proposed Hotel Development

JOB NO.: DEROY-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
								CL	LEAN CLAY: olive-gray, medium stiff, moist to very moist	
DSX	1800	22.5	1000	25.3	99	14	6, 5, 6	CL	SANDY LEAN CLAY: blue-gray with trace brown to orange-brown mottling, medium stiff, very moist, fine sand	
				24.2		16	8, 10, 14	SC	CLAYEY SAND: mottled light brown and gray, medium dense, very moist to wet	% Fines=71 PI=11, LL=27 Environmental Sample
						18	7, 12, 25	SC-SM	SILTY CLAYEY SAND: yellow-brown with blue-gray mottling, medium dense, very moist, fine sand	
				14.8		20	17, 20, 28		...wet	% Fines=43 PI=5, LL=24
DSX	2500	18.8	2620	19.0	109			SC	CLAYEY SAND: light brown with blue-gray mottling, dense, moist, fine sand	Environmental Sample
						22		CL	LEAN CLAY: dark blue-gray, very stiff, moist, trace fine sand	
DS	2800	Nat.	1260	28.5	94	24	8, 14, 17			
						26	9, 12, 13	CL	LEAN CLAY WITH SAND:	Environmental Sample

BORING LOG

JOB NAME: Proposed Hotel Development

JOB NO.: DEROY-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
									blue-gray with trace orange- to yellow-brown mottling, stiff, moist, fine sand	
						28		CL	LEAN CLAY: blue-gray with trace yellow- brown mottling, stiff, moist	
DS	3100	Nat.	1150	27.3	94		8, 10, 12			
						30	8, 12, 13		...mottled olive- to orange-brown and blue-gray with trace dark gray, very stiff	Environmental Sample
						32				
						34	9, 13, 14		...olive-gray with orange-brown mottling, very stiff, moist, trace fine sand	
DS	3500	Nat.	1580	28.9	91					
						36				
						38		CL	LEAN CLAY WITH SAND: olive- to yellow-brown with blue-gray mottling, stiff, moist, fine sand	
						40	8, 7, 13			

BORING LOG

JOB NAME: Proposed Hotel Development

JOB NO.: DEROY-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						42				
						44	8, 9, 13	GW	WELL-GRADED GRAVEL WITH SAND: gray-brown, medium dense, wet, well-graded sand	
						46	12, 16, 22	SP	POORLY-GRADED SAND: dark gray to blue-gray, dense, very moist, fine to medium sand	
								GW	WELL-GRADED GRAVEL WITH SAND: brown to gray-brown, dense, wet, well-graded sand	
						48			The boring was terminated at approximately 46½ feet bgs. Groundwater was encountered at approximately 15 feet bgs and measured at approximately 21 feet bgs after completion of the boring. The borehole was backfilled with cement grout.	
						50				
						52				
						54				

BORING LOG

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: Northeast portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

JOB NO.: DEROY-01-00
DATE DRILLED: February 15, 2018
ELEVATION: 83½± feet
LOGGED BY: EW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Aggregate Base	
								SC	CLAYEY SAND WITH GRAVEL: brown, dense, moist, well-graded sand, few gravel	Fill
						2	22 35			Environmental Sample
								CH	FAT CLAY: dark gray, moist	Native
						4				
								SC-SM	SILTY AND CLAYEY SAND: yellow brown, moist	
						6				
						8				
						10		CL	LEAN CLAY: olive brown, moist	
						12				

BORING LOG

Boring No. B-2B
Page 2 of 3

JOB NAME: Proposed Hotel Development

JOB NO.: DEROY-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						14			...stiff, color change to gray brown,	
						16				
						18				
						20				
						22	6 7 8		...color change to dark blue gray with sand, wet	
						24				
						26				

BORING LOG

JOB NAME: Proposed Hotel Development

JOB NO.: DEROY-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						28 30 32	5 6 8		...blue-gray with orange-brown mottling, stiff, moist	25 psi 100 psi
						34 36 38 40			Boring was terminated at 32½' bgs. Groundwater was encountered at approximately 14' bgs. The borehole was backfilled with cement grout.	

BORING LOG

Boring No. EB-1
Page 1 of 1

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: Northeast portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

JOB NO.: DEROY-01-00
DATE DRILLED: February 15, 2018
ELEVATION: 84± feet
LOGGED BY: EW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Aggregate Base	
								SM	SILTY SAND: yellow brown	Fill
						2	10 9 9	CL	SANDY LEAN CLAY: dark gray, stiff, moist, well-graded sand, trace fine-grained gravel	Environmental Sample
						4			Boring was terminated at 3½' bgs. Groundwater was not encountered. The borehole was backfilled with cement grout.	
						6				
						8				
						10				
						12				

BORING LOG

Boring No. EB-2
Page 1 of 1

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: Southeast portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

JOB NO.: DEROY-01-00
DATE DRILLED: February 15, 2018
ELEVATION: 84± feet
LOGGED BY: EW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Aggregate Base	
								CL	SANDY LEAN CLAY: brown and gray brown, stiff, moist, well-graded sand, trace gravel	Fill
						2	7, 10, 11			Environmental Sample
						4			Boring was terminated at 3½' bgs. Groundwater was not encountered. The borehole was backfilled with cement grout.	
						6				
						8				
						10				
						12				

BORING LOG

Boring No. EB-3
Page 1 of 1

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: North-central portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

JOB NO.: DEROY-01-00
DATE DRILLED: February 15, 2018
ELEVATION: 83½± feet
LOGGED BY: EW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Aggregate Base	
								CL/ CH	MODERATE PLASTICITY CLAY WITH SAND: dark gray, stiff, moist, well-graded sand, trace gravel	Fill
						2	5 7 9			Environmental Sample
						4			Boring was terminated at 4' bgs. Groundwater was not encountered. The borehole was backfilled with cement grout.	
						6				
						8				
						10				
						12				

BORING LOG

Boring No. EB-4
Page 1 of 1

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: South-central portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

JOB NO.: DEROY-01-00
DATE DRILLED: February 15, 2018
ELEVATION: 84½± feet
LOGGED BY: EW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Aggregate Base	
								CH	FAT CLAY with sand: dark gray, stiff, moist, well-graded sand	Fill
						2	4 7 8			Environmental Sample
						4			Boring was terminated at 3½' bgs. Groundwater was not encountered. The borehole was backfilled with cement grout.	
						6				
						8				
						10				
						12				

BORING LOG

Boring No. EB-5
Page 1 of 1

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: West-central portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

JOB NO.: DEROY-01-00
DATE DRILLED: February 15, 2018
ELEVATION: 85± feet
LOGGED BY: EW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Aggregate Base	
								CH	FAT CLAY with sand: dark gray, stiff, moist, well-graded sand, few gravel	Fill
						2	11 13 3			Environmental Sample
						4			Boring was terminated at 3½' bgs. Groundwater was not encountered. The borehole was backfilled with cement grout.	
						6				
						8				
						10				
						12				

BORING LOG

Boring No. EB-6
Page 1 of 1

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: Northwest portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

JOB NO.: DEROY-01-00
DATE DRILLED: February 15, 2018
ELEVATION: 85± feet
LOGGED BY: EW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Aggregate Base	
								CH	SANDY FAT CLAY: dark gray, very stiff, moist, well-graded sand, few gravel	Fill
						2	9 13 12			Environmental Sample
									Boring was terminated at 3' bgs. Groundwater was not encountered. The borehole was backfilled with cement grout.	
						4				
						6				
						8				
						10				
						12				

BORING LOG

Boring No. EB-7
Page 1 of 1

JOB NAME: Proposed Hotel Development
CLIENT: KADE Development
LOCATION: Southwest portion of property
DRILLER: Exploration Geoservices, Inc.
DRILL METHOD: Truck mounted drilling rig w/ 8"-diameter hollow stem augers

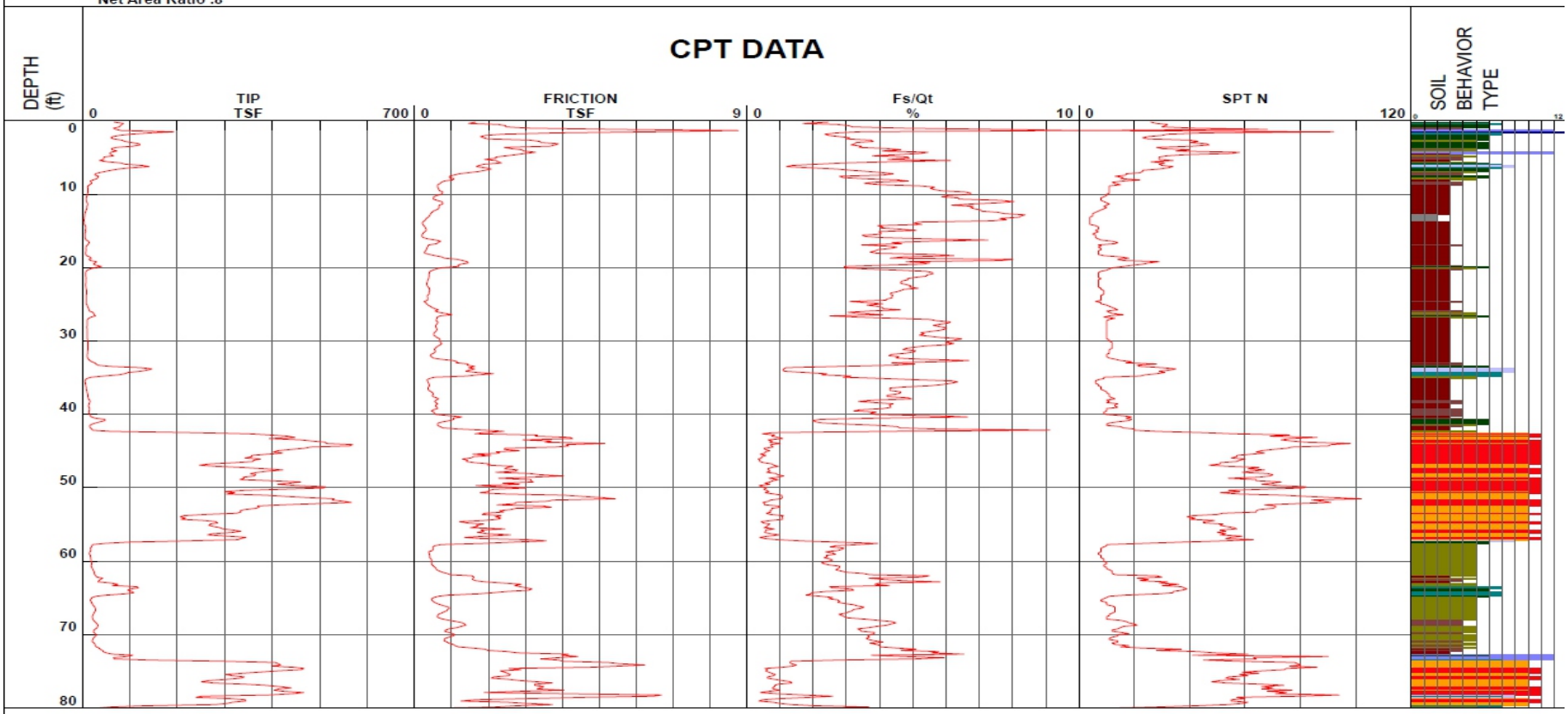
JOB NO.: DEROY-01-00
DATE DRILLED: February 15, 2018
ELEVATION: 85± feet
LOGGED BY: EW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Aggregate Base	
								CH	SANDY FAT CLAY: dark gray, very stiff, moist, well-graded sand, few gravel	Fill
						2	6 8 10			Environmental Sample
						4			Boring was terminated at 3½' bgs. Groundwater was not encountered. The borehole was backfilled with cement grout.	
						6				
						8				
						10				
						12				

BAGG Engineers

Project	Proposed Hotel Development	Operator	BH-RB	Filename	SDF(024).cpt
Job Number	DEROY-01-00	Cone Number	DDG1418	GPS	
Hole Number	CPT-01	Date and Time	2/6/2018 6:08:23 PM	Maximum Depth	80.54 ft
EST GW Depth During Test	13.00 ft				

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAGG ENGINEERS

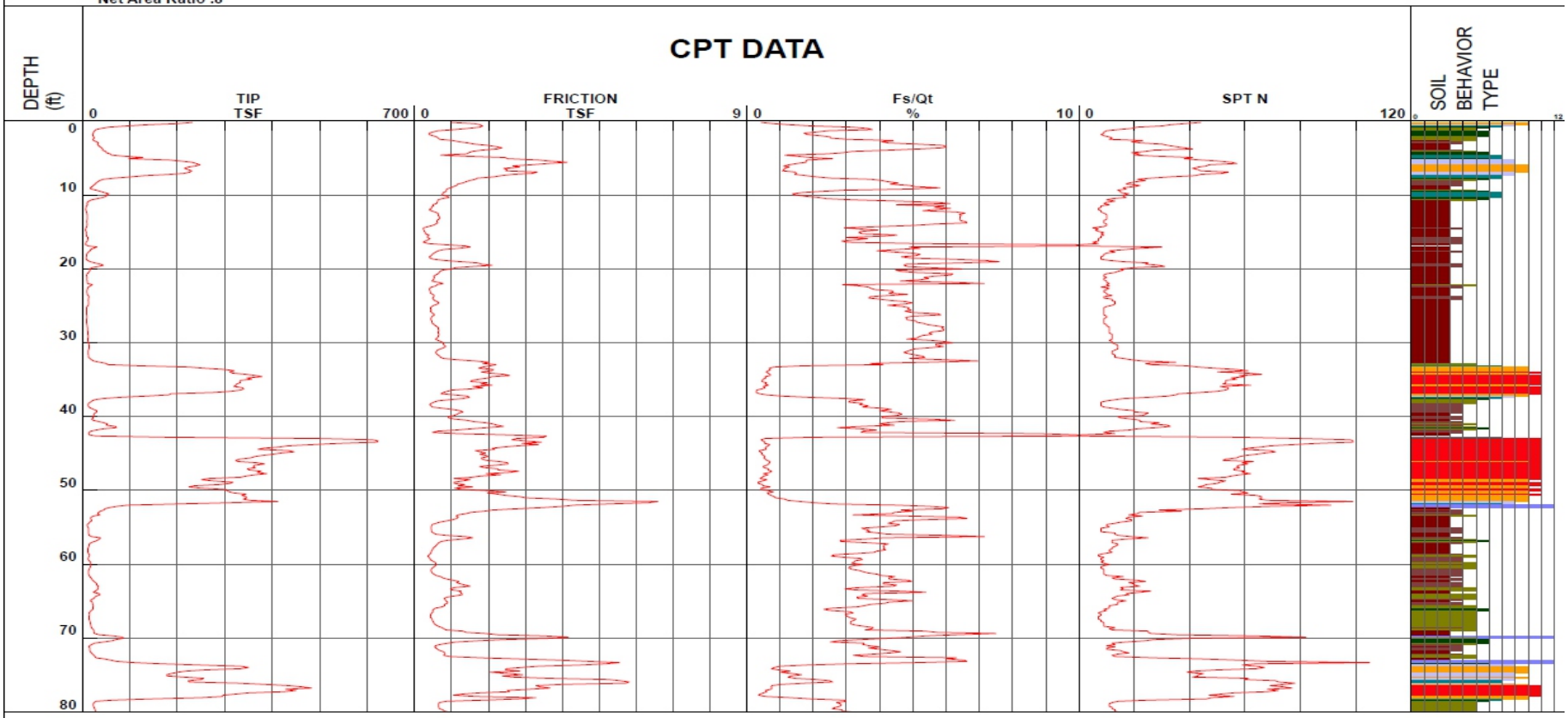
CONE PENETROMETER TEST RESULTS CPT-1

DATE:	JOB NUMBER:	PLATE
March, 2019	DEROY-01-00	22

BAGG Engineers

Project	Proposed Hotel Development	Operator	BH-RB	Filename	SDF(022).cpt
Job Number	DEROY-01-00	Cone Number	DDG1418	GPS	
Hole Number	CPT-02	Date and Time	2/6/2018 4:56:09 PM	Maximum Depth	80.54 ft
EST GW Depth During Test		13.00 ft			

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAGG ENGINEERS

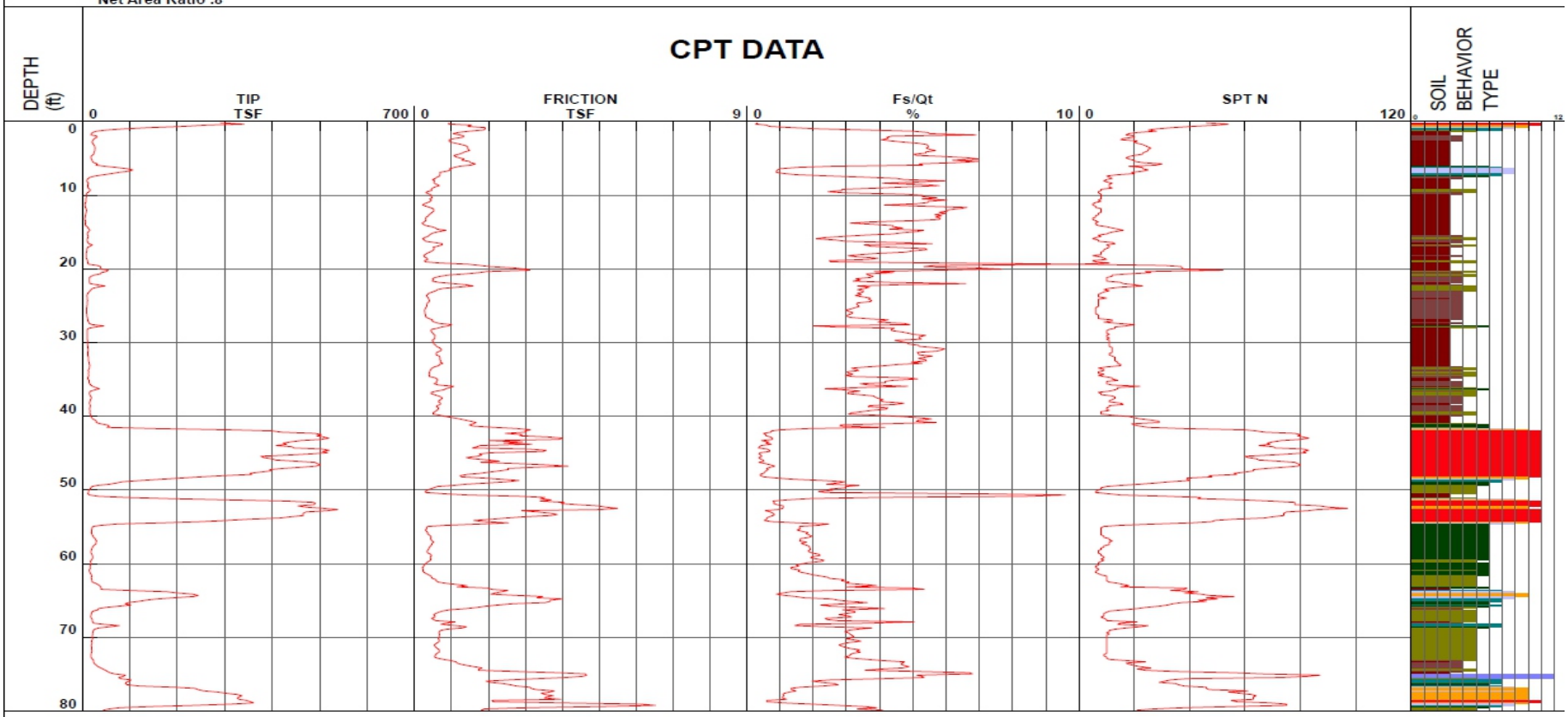
CONE PENETROMETER TEST RESULTS CPT-2

DATE:	JOB NUMBER:	PLATE
March, 2019	DEROY-01-00	23

BAGG Engineers

Project	Proposed Hotel Development	Operator	BH-RB	Filename	SDF(021).cpt
Job Number	DEROY-01-00	Cone Number	DDG1418	GPS	
Hole Number	CPT-03	Date and Time	2/6/2018 3:44:47 PM	Maximum Depth	80.54 ft
EST GW Depth During Test	13.00 ft				

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAGG ENGINEERS

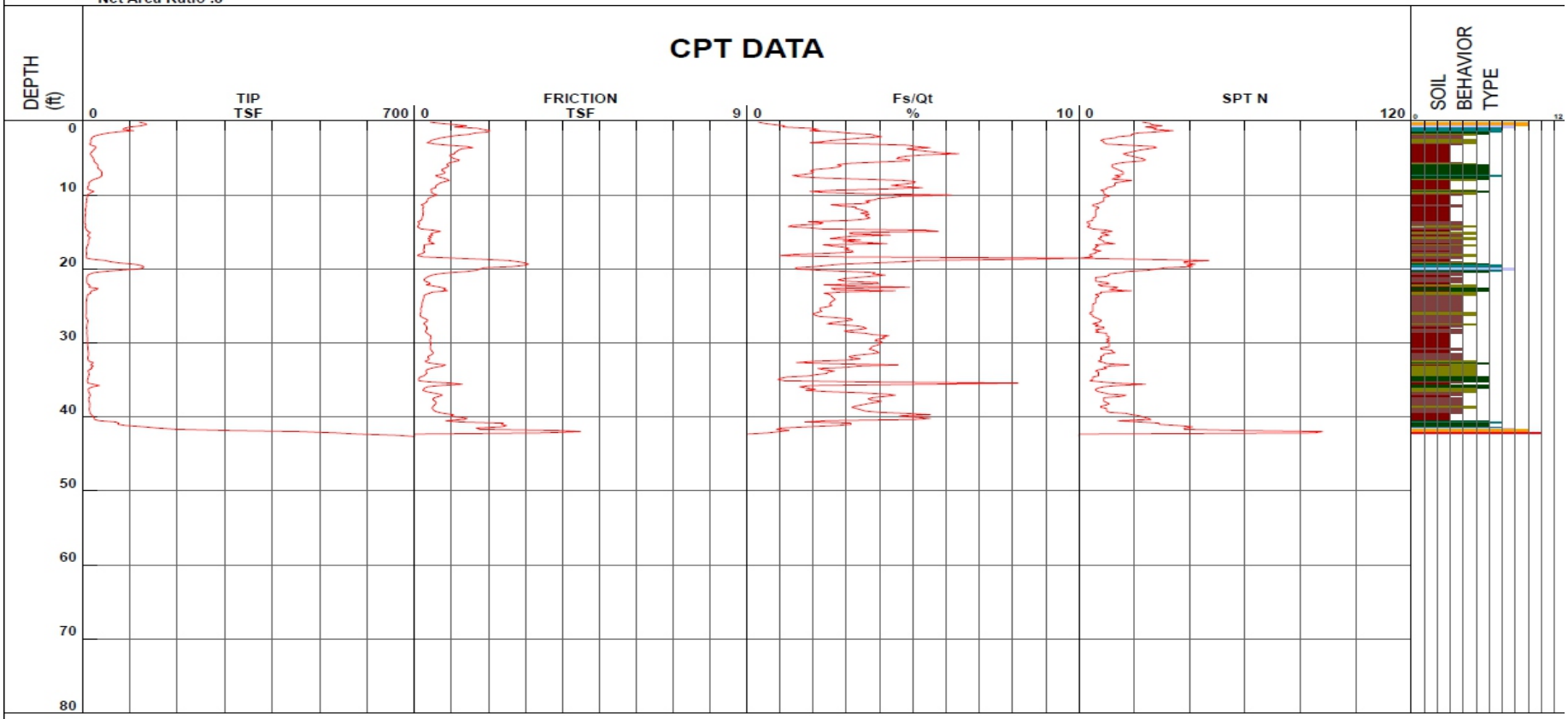
CONE PENETROMETER TEST RESULTS CPT-3

DATE:	JOB NUMBER:	PLATE
March, 2019	DEROY-01-00	24

BAGG Engineers

Project	Proposed Hotel Development	Operator	BH-RB	Filename	SDF(020).cpt
Job Number	DEROY-01-00	Cone Number	DDG1418	GPS	
Hole Number	CPT-04	Date and Time	2/6/2018 2:52:50 PM	Maximum Depth	42.65 ft
EST GW Depth During Test		11.50 ft			

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

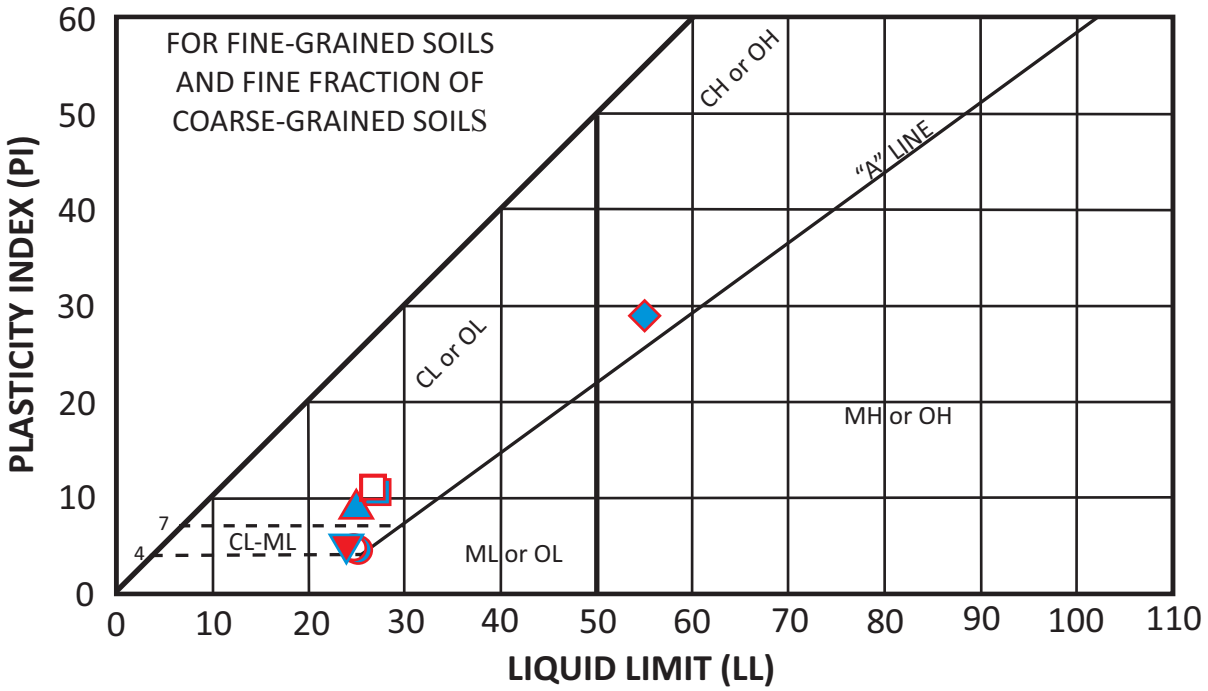
GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAGG ENGINEERS

CONE PENETROMETER TEST RESULTS CPT-4

DATE:	JOB NUMBER:	PLATE
March, 2019	DEROY-01-00	25

PLASTICITY CHART



SYMBOL	SAMPLE SOURCE	DEPTH (FEET)	NATURAL WATER CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	SOIL DESCRIPTION
○	Boring B-1	15½	22.7	25	20	5	Sandy Silty Clay (CL-ML)
	Boring B-1	19½	17.6		Non-plastic fines		Silty Sand (SM)
▲	Boring B-1	34½	22.5	25	16	9	Clayey Sand (SC)
◆	Boring B-2	4½	24.9	55	26	29	Fat Clay (CH)
□	Boring B-2	15½	24.2	27	16	11	Sandy Lean Clay (CL)
▼	Boring B-2	19½	14.8	24	19	5	Silty Clayey Sand (SC-SM)

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

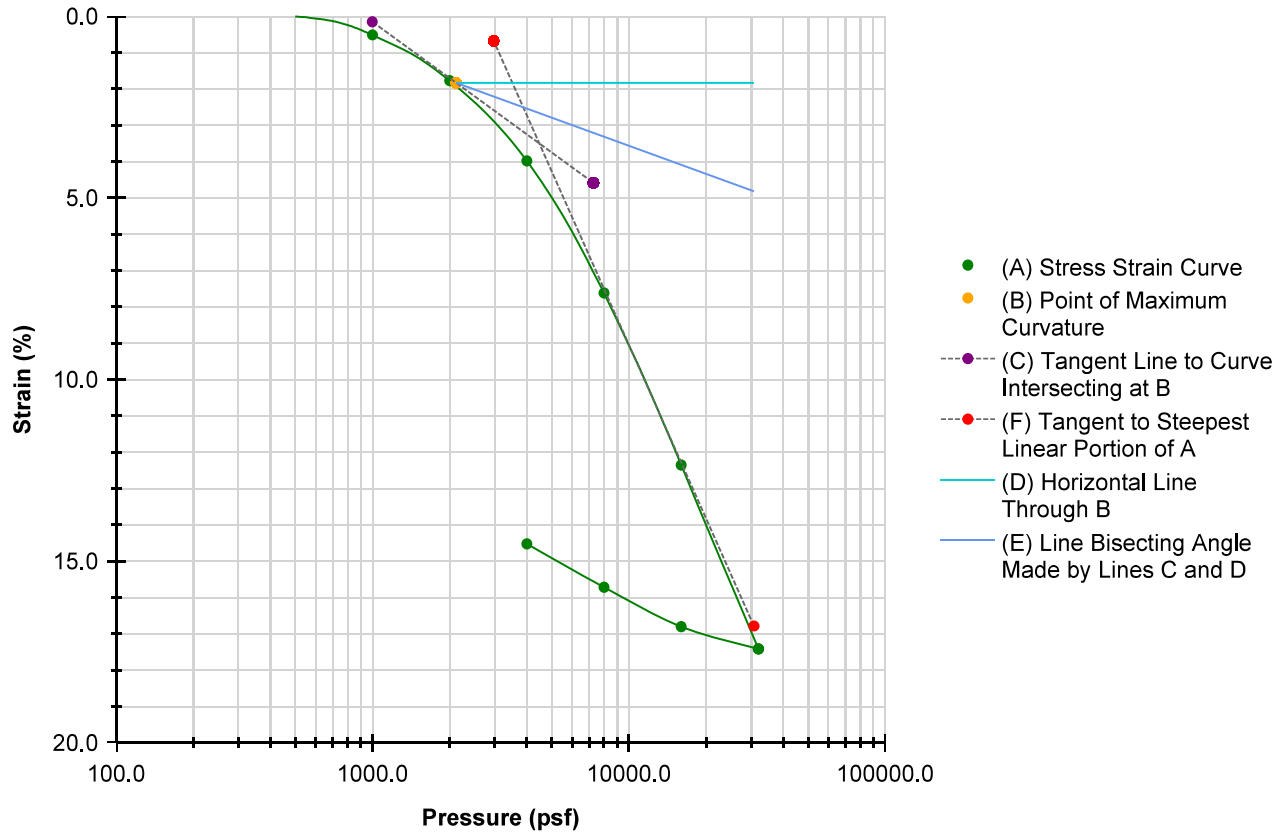
ATTERBERG LIMITS

DATE:	JOB NUMBER:	PLATE
March, 2019	DEROY-01-00	26

BVGG ENGINEERS

Percent Strain [Log]

ASTM D2435



Preconsolidation Stress (psf)	3871.58	**Cc** 0.334	**Cr** 0.060

	BEFORE	AFTER			
			Liquid Limits	0	**Test Date** 2/21/2018
Moisture (%)	34.3	26.4	**Plastic Limits**	0	
Dry Density (pcf)	85.7	100.9			
Saturation (%)	91.8	100.0			
Void Ratio	1.06	0.75	**Specific Gravity**	2.823	ASSUMED

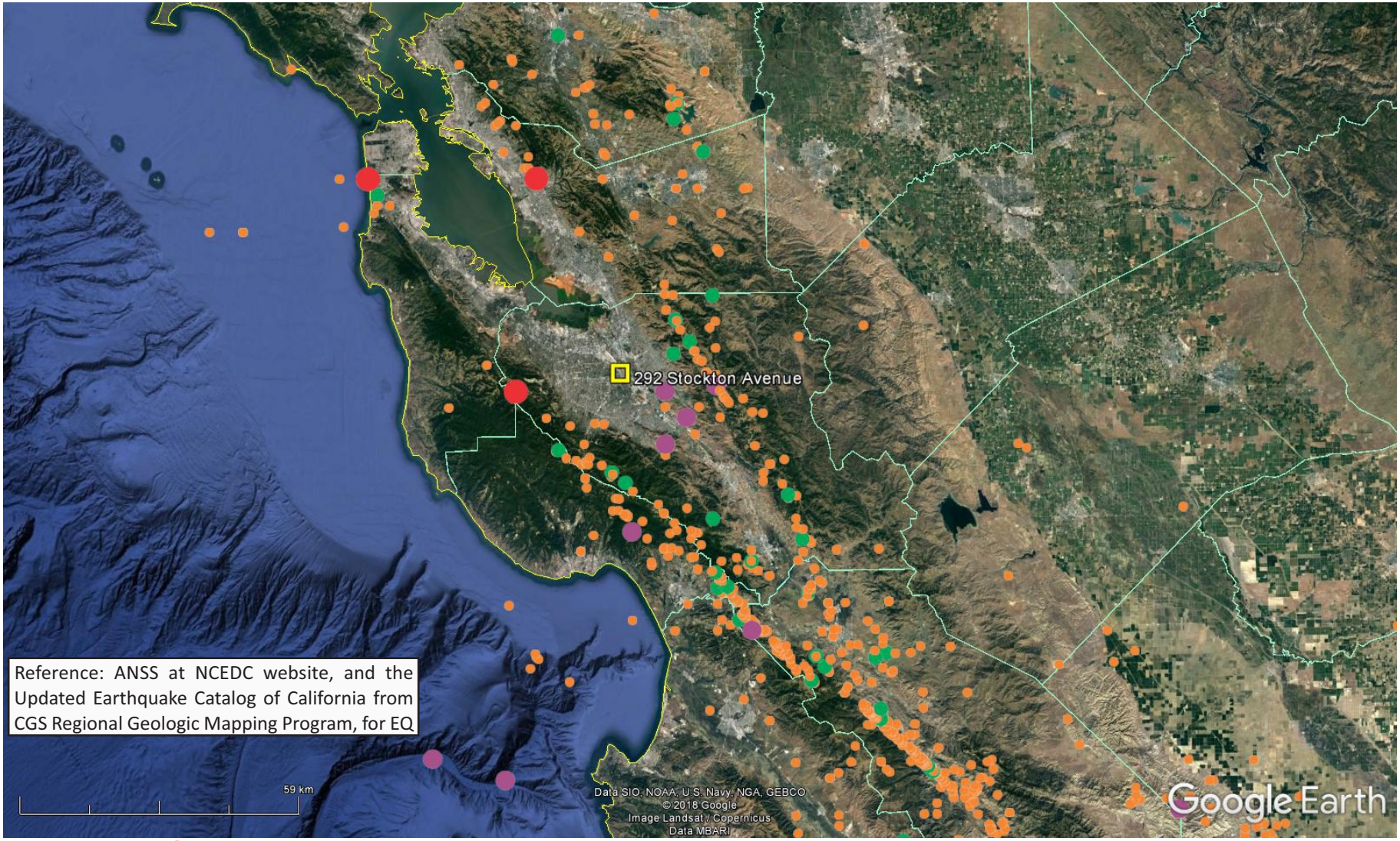
Sample Description	MOIST GREY AND YELLOW BROWN CLAY			
Project Number	DEROY-01-00	**Depth (ft)**	30-31.5	**Remarks**
Sample Number	4	**Boring Number**	B-2B	
Project	PROP. HOTEL DEVELOPMENT			
Client				
Location	292 STOCKTON AVE			

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

CONSOLIDATION TEST DATA

DATE:	JOB NUMBER:	PLATE
March, 2019	DEROY-01-00	27

BYGG ENGINEERS



LEGEND: M = 7.99 to 7.00 M = 6.99 to 6.00 M = 5.99 to 5.00 M = 4.99 to 4.00

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAYGG ENGINEERS

MAP OF HISTORIC EARTHQUAKES

DATE:	JOB NUMBER:	PLATE
March, 2019	DEROY-01-00	28

Historic Earthquakes in Vicinity of Project Site

($M_w \geq 5.0$ & Distance ≤ 50 km, since 1769)

Date	Epicenter Latitude	Epicenter Longitude	Distance to site (km)	Depth (km)	Magnitude	Type
8/3/1903	37.3	-121.8	10		6.2	
1/02/1891	37.3	-121.8	10		5.8	
9/5/1955	37.37	-121.78	12		5.5	ML
10/08/1865	37.2	-121.9	15		6.5	
10/31/2007	37.4335	-121.7743	16	9.74	5.45	Mw
6/13/1988	37.3927	-121.7415	16	9.09	5.3	ML
7/1/1911	37.25	-121.75	17		6.6	Unk
10/09/1781	37.2	-122	17		5.5	
6/11/1903	37.2	-121.8	18		6.1	
4/24/1984	37.3097	-121.6788	20	8.19	6.2	ML
11/26/1858	37.5	-121.8	21		6.2	
8/8/1989	37.1482	-121.9268	21	13.41	5.4	ML
10/18/1989	37.1902	-122.052	21	15.31	5.1	ML
6/00/1838	37.3	-122.15	22		7.4	
6/27/1988	37.1283	-121.895	23	12.63	5.3	ML
3/05/1864	37.5528	-121.855	25		6	
3/31/1986	37.4792	-121.6867	25	8.5	5.7	ML
6/27/1882	37.1	-121.9	26		5.8	
2/17/1870	37.1	-122	27		5.9	
5/24/1865	37.1	-121.8	28		5.9	
5/21/1864	37.6	-121.9	30		5.8	
2/26/1864	37.2	-121.6	31		6.1	
10/18/1989	37.0362	-121.8798	33	17.21	6.9	Unk
11/16/1964	37.06	-121.69	36		5	ML
2/15/1856	37.5	-122.3	39		5.9	
3/26/1866	37	-121.7	41		5.8	
8/6/1979	37.1038	-121.5123	43	8.31	5.8	ML
10/21/1868	37.7	-122.1	44		7	
9/00/1825	37.1	-122.3	44		5.5	
7/04/1861	37.75	-121.95	46		5.8	
3/11/1910	36.95	-121.7	46		5.8	
4/18/1990	36.9588	-121.6845	46	6.64	5.1	ML
3/26/1884	37	-122.25	48		5.9	
3/2/1959	36.98	-121.6	48		5.3	ML
1/27/1980	37.749	-121.7063	49	14.17	5.4	ML
4/25/1954	36.93	-121.68	49		5.3	ML
4/18/1990	36.9323	-121.6568	50	5.49	5.4	ML

1.) Data from the ANSS Composite Earthquake Catalog, - 1911 to Present, & CGS Updated Earthquake Catalog - prior to 1911

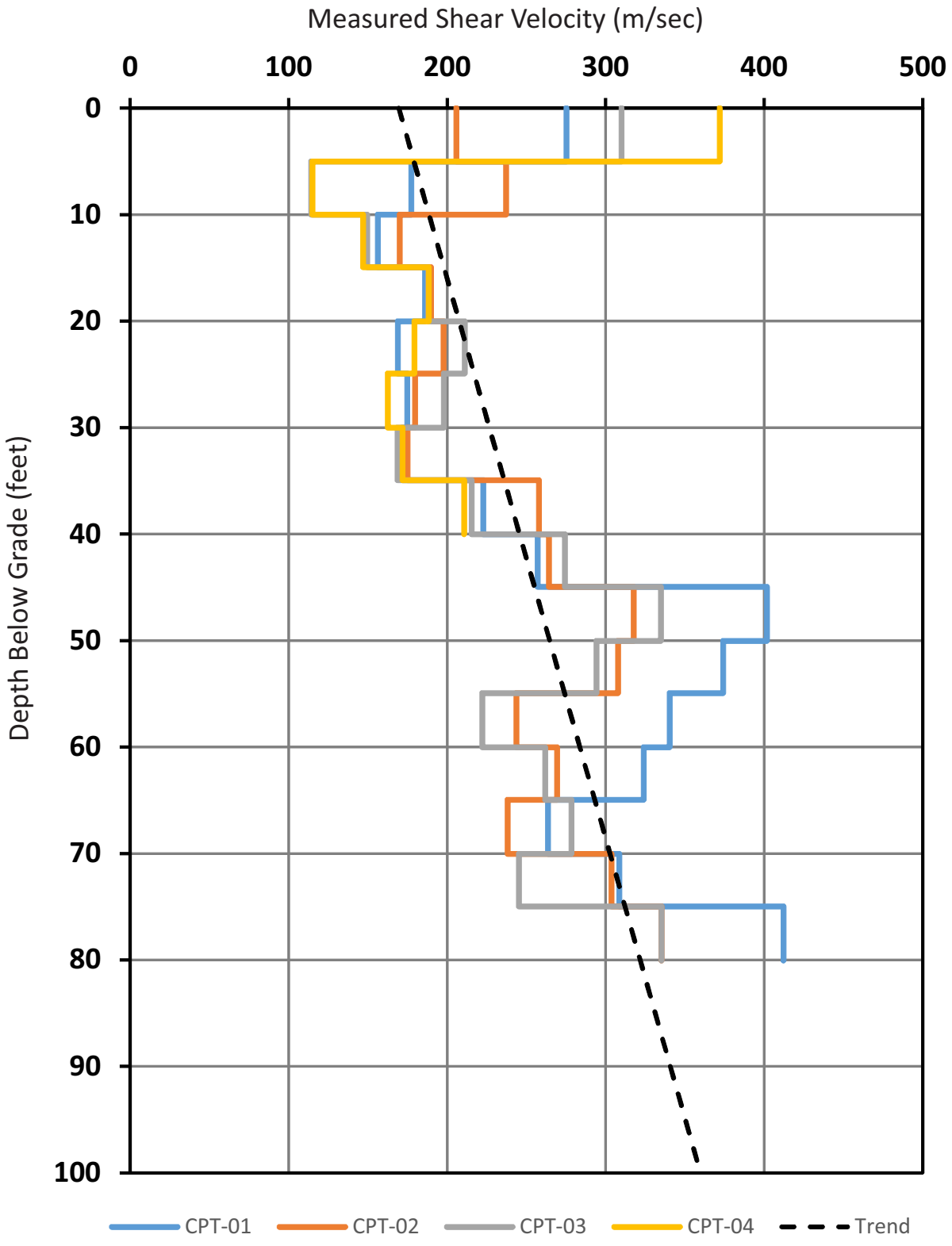
2.) ML = Local Magnitude; Mw = Moment Magnitude; Unk = Unknown, blank = not reported.

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

TABLE OF HISTORICAL EARTHQUAKES

DATE:	JOB NUMBER:	PLATE:
March, 2019	DEROY-01-00	29

BAGG ENGINEERS

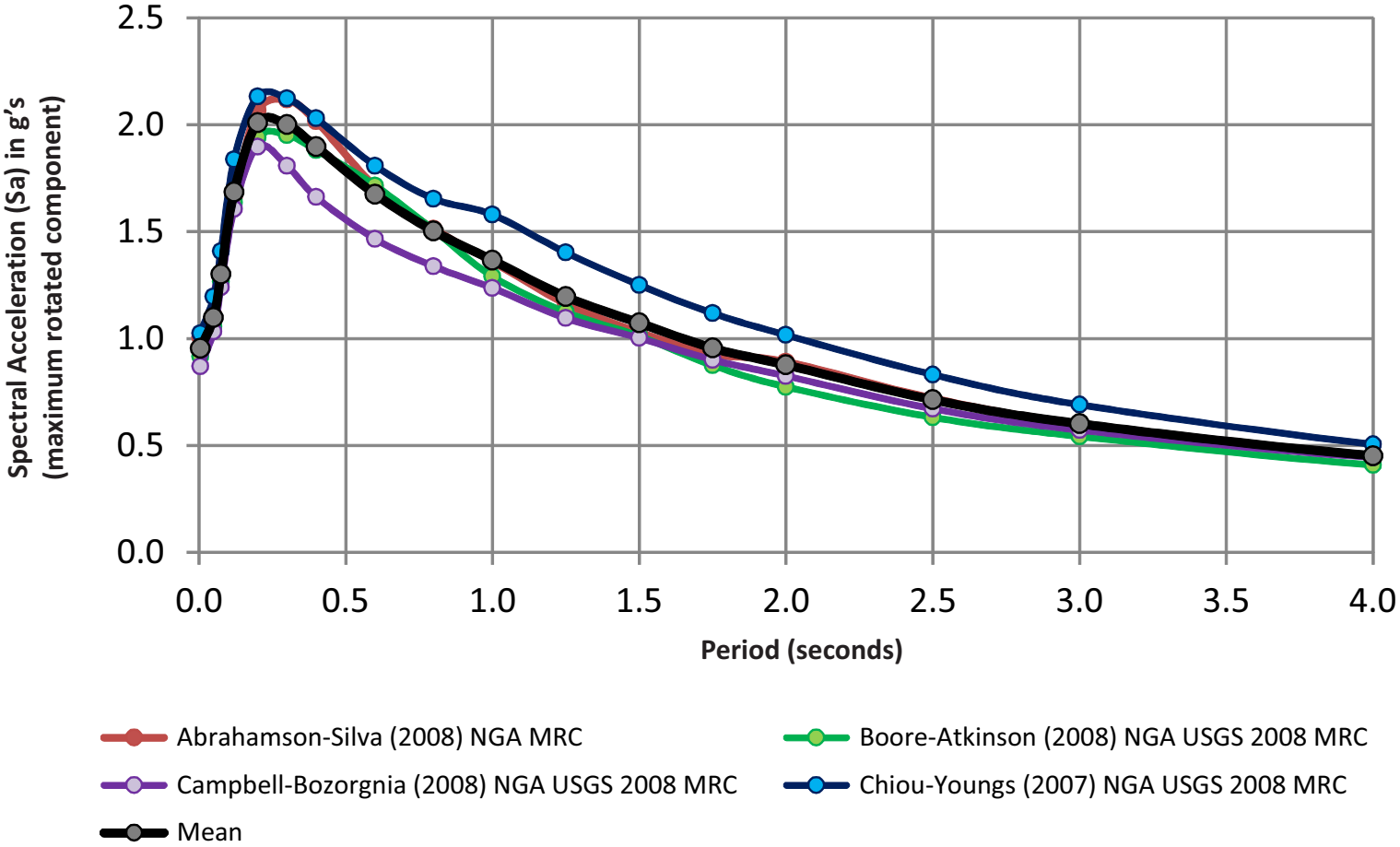


GEOTECHNICAL ENGINEERING INVESTIGATION PROPOSED HOTEL DEVELOPMENT 292 STOCKTON AVENUE SAN JOSE, CALIFORNIA APN: 259-28-028	SHEAR VELOCITY MEASUREMENTS		
	DATE: March, 2019	JOB NUMBER: DEROY-01-00	PLATE: 30

BVGG ENGINEERS

Probabilistic Spectra

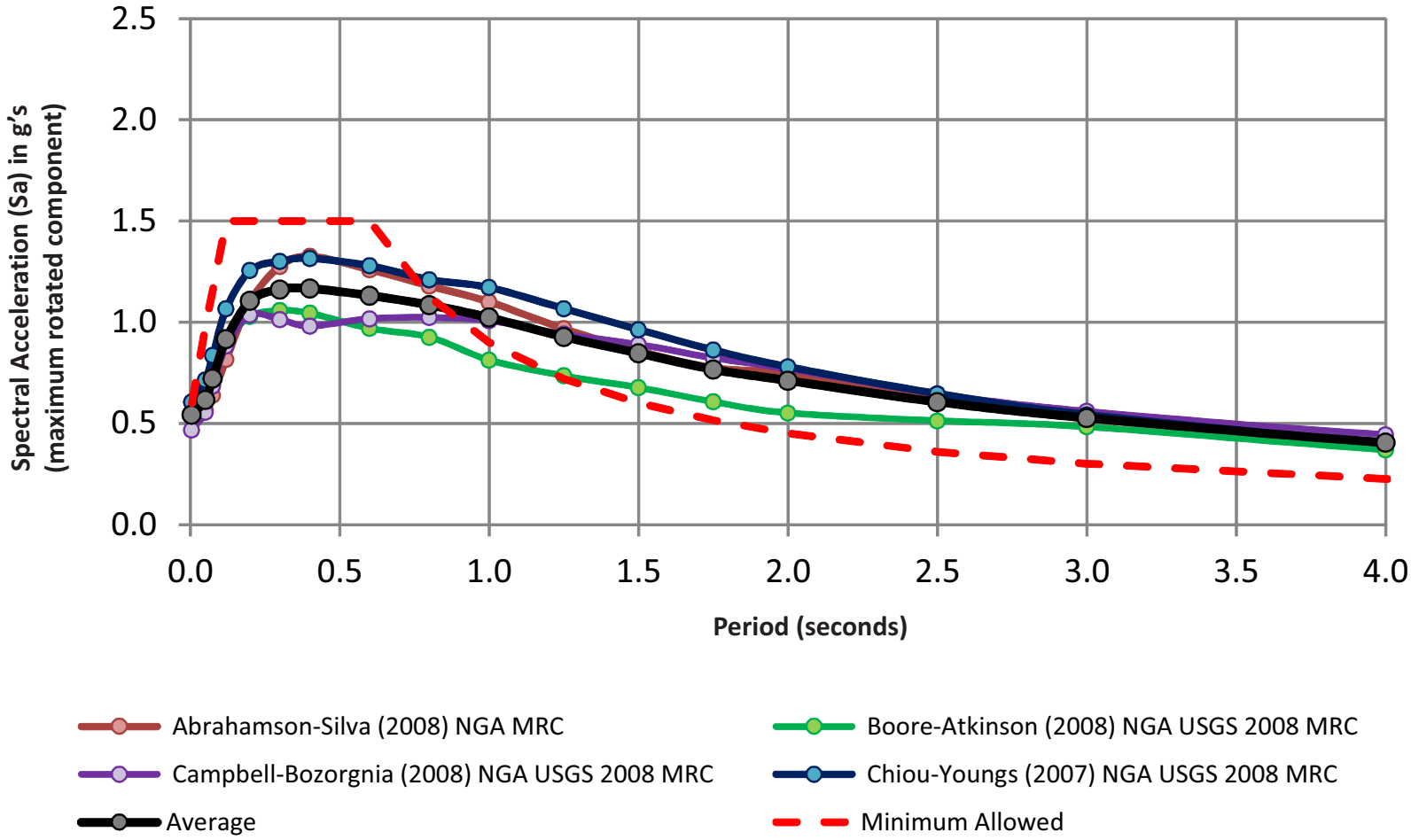
(2% in 50 yrs)



GEOTECHNICAL ENGINEERING INVESTIGATION PROPOSED HOTEL DEVELOPMENT 292 STOCKTON AVENUE SAN JOSE, CALIFORNIA APN: 259-28-028	BAGG ENGINEERS	PROBABILISTIC RESPONSE SPECTRA		
		DATE: March, 2019	JOB NUMBER: DEROY-01-00	PLATE: 31

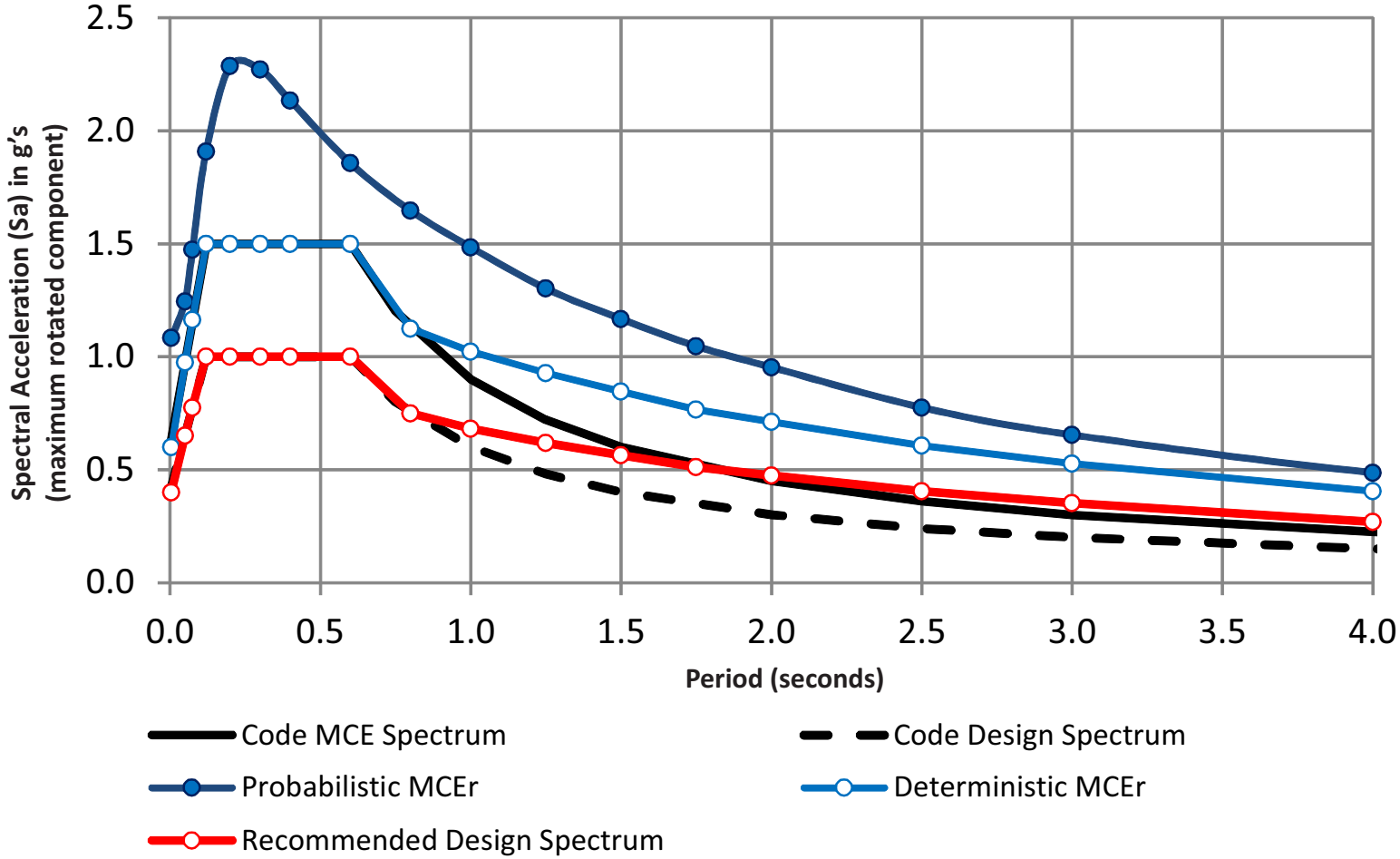
Deterministic Spectra

(84th percentile of max. rotated component)



GEOTECHNICAL ENGINEERING INVESTIGATION PROPOSED HOTEL DEVELOPMENT 292 STOCKTON AVENUE SAN JOSE, CALIFORNIA APN: 259-28-028	BAGG ENGINEERS	DETERMINISTIC RESPONSE SPECTRA		
		DATE: March, 2019	JOB NUMBER: DEROY-01-00	PLATE: 32

Design Response Spectra



GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAGG ENGINEERS

DESIGN RESPONSE SPECTRA

DATE:	JOB NUMBER:	PLATE:
March, 2019	DEROY-01-00	33

Period (seconds)	Spectral Acceleration (Sa) in g's: Four NGA Relationships w/ Max. Rotated Component: Probabilistic (2% in 50 yrs) Average	Probabilistic (2% in 50 yrs) MCE_R	Deterministic (84th percentile) Average	Deterministic (84th percentile) Lower Limit	Site Specific MCE_R	80% of Code Design	Recommended Design Spectrum
PGA	0.96	1.08	0.54	0.60	0.60	0.32	0.40
0.05	1.10	1.25	0.62	0.98	0.98	0.52	0.65
0.075	1.30	1.47	0.72	1.16	1.16	0.62	0.78
0.12	1.69	1.91	0.92	1.50	1.50	0.80	1.00
0.2	2.02	2.29	1.11	1.50	1.50	0.80	1.00
0.3	2.02	2.27	1.16	1.50	1.50	0.80	1.00
0.4	1.91	2.13	1.17	1.50	1.50	0.80	1.00
0.6	1.68	1.86	1.13	1.50	1.50	0.80	1.00
0.8	1.51	1.65	1.08	1.13	1.13	0.60	0.75
1	1.38	1.48	1.02	0.90	1.02	0.48	0.68
1.25	1.21	1.30	0.93	0.72	0.93	0.38	0.62
1.5	1.09	1.17	0.85	0.60	0.85	0.32	0.56
1.75	0.97	1.05	0.77	0.51	0.77	0.27	0.51
2	0.89	0.95	0.71	0.45	0.71	0.24	0.47
2.5	0.72	0.78	0.61	0.36	0.61	0.19	0.40
3	0.61	0.65	0.53	0.30	0.53	0.16	0.35
4	0.45	0.49	0.40	0.23	0.40	0.12	0.27
5	0.36	0.39	0.32	0.18	0.32	0.10	0.21

S_{DS} = 1.00 S_{D1} = 0.95

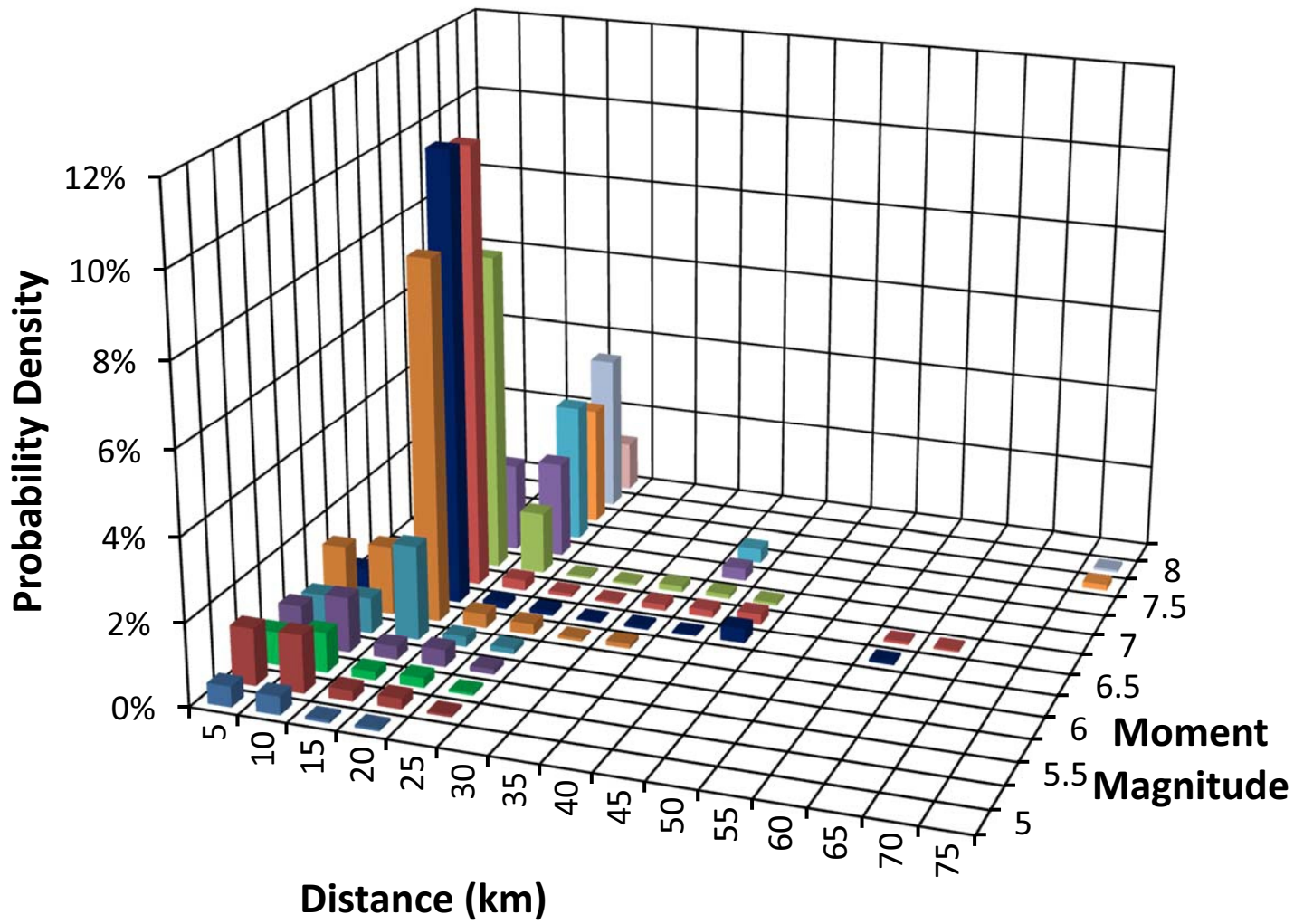
GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAGG ENGINEERS

DESIGN RESPONSE SPECTRA DATA

DATE:	JOB NUMBER:	PLATE:
March, 2019	DEROY-01-00	34

Hazard Contributrion to PGA = 0.6g



GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAYGG ENGINEERS

HAZARD DEAGGREGATION

DATE:	JOB NUMBER:	PLATE:
March, 2019	DEROY-01-00	35

COOPER TESTING LABORATORY

Corrosivity Tests Summary

CTL # 011-822 **Date:** 6/11/2018 **Tested By:** PJ **Checked:** PJ
Client: BAGG **Project:** Hotel Development **Proj. No:** DEROY-01-00
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP (Redox)		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%				Qualitative	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		E_H (mv)	At Test	by Lead	%	
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
B-2	3A	5½	-	-	1,580	12	133	0.0133	7.9	526	23	Negative	16.7	Olive Gray Clayey SAND

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOTEL DEVELOPMENT
292 STOCKTON AVENUE
SAN JOSE, CALIFORNIA
APN: 259-28-028

BAGG ENGINEERS

CORROSION TEST RESULTS

DATE:	JOB NUMBER:	PLATE:
March, 2019	DEROY-01-00	36

Appendix A

Analytical Reports by McCampbell Analytical

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1712382

Report Created for: BAGG Engineers

138 Charcot Ave
San Jose, CA 95131

Project Contact: Evan Wolf
Project P.O.:
Project: DEROY-01-00; Environmental Characterization in situ soils
Project Received: 12/08/2017

Analytical Report reviewed & approved for release on 12/21/2017 by:

Christine Askari
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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"

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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: BAGG Engineers
Project: DEROY-01-00; Environmental Characterization in situ soils
WorkOrder: 1712382

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)

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Glossary of Terms & Qualifier Definitions

Client: BAGG Engineers
Project: DEROY-01-00; Environmental Characterization in situ soils
WorkOrder: 1712382

Analytical Qualifiers

S	Surrogate spike recovery outside accepted recovery limits
c2	Surrogate recovery outside of the control limits due to matrix interference.

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.
F2	LCS/LCSD recovery and/or RPD is out of acceptance criteria.
F3	The surrogate standard recovery and/or RPD is outside of acceptance limits.
F10	MS/MSD outside control limits. Physical or chemical interferences exist due to sample matrix.

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	12/12/17-12/19/17	**Analytical Method:**	SW8081A/8082
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**GC23 12131732.D**	**150087**

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	12/13/2017 22:01
a-BHC	ND	0.00010	1	12/13/2017 22:01
b-BHC	ND	0.00010	1	12/13/2017 22:01
d-BHC	ND	0.00010	1	12/13/2017 22:01
g-BHC	ND	0.00010	1	12/13/2017 22:01
Chlordane (Technical)	ND	0.0025	1	12/13/2017 22:01
a-Chlordane	ND	0.00010	1	12/13/2017 22:01
g-Chlordane	ND	0.00010	1	12/13/2017 22:01
p,p-DDD	ND	0.00010	1	12/13/2017 22:01
p,p-DDE	**0.00011**	0.00010	1	12/13/2017 22:01
p,p-DDT	ND	0.00010	1	12/13/2017 22:01
Dieldrin	ND	0.00010	1	12/13/2017 22:01
Endosulfan I	ND	0.00010	1	12/13/2017 22:01
Endosulfan II	ND	0.00010	1	12/13/2017 22:01
Endosulfan sulfate	ND	0.00010	1	12/13/2017 22:01
Endrin	ND	0.00010	1	12/13/2017 22:01
Endrin aldehyde	ND	0.00010	1	12/13/2017 22:01
Endrin ketone	ND	0.00010	1	12/13/2017 22:01
Heptachlor	ND	0.00010	1	12/13/2017 22:01
Heptachlor epoxide	ND	0.00010	1	12/13/2017 22:01
Hexachlorobenzene	ND	0.0010	1	12/13/2017 22:01
Hexachlorocyclopentadiene	ND	0.0020	1	12/13/2017 22:01
Methoxychlor	ND	0.00010	1	12/13/2017 22:01
Toxaphene	ND	0.0050	1	12/13/2017 22:01
Aroclor1016	ND	0.0050	1	12/13/2017 22:01
Aroclor1221	ND	0.0050	1	12/13/2017 22:01
Aroclor1232	ND	0.0050	1	12/13/2017 22:01
Aroclor1242	ND	0.0050	1	12/13/2017 22:01
Aroclor1248	ND	0.0050	1	12/13/2017 22:01
Aroclor1254	ND	0.0050	1	12/13/2017 22:01
Aroclor1260	ND	0.0050	1	12/13/2017 22:01
PCBs, total	ND	0.0050	1	12/13/2017 22:01

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	78	20-145	12/13/2017 22:01

Analyst(s): LT

(Cont.)

NELAP 4033ORELAP

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	12/12/17-12/19/17	**Analytical Method:**	SW8081A/8082
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**GC23 12131736.D**	**150087**

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	12/13/2017 23:05
a-BHC	ND	0.00010	1	12/13/2017 23:05
b-BHC	ND	0.00010	1	12/13/2017 23:05
d-BHC	ND	0.00010	1	12/13/2017 23:05
g-BHC	ND	0.00010	1	12/13/2017 23:05
Chlordane (Technical)	ND	0.0025	1	12/13/2017 23:05
a-Chlordane	ND	0.00010	1	12/13/2017 23:05
g-Chlordane	ND	0.00010	1	12/13/2017 23:05
p,p-DDD	ND	0.00010	1	12/13/2017 23:05
p,p-DDE	ND	0.00010	1	12/13/2017 23:05
p,p-DDT	ND	0.00010	1	12/13/2017 23:05
Dieldrin	ND	0.00010	1	12/13/2017 23:05
Endosulfan I	ND	0.00010	1	12/13/2017 23:05
Endosulfan II	ND	0.00010	1	12/13/2017 23:05
Endosulfan sulfate	ND	0.00010	1	12/13/2017 23:05
Endrin	ND	0.00010	1	12/13/2017 23:05
Endrin aldehyde	ND	0.00010	1	12/13/2017 23:05
Endrin ketone	ND	0.00010	1	12/13/2017 23:05
Heptachlor	ND	0.00010	1	12/13/2017 23:05
Heptachlor epoxide	ND	0.00010	1	12/13/2017 23:05
Hexachlorobenzene	ND	0.0010	1	12/13/2017 23:05
Hexachlorocyclopentadiene	ND	0.0020	1	12/13/2017 23:05
Methoxychlor	ND	0.00010	1	12/13/2017 23:05
Toxaphene	ND	0.0050	1	12/13/2017 23:05
Aroclor1016	ND	0.0050	1	12/13/2017 23:05
Aroclor1221	ND	0.0050	1	12/13/2017 23:05
Aroclor1232	ND	0.0050	1	12/13/2017 23:05
Aroclor1242	ND	0.0050	1	12/13/2017 23:05
Aroclor1248	ND	0.0050	1	12/13/2017 23:05
Aroclor1254	ND	0.0050	1	12/13/2017 23:05
Aroclor1260	ND	0.0050	1	12/13/2017 23:05
PCBs, total	ND	0.0050	1	12/13/2017 23:05

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	88	20-145	12/13/2017 23:05

Analyst(s): LT

(Cont.)

NELAP 4033ORELAP

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	12/12/17-12/19/17	**Analytical Method:**	SW8081A/8082
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**GC23 12141732.D**	**150087**

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	12/15/2017 02:36
a-BHC	ND	0.00010	1	12/15/2017 02:36
b-BHC	ND	0.00010	1	12/15/2017 02:36
d-BHC	ND	0.00010	1	12/15/2017 02:36
g-BHC	ND	0.00010	1	12/15/2017 02:36
Chlordane (Technical)	ND	0.0025	1	12/15/2017 02:36
a-Chlordane	ND	0.00010	1	12/15/2017 02:36
g-Chlordane	ND	0.00010	1	12/15/2017 02:36
p,p-DDD	ND	0.00010	1	12/15/2017 02:36
p,p-DDE	ND	0.00010	1	12/15/2017 02:36
p,p-DDT	ND	0.00010	1	12/15/2017 02:36
Dieldrin	ND	0.00010	1	12/15/2017 02:36
Endosulfan I	ND	0.00010	1	12/15/2017 02:36
Endosulfan II	ND	0.00010	1	12/15/2017 02:36
Endosulfan sulfate	ND	0.00010	1	12/15/2017 02:36
Endrin	ND	0.00010	1	12/15/2017 02:36
Endrin aldehyde	ND	0.00010	1	12/15/2017 02:36
Endrin ketone	ND	0.00010	1	12/15/2017 02:36
Heptachlor	ND	0.00010	1	12/15/2017 02:36
Heptachlor epoxide	ND	0.00010	1	12/15/2017 02:36
Hexachlorobenzene	ND	0.0010	1	12/15/2017 02:36
Hexachlorocyclopentadiene	ND	0.0020	1	12/15/2017 02:36
Methoxychlor	ND	0.00010	1	12/15/2017 02:36
Toxaphene	ND	0.0050	1	12/15/2017 02:36
Aroclor1016	ND	0.0050	1	12/15/2017 02:36
Aroclor1221	ND	0.0050	1	12/15/2017 02:36
Aroclor1232	ND	0.0050	1	12/15/2017 02:36
Aroclor1242	ND	0.0050	1	12/15/2017 02:36
Aroclor1248	ND	0.0050	1	12/15/2017 02:36
Aroclor1254	ND	0.0050	1	12/15/2017 02:36
Aroclor1260	ND	0.0050	1	12/15/2017 02:36
PCBs, total	ND	0.0050	1	12/15/2017 02:36

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	113	20-145	12/15/2017 02:36

Analyst(s): LT

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	12/12/17-12/19/17	**Analytical Method:**	SW8081A/8082
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**GC23 12131735.D**	**150087**

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	12/13/2017 22:49
a-BHC	ND	0.00010	1	12/13/2017 22:49
b-BHC	ND	0.00010	1	12/13/2017 22:49
d-BHC	ND	0.00010	1	12/13/2017 22:49
g-BHC	ND	0.00010	1	12/13/2017 22:49
Chlordane (Technical)	ND	0.0025	1	12/13/2017 22:49
a-Chlordane	ND	0.00010	1	12/13/2017 22:49
g-Chlordane	ND	0.00010	1	12/13/2017 22:49
p,p-DDD	ND	0.00010	1	12/13/2017 22:49
p,p-DDE	ND	0.00010	1	12/13/2017 22:49
p,p-DDT	ND	0.00010	1	12/13/2017 22:49
Dieldrin	ND	0.00010	1	12/13/2017 22:49
Endosulfan I	ND	0.00010	1	12/13/2017 22:49
Endosulfan II	ND	0.00010	1	12/13/2017 22:49
Endosulfan sulfate	ND	0.00010	1	12/13/2017 22:49
Endrin	ND	0.00010	1	12/13/2017 22:49
Endrin aldehyde	ND	0.00010	1	12/13/2017 22:49
Endrin ketone	ND	0.00010	1	12/13/2017 22:49
Heptachlor	ND	0.00010	1	12/13/2017 22:49
Heptachlor epoxide	ND	0.00010	1	12/13/2017 22:49
Hexachlorobenzene	ND	0.0010	1	12/13/2017 22:49
Hexachlorocyclopentadiene	ND	0.0020	1	12/13/2017 22:49
Methoxychlor	ND	0.00010	1	12/13/2017 22:49
Toxaphene	ND	0.0050	1	12/13/2017 22:49
Aroclor1016	ND	0.0050	1	12/13/2017 22:49
Aroclor1221	ND	0.0050	1	12/13/2017 22:49
Aroclor1232	ND	0.0050	1	12/13/2017 22:49
Aroclor1242	ND	0.0050	1	12/13/2017 22:49
Aroclor1248	ND	0.0050	1	12/13/2017 22:49
Aroclor1254	ND	0.0050	1	12/13/2017 22:49
Aroclor1260	ND	0.0050	1	12/13/2017 22:49
PCBs, total	ND	0.0050	1	12/13/2017 22:49

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	103	20-145	12/13/2017 22:49

Analyst(s): LT

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	12/12/17-12/19/17	**Analytical Method:**	SW8081A/8082
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**GC23 12141730.D**	**150087**

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	12/15/2017 02:04
a-BHC	ND	0.00010	1	12/15/2017 02:04
b-BHC	ND	0.00010	1	12/15/2017 02:04
d-BHC	ND	0.00010	1	12/15/2017 02:04
g-BHC	ND	0.00010	1	12/15/2017 02:04
Chlordane (Technical)	ND	0.0025	1	12/15/2017 02:04
a-Chlordane	ND	0.00010	1	12/15/2017 02:04
g-Chlordane	ND	0.00010	1	12/15/2017 02:04
p,p-DDD	ND	0.00010	1	12/15/2017 02:04
p,p-DDE	ND	0.00010	1	12/15/2017 02:04
p,p-DDT	ND	0.00010	1	12/15/2017 02:04
Dieldrin	ND	0.00010	1	12/15/2017 02:04
Endosulfan I	ND	0.00010	1	12/15/2017 02:04
Endosulfan II	ND	0.00010	1	12/15/2017 02:04
Endosulfan sulfate	ND	0.00010	1	12/15/2017 02:04
Endrin	ND	0.00010	1	12/15/2017 02:04
Endrin aldehyde	ND	0.00010	1	12/15/2017 02:04
Endrin ketone	ND	0.00010	1	12/15/2017 02:04
Heptachlor	ND	0.00010	1	12/15/2017 02:04
Heptachlor epoxide	ND	0.00010	1	12/15/2017 02:04
Hexachlorobenzene	ND	0.0010	1	12/15/2017 02:04
Hexachlorocyclopentadiene	ND	0.0020	1	12/15/2017 02:04
Methoxychlor	ND	0.00010	1	12/15/2017 02:04
Toxaphene	ND	0.0050	1	12/15/2017 02:04
Aroclor1016	ND	0.0050	1	12/15/2017 02:04
Aroclor1221	ND	0.0050	1	12/15/2017 02:04
Aroclor1232	ND	0.0050	1	12/15/2017 02:04
Aroclor1242	ND	0.0050	1	12/15/2017 02:04
Aroclor1248	ND	0.0050	1	12/15/2017 02:04
Aroclor1254	ND	0.0050	1	12/15/2017 02:04
Aroclor1260	ND	0.0050	1	12/15/2017 02:04
PCBs, total	ND	0.0050	1	12/15/2017 02:04

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	60	20-145	12/15/2017 02:04

Analyst(s): LT

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	12/12/17-12/19/17	**Analytical Method:**	SW8081A/8082
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	**1712382-006A**	**Soil**	**12/07/2017 12:50**	**GC23 12191764.D**	**150481**

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	12/20/2017 20:22
a-BHC	ND	0.00010	1	12/20/2017 20:22
b-BHC	ND	0.00010	1	12/20/2017 20:22
d-BHC	ND	0.00010	1	12/20/2017 20:22
g-BHC	ND	0.00010	1	12/20/2017 20:22
Chlordane (Technical)	ND	0.0025	1	12/20/2017 20:22
a-Chlordane	ND	0.00010	1	12/20/2017 20:22
g-Chlordane	ND	0.00010	1	12/20/2017 20:22
p,p-DDD	ND	0.00010	1	12/20/2017 20:22
p,p-DDE	ND	0.00010	1	12/20/2017 20:22
p,p-DDT	ND	0.00010	1	12/20/2017 20:22
Dieldrin	ND	0.00010	1	12/20/2017 20:22
Endosulfan I	ND	0.00010	1	12/20/2017 20:22
Endosulfan II	ND	0.00010	1	12/20/2017 20:22
Endosulfan sulfate	ND	0.00010	1	12/20/2017 20:22
Endrin	ND	0.00010	1	12/20/2017 20:22
Endrin aldehyde	ND	0.00010	1	12/20/2017 20:22
Endrin ketone	ND	0.00010	1	12/20/2017 20:22
Heptachlor	ND	0.00010	1	12/20/2017 20:22
Heptachlor epoxide	ND	0.00010	1	12/20/2017 20:22
Hexachlorobenzene	ND	0.0010	1	12/20/2017 20:22
Hexachlorocyclopentadiene	ND	0.0020	1	12/20/2017 20:22
Methoxychlor	ND	0.00010	1	12/20/2017 20:22
Toxaphene	ND	0.0050	1	12/20/2017 20:22
Aroclor1016	ND	0.0050	1	12/20/2017 20:22
Aroclor1221	ND	0.0050	1	12/20/2017 20:22
Aroclor1232	ND	0.0050	1	12/20/2017 20:22
Aroclor1242	ND	0.0050	1	12/20/2017 20:22
Aroclor1248	ND	0.0050	1	12/20/2017 20:22
Aroclor1254	ND	0.0050	1	12/20/2017 20:22
Aroclor1260	ND	0.0050	1	12/20/2017 20:22
PCBs, total	ND	0.0050	1	12/20/2017 20:22

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	76	20-145	12/20/2017 20:22

Analyst(s): KX

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	12/12/17-12/19/17	**Analytical Method:**	SW8081A/8082
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**GC23 12141719.D**	**150087**

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	12/14/2017 23:11
a-BHC	ND	0.00010	1	12/14/2017 23:11
b-BHC	ND	0.00010	1	12/14/2017 23:11
d-BHC	ND	0.00010	1	12/14/2017 23:11
g-BHC	ND	0.00010	1	12/14/2017 23:11
Chlordane (Technical)	ND	0.0025	1	12/14/2017 23:11
a-Chlordane	ND	0.00010	1	12/14/2017 23:11
g-Chlordane	ND	0.00010	1	12/14/2017 23:11
p,p-DDD	ND	0.00010	1	12/14/2017 23:11
p,p-DDE	ND	0.00010	1	12/14/2017 23:11
p,p-DDT	ND	0.00010	1	12/14/2017 23:11
Dieldrin	ND	0.00010	1	12/14/2017 23:11
Endosulfan I	ND	0.00010	1	12/14/2017 23:11
Endosulfan II	ND	0.00010	1	12/14/2017 23:11
Endosulfan sulfate	ND	0.00010	1	12/14/2017 23:11
Endrin	ND	0.00010	1	12/14/2017 23:11
Endrin aldehyde	ND	0.00010	1	12/14/2017 23:11
Endrin ketone	ND	0.00010	1	12/14/2017 23:11
Heptachlor	ND	0.00010	1	12/14/2017 23:11
Heptachlor epoxide	ND	0.00010	1	12/14/2017 23:11
Hexachlorobenzene	ND	0.0010	1	12/14/2017 23:11
Hexachlorocyclopentadiene	ND	0.0020	1	12/14/2017 23:11
Methoxychlor	ND	0.00010	1	12/14/2017 23:11
Toxaphene	ND	0.0050	1	12/14/2017 23:11
Aroclor1016	ND	0.0050	1	12/14/2017 23:11
Aroclor1221	ND	0.0050	1	12/14/2017 23:11
Aroclor1232	ND	0.0050	1	12/14/2017 23:11
Aroclor1242	ND	0.0050	1	12/14/2017 23:11
Aroclor1248	ND	0.0050	1	12/14/2017 23:11
Aroclor1254	ND	0.0050	1	12/14/2017 23:11
Aroclor1260	ND	0.0050	1	12/14/2017 23:11
PCBs, total	ND	0.0050	1	12/14/2017 23:11

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	62	20-145	12/14/2017 23:11

Analyst(s): LT

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**GC28 12111730.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	12/12/2017 02:02
tert-Amyl methyl ether (TAME)	ND	0.0050	1	12/12/2017 02:02
Benzene	ND	0.0050	1	12/12/2017 02:02
Bromobenzene	ND	0.0050	1	12/12/2017 02:02
Bromochloromethane	ND	0.0050	1	12/12/2017 02:02
Bromodichloromethane	ND	0.0050	1	12/12/2017 02:02
Bromoform	ND	0.0050	1	12/12/2017 02:02
Bromomethane	ND	0.0050	1	12/12/2017 02:02
2-Butanone (MEK)	ND	0.020	1	12/12/2017 02:02
t-Butyl alcohol (TBA)	ND	0.050	1	12/12/2017 02:02
n-Butyl benzene	ND	0.0050	1	12/12/2017 02:02
sec-Butyl benzene	ND	0.0050	1	12/12/2017 02:02
tert-Butyl benzene	ND	0.0050	1	12/12/2017 02:02
Carbon Disulfide	ND	0.0050	1	12/12/2017 02:02
Carbon Tetrachloride	ND	0.0050	1	12/12/2017 02:02
Chlorobenzene	ND	0.0050	1	12/12/2017 02:02
Chloroethane	ND	0.0050	1	12/12/2017 02:02
Chloroform	ND	0.0050	1	12/12/2017 02:02
Chloromethane	ND	0.0050	1	12/12/2017 02:02
2-Chlorotoluene	ND	0.0050	1	12/12/2017 02:02
4-Chlorotoluene	ND	0.0050	1	12/12/2017 02:02
Dibromochloromethane	ND	0.0050	1	12/12/2017 02:02
1,2-Dibromo-3-chloropropane	ND	0.0040	1	12/12/2017 02:02
1,2-Dibromoethane (EDB)	ND	0.0040	1	12/12/2017 02:02
Dibromomethane	ND	0.0050	1	12/12/2017 02:02
1,2-Dichlorobenzene	ND	0.0050	1	12/12/2017 02:02
1,3-Dichlorobenzene	ND	0.0050	1	12/12/2017 02:02
1,4-Dichlorobenzene	ND	0.0050	1	12/12/2017 02:02
Dichlorodifluoromethane	ND	0.0050	1	12/12/2017 02:02
1,1-Dichloroethane	ND	0.0050	1	12/12/2017 02:02
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	12/12/2017 02:02
1,1-Dichloroethene	ND	0.0050	1	12/12/2017 02:02
cis-1,2-Dichloroethene	ND	0.0050	1	12/12/2017 02:02
trans-1,2-Dichloroethene	ND	0.0050	1	12/12/2017 02:02
1,2-Dichloropropane	ND	0.0050	1	12/12/2017 02:02
1,3-Dichloropropane	ND	0.0050	1	12/12/2017 02:02
2,2-Dichloropropane	ND	0.0050	1	12/12/2017 02:02

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**GC28 12111730.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	12/12/2017 02:02
cis-1,3-Dichloropropene	ND	0.0050	1	12/12/2017 02:02
trans-1,3-Dichloropropene	ND	0.0050	1	12/12/2017 02:02
Diisopropyl ether (DIPE)	ND	0.0050	1	12/12/2017 02:02
Ethylbenzene	ND	0.0050	1	12/12/2017 02:02
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	12/12/2017 02:02
Freon 113	ND	0.0050	1	12/12/2017 02:02
Hexachlorobutadiene	ND	0.0050	1	12/12/2017 02:02
Hexachloroethane	ND	0.0050	1	12/12/2017 02:02
2-Hexanone	ND	0.0050	1	12/12/2017 02:02
Isopropylbenzene	ND	0.0050	1	12/12/2017 02:02
4-Isopropyl toluene	ND	0.0050	1	12/12/2017 02:02
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	12/12/2017 02:02
Methylene chloride	ND	0.0050	1	12/12/2017 02:02
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	12/12/2017 02:02
Naphthalene	ND	0.0050	1	12/12/2017 02:02
n-Propyl benzene	ND	0.0050	1	12/12/2017 02:02
Styrene	ND	0.0050	1	12/12/2017 02:02
1,1,1,2-Tetrachloroethane	ND	0.0050	1	12/12/2017 02:02
1,1,2,2-Tetrachloroethane	ND	0.0050	1	12/12/2017 02:02
Tetrachloroethene	ND	0.0050	1	12/12/2017 02:02
Toluene	ND	0.0050	1	12/12/2017 02:02
1,2,3-Trichlorobenzene	ND	0.0050	1	12/12/2017 02:02
1,2,4-Trichlorobenzene	ND	0.0050	1	12/12/2017 02:02
1,1,1-Trichloroethane	ND	0.0050	1	12/12/2017 02:02
1,1,2-Trichloroethane	ND	0.0050	1	12/12/2017 02:02
Trichloroethene	ND	0.0050	1	12/12/2017 02:02
Trichlorofluoromethane	ND	0.0050	1	12/12/2017 02:02
1,2,3-Trichloropropane	ND	0.0050	1	12/12/2017 02:02
1,2,4-Trimethylbenzene	ND	0.0050	1	12/12/2017 02:02
1,3,5-Trimethylbenzene	ND	0.0050	1	12/12/2017 02:02
Vinyl Chloride	ND	0.0050	1	12/12/2017 02:02
Xylenes, Total	ND	0.0050	1	12/12/2017 02:02

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**GC28 12111730.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	118	82-136		12/12/2017 02:02
Toluene-d8	125	92-139		12/12/2017 02:02
4-BFB	116	82-135		12/12/2017 02:02
Benzene-d6	111	55-122		12/12/2017 02:02
Ethylbenzene-d10	107	58-141		12/12/2017 02:02
1,2-DCB-d4	85	51-107		12/12/2017 02:02

Analyst(s): HK

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**GC28 12121732.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	12/13/2017 03:15
tert-Amyl methyl ether (TAME)	ND	0.0050	1	12/13/2017 03:15
Benzene	ND	0.0050	1	12/13/2017 03:15
Bromobenzene	ND	0.0050	1	12/13/2017 03:15
Bromochloromethane	ND	0.0050	1	12/13/2017 03:15
Bromodichloromethane	ND	0.0050	1	12/13/2017 03:15
Bromoform	ND	0.0050	1	12/13/2017 03:15
Bromomethane	ND	0.0050	1	12/13/2017 03:15
2-Butanone (MEK)	ND	0.020	1	12/13/2017 03:15
t-Butyl alcohol (TBA)	ND	0.050	1	12/13/2017 03:15
n-Butyl benzene	ND	0.0050	1	12/13/2017 03:15
sec-Butyl benzene	ND	0.0050	1	12/13/2017 03:15
tert-Butyl benzene	ND	0.0050	1	12/13/2017 03:15
Carbon Disulfide	ND	0.0050	1	12/13/2017 03:15
Carbon Tetrachloride	ND	0.0050	1	12/13/2017 03:15
Chlorobenzene	ND	0.0050	1	12/13/2017 03:15
Chloroethane	ND	0.0050	1	12/13/2017 03:15
Chloroform	ND	0.0050	1	12/13/2017 03:15
Chloromethane	ND	0.0050	1	12/13/2017 03:15
2-Chlorotoluene	ND	0.0050	1	12/13/2017 03:15
4-Chlorotoluene	ND	0.0050	1	12/13/2017 03:15
Dibromochloromethane	ND	0.0050	1	12/13/2017 03:15
1,2-Dibromo-3-chloropropane	ND	0.0040	1	12/13/2017 03:15
1,2-Dibromoethane (EDB)	ND	0.0040	1	12/13/2017 03:15
Dibromomethane	ND	0.0050	1	12/13/2017 03:15
1,2-Dichlorobenzene	ND	0.0050	1	12/13/2017 03:15
1,3-Dichlorobenzene	ND	0.0050	1	12/13/2017 03:15
1,4-Dichlorobenzene	ND	0.0050	1	12/13/2017 03:15
Dichlorodifluoromethane	ND	0.0050	1	12/13/2017 03:15
1,1-Dichloroethane	ND	0.0050	1	12/13/2017 03:15
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	12/13/2017 03:15
1,1-Dichloroethene	ND	0.0050	1	12/13/2017 03:15
cis-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 03:15
trans-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 03:15
1,2-Dichloropropane	ND	0.0050	1	12/13/2017 03:15
1,3-Dichloropropane	ND	0.0050	1	12/13/2017 03:15
2,2-Dichloropropane	ND	0.0050	1	12/13/2017 03:15

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**GC28 12121732.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	12/13/2017 03:15
cis-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 03:15
trans-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 03:15
Diisopropyl ether (DIPE)	ND	0.0050	1	12/13/2017 03:15
Ethylbenzene	ND	0.0050	1	12/13/2017 03:15
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	12/13/2017 03:15
Freon 113	ND	0.0050	1	12/13/2017 03:15
Hexachlorobutadiene	ND	0.0050	1	12/13/2017 03:15
Hexachloroethane	ND	0.0050	1	12/13/2017 03:15
2-Hexanone	ND	0.0050	1	12/13/2017 03:15
Isopropylbenzene	ND	0.0050	1	12/13/2017 03:15
4-Isopropyl toluene	ND	0.0050	1	12/13/2017 03:15
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	12/13/2017 03:15
Methylene chloride	ND	0.0050	1	12/13/2017 03:15
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	12/13/2017 03:15
Naphthalene	ND	0.0050	1	12/13/2017 03:15
n-Propyl benzene	ND	0.0050	1	12/13/2017 03:15
Styrene	ND	0.0050	1	12/13/2017 03:15
1,1,1,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 03:15
1,1,2,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 03:15
Tetrachloroethene	ND	0.0050	1	12/13/2017 03:15
Toluene	ND	0.0050	1	12/13/2017 03:15
1,2,3-Trichlorobenzene	ND	0.0050	1	12/13/2017 03:15
1,2,4-Trichlorobenzene	ND	0.0050	1	12/13/2017 03:15
1,1,1-Trichloroethane	ND	0.0050	1	12/13/2017 03:15
1,1,2-Trichloroethane	ND	0.0050	1	12/13/2017 03:15
Trichloroethene	ND	0.0050	1	12/13/2017 03:15
Trichlorofluoromethane	ND	0.0050	1	12/13/2017 03:15
1,2,3-Trichloropropane	ND	0.0050	1	12/13/2017 03:15
1,2,4-Trimethylbenzene	ND	0.0050	1	12/13/2017 03:15
1,3,5-Trimethylbenzene	ND	0.0050	1	12/13/2017 03:15
Vinyl Chloride	ND	0.0050	1	12/13/2017 03:15
Xylenes, Total	ND	0.0050	1	12/13/2017 03:15

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**GC28 12121732.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	114	82-136		12/13/2017 03:15
Toluene-d8	125	92-139		12/13/2017 03:15
4-BFB	114	82-135		12/13/2017 03:15
Benzene-d6	112	55-122		12/13/2017 03:15
Ethylbenzene-d10	110	58-141		12/13/2017 03:15
1,2-DCB-d4	88	51-107		12/13/2017 03:15

Analyst(s): KF

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**GC28 12121734.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	12/13/2017 04:32
tert-Amyl methyl ether (TAME)	ND	0.0050	1	12/13/2017 04:32
Benzene	ND	0.0050	1	12/13/2017 04:32
Bromobenzene	ND	0.0050	1	12/13/2017 04:32
Bromochloromethane	ND	0.0050	1	12/13/2017 04:32
Bromodichloromethane	ND	0.0050	1	12/13/2017 04:32
Bromoform	ND	0.0050	1	12/13/2017 04:32
Bromomethane	ND	0.0050	1	12/13/2017 04:32
2-Butanone (MEK)	ND	0.020	1	12/13/2017 04:32
t-Butyl alcohol (TBA)	ND	0.050	1	12/13/2017 04:32
n-Butyl benzene	ND	0.0050	1	12/13/2017 04:32
sec-Butyl benzene	ND	0.0050	1	12/13/2017 04:32
tert-Butyl benzene	ND	0.0050	1	12/13/2017 04:32
Carbon Disulfide	ND	0.0050	1	12/13/2017 04:32
Carbon Tetrachloride	ND	0.0050	1	12/13/2017 04:32
Chlorobenzene	ND	0.0050	1	12/13/2017 04:32
Chloroethane	ND	0.0050	1	12/13/2017 04:32
Chloroform	ND	0.0050	1	12/13/2017 04:32
Chloromethane	ND	0.0050	1	12/13/2017 04:32
2-Chlorotoluene	ND	0.0050	1	12/13/2017 04:32
4-Chlorotoluene	ND	0.0050	1	12/13/2017 04:32
Dibromochloromethane	ND	0.0050	1	12/13/2017 04:32
1,2-Dibromo-3-chloropropane	ND	0.0040	1	12/13/2017 04:32
1,2-Dibromoethane (EDB)	ND	0.0040	1	12/13/2017 04:32
Dibromomethane	ND	0.0050	1	12/13/2017 04:32
1,2-Dichlorobenzene	ND	0.0050	1	12/13/2017 04:32
1,3-Dichlorobenzene	ND	0.0050	1	12/13/2017 04:32
1,4-Dichlorobenzene	ND	0.0050	1	12/13/2017 04:32
Dichlorodifluoromethane	ND	0.0050	1	12/13/2017 04:32
1,1-Dichloroethane	ND	0.0050	1	12/13/2017 04:32
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	12/13/2017 04:32
1,1-Dichloroethene	ND	0.0050	1	12/13/2017 04:32
cis-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 04:32
trans-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 04:32
1,2-Dichloropropane	ND	0.0050	1	12/13/2017 04:32
1,3-Dichloropropane	ND	0.0050	1	12/13/2017 04:32
2,2-Dichloropropane	ND	0.0050	1	12/13/2017 04:32

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**GC28 12121734.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	12/13/2017 04:32
cis-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 04:32
trans-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 04:32
Diisopropyl ether (DIPE)	ND	0.0050	1	12/13/2017 04:32
Ethylbenzene	ND	0.0050	1	12/13/2017 04:32
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	12/13/2017 04:32
Freon 113	ND	0.0050	1	12/13/2017 04:32
Hexachlorobutadiene	ND	0.0050	1	12/13/2017 04:32
Hexachloroethane	ND	0.0050	1	12/13/2017 04:32
2-Hexanone	ND	0.0050	1	12/13/2017 04:32
Isopropylbenzene	ND	0.0050	1	12/13/2017 04:32
4-Isopropyl toluene	ND	0.0050	1	12/13/2017 04:32
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	12/13/2017 04:32
Methylene chloride	ND	0.0050	1	12/13/2017 04:32
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	12/13/2017 04:32
Naphthalene	ND	0.0050	1	12/13/2017 04:32
n-Propyl benzene	ND	0.0050	1	12/13/2017 04:32
Styrene	ND	0.0050	1	12/13/2017 04:32
1,1,1,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 04:32
1,1,2,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 04:32
Tetrachloroethene	ND	0.0050	1	12/13/2017 04:32
Toluene	ND	0.0050	1	12/13/2017 04:32
1,2,3-Trichlorobenzene	ND	0.0050	1	12/13/2017 04:32
1,2,4-Trichlorobenzene	ND	0.0050	1	12/13/2017 04:32
1,1,1-Trichloroethane	ND	0.0050	1	12/13/2017 04:32
1,1,2-Trichloroethane	ND	0.0050	1	12/13/2017 04:32
Trichloroethene	ND	0.0050	1	12/13/2017 04:32
Trichlorofluoromethane	ND	0.0050	1	12/13/2017 04:32
1,2,3-Trichloropropane	ND	0.0050	1	12/13/2017 04:32
1,2,4-Trimethylbenzene	ND	0.0050	1	12/13/2017 04:32
1,3,5-Trimethylbenzene	ND	0.0050	1	12/13/2017 04:32
Vinyl Chloride	ND	0.0050	1	12/13/2017 04:32
Xylenes, Total	ND	0.0050	1	12/13/2017 04:32

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**GC28 12121734.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	114	82-136		12/13/2017 04:32
Toluene-d8	125	92-139		12/13/2017 04:32
4-BFB	123	82-135		12/13/2017 04:32
Benzene-d6	105	55-122		12/13/2017 04:32
Ethylbenzene-d10	102	58-141		12/13/2017 04:32
1,2-DCB-d4	80	51-107		12/13/2017 04:32

Analyst(s): KF

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**GC28 12131712.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	12/13/2017 14:20
tert-Amyl methyl ether (TAME)	ND	0.0050	1	12/13/2017 14:20
Benzene	ND	0.0050	1	12/13/2017 14:20
Bromobenzene	ND	0.0050	1	12/13/2017 14:20
Bromochloromethane	ND	0.0050	1	12/13/2017 14:20
Bromodichloromethane	ND	0.0050	1	12/13/2017 14:20
Bromoform	ND	0.0050	1	12/13/2017 14:20
Bromomethane	ND	0.0050	1	12/13/2017 14:20
2-Butanone (MEK)	ND	0.020	1	12/13/2017 14:20
t-Butyl alcohol (TBA)	ND	0.050	1	12/13/2017 14:20
n-Butyl benzene	ND	0.0050	1	12/13/2017 14:20
sec-Butyl benzene	ND	0.0050	1	12/13/2017 14:20
tert-Butyl benzene	ND	0.0050	1	12/13/2017 14:20
Carbon Disulfide	ND	0.0050	1	12/13/2017 14:20
Carbon Tetrachloride	ND	0.0050	1	12/13/2017 14:20
Chlorobenzene	ND	0.0050	1	12/13/2017 14:20
Chloroethane	ND	0.0050	1	12/13/2017 14:20
Chloroform	ND	0.0050	1	12/13/2017 14:20
Chloromethane	ND	0.0050	1	12/13/2017 14:20
2-Chlorotoluene	ND	0.0050	1	12/13/2017 14:20
4-Chlorotoluene	ND	0.0050	1	12/13/2017 14:20
Dibromochloromethane	ND	0.0050	1	12/13/2017 14:20
1,2-Dibromo-3-chloropropane	ND	0.0040	1	12/13/2017 14:20
1,2-Dibromoethane (EDB)	ND	0.0040	1	12/13/2017 14:20
Dibromomethane	ND	0.0050	1	12/13/2017 14:20
1,2-Dichlorobenzene	ND	0.0050	1	12/13/2017 14:20
1,3-Dichlorobenzene	ND	0.0050	1	12/13/2017 14:20
1,4-Dichlorobenzene	ND	0.0050	1	12/13/2017 14:20
Dichlorodifluoromethane	ND	0.0050	1	12/13/2017 14:20
1,1-Dichloroethane	ND	0.0050	1	12/13/2017 14:20
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	12/13/2017 14:20
1,1-Dichloroethene	ND	0.0050	1	12/13/2017 14:20
cis-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 14:20
trans-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 14:20
1,2-Dichloropropane	ND	0.0050	1	12/13/2017 14:20
1,3-Dichloropropane	ND	0.0050	1	12/13/2017 14:20
2,2-Dichloropropane	ND	0.0050	1	12/13/2017 14:20

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**GC28 12131712.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	12/13/2017 14:20
cis-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 14:20
trans-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 14:20
Diisopropyl ether (DIPE)	ND	0.0050	1	12/13/2017 14:20
Ethylbenzene	ND	0.0050	1	12/13/2017 14:20
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	12/13/2017 14:20
Freon 113	ND	0.0050	1	12/13/2017 14:20
Hexachlorobutadiene	ND	0.0050	1	12/13/2017 14:20
Hexachloroethane	ND	0.0050	1	12/13/2017 14:20
2-Hexanone	ND	0.0050	1	12/13/2017 14:20
Isopropylbenzene	ND	0.0050	1	12/13/2017 14:20
4-Isopropyl toluene	ND	0.0050	1	12/13/2017 14:20
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	12/13/2017 14:20
Methylene chloride	ND	0.0050	1	12/13/2017 14:20
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	12/13/2017 14:20
Naphthalene	ND	0.0050	1	12/13/2017 14:20
n-Propyl benzene	ND	0.0050	1	12/13/2017 14:20
Styrene	ND	0.0050	1	12/13/2017 14:20
1,1,1,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 14:20
1,1,2,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 14:20
Tetrachloroethene	ND	0.0050	1	12/13/2017 14:20
Toluene	ND	0.0050	1	12/13/2017 14:20
1,2,3-Trichlorobenzene	ND	0.0050	1	12/13/2017 14:20
1,2,4-Trichlorobenzene	ND	0.0050	1	12/13/2017 14:20
1,1,1-Trichloroethane	ND	0.0050	1	12/13/2017 14:20
1,1,2-Trichloroethane	ND	0.0050	1	12/13/2017 14:20
Trichloroethene	ND	0.0050	1	12/13/2017 14:20
Trichlorofluoromethane	ND	0.0050	1	12/13/2017 14:20
1,2,3-Trichloropropane	ND	0.0050	1	12/13/2017 14:20
1,2,4-Trimethylbenzene	ND	0.0050	1	12/13/2017 14:20
1,3,5-Trimethylbenzene	ND	0.0050	1	12/13/2017 14:20
Vinyl Chloride	ND	0.0050	1	12/13/2017 14:20
Xylenes, Total	ND	0.0050	1	12/13/2017 14:20

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1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**GC28 12131712.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	113	82-136		12/13/2017 14:20
Toluene-d8	123	92-139		12/13/2017 14:20
4-BFB	112	82-135		12/13/2017 14:20
Benzene-d6	97	55-122		12/13/2017 14:20
Ethylbenzene-d10	96	58-141		12/13/2017 14:20
1,2-DCB-d4	77	51-107		12/13/2017 14:20

Analyst(s): AK

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**GC28 12131713.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	12/13/2017 14:58
tert-Amyl methyl ether (TAME)	ND	0.0050	1	12/13/2017 14:58
Benzene	ND	0.0050	1	12/13/2017 14:58
Bromobenzene	ND	0.0050	1	12/13/2017 14:58
Bromochloromethane	ND	0.0050	1	12/13/2017 14:58
Bromodichloromethane	ND	0.0050	1	12/13/2017 14:58
Bromoform	ND	0.0050	1	12/13/2017 14:58
Bromomethane	ND	0.0050	1	12/13/2017 14:58
2-Butanone (MEK)	ND	0.020	1	12/13/2017 14:58
t-Butyl alcohol (TBA)	ND	0.050	1	12/13/2017 14:58
n-Butyl benzene	ND	0.0050	1	12/13/2017 14:58
sec-Butyl benzene	ND	0.0050	1	12/13/2017 14:58
tert-Butyl benzene	ND	0.0050	1	12/13/2017 14:58
Carbon Disulfide	ND	0.0050	1	12/13/2017 14:58
Carbon Tetrachloride	ND	0.0050	1	12/13/2017 14:58
Chlorobenzene	ND	0.0050	1	12/13/2017 14:58
Chloroethane	ND	0.0050	1	12/13/2017 14:58
Chloroform	ND	0.0050	1	12/13/2017 14:58
Chloromethane	ND	0.0050	1	12/13/2017 14:58
2-Chlorotoluene	ND	0.0050	1	12/13/2017 14:58
4-Chlorotoluene	ND	0.0050	1	12/13/2017 14:58
Dibromochloromethane	ND	0.0050	1	12/13/2017 14:58
1,2-Dibromo-3-chloropropane	ND	0.0040	1	12/13/2017 14:58
1,2-Dibromoethane (EDB)	ND	0.0040	1	12/13/2017 14:58
Dibromomethane	ND	0.0050	1	12/13/2017 14:58
1,2-Dichlorobenzene	ND	0.0050	1	12/13/2017 14:58
1,3-Dichlorobenzene	ND	0.0050	1	12/13/2017 14:58
1,4-Dichlorobenzene	ND	0.0050	1	12/13/2017 14:58
Dichlorodifluoromethane	ND	0.0050	1	12/13/2017 14:58
1,1-Dichloroethane	ND	0.0050	1	12/13/2017 14:58
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	12/13/2017 14:58
1,1-Dichloroethene	ND	0.0050	1	12/13/2017 14:58
cis-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 14:58
trans-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 14:58
1,2-Dichloropropane	ND	0.0050	1	12/13/2017 14:58
1,3-Dichloropropane	ND	0.0050	1	12/13/2017 14:58
2,2-Dichloropropane	ND	0.0050	1	12/13/2017 14:58

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**GC28 12131713.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	12/13/2017 14:58
cis-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 14:58
trans-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 14:58
Diisopropyl ether (DIPE)	ND	0.0050	1	12/13/2017 14:58
Ethylbenzene	ND	0.0050	1	12/13/2017 14:58
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	12/13/2017 14:58
Freon 113	ND	0.0050	1	12/13/2017 14:58
Hexachlorobutadiene	ND	0.0050	1	12/13/2017 14:58
Hexachloroethane	ND	0.0050	1	12/13/2017 14:58
2-Hexanone	ND	0.0050	1	12/13/2017 14:58
Isopropylbenzene	ND	0.0050	1	12/13/2017 14:58
4-Isopropyl toluene	ND	0.0050	1	12/13/2017 14:58
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	12/13/2017 14:58
Methylene chloride	ND	0.0050	1	12/13/2017 14:58
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	12/13/2017 14:58
Naphthalene	ND	0.0050	1	12/13/2017 14:58
n-Propyl benzene	ND	0.0050	1	12/13/2017 14:58
Styrene	ND	0.0050	1	12/13/2017 14:58
1,1,1,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 14:58
1,1,2,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 14:58
Tetrachloroethene	ND	0.0050	1	12/13/2017 14:58
Toluene	ND	0.0050	1	12/13/2017 14:58
1,2,3-Trichlorobenzene	ND	0.0050	1	12/13/2017 14:58
1,2,4-Trichlorobenzene	ND	0.0050	1	12/13/2017 14:58
1,1,1-Trichloroethane	ND	0.0050	1	12/13/2017 14:58
1,1,2-Trichloroethane	ND	0.0050	1	12/13/2017 14:58
Trichloroethene	ND	0.0050	1	12/13/2017 14:58
Trichlorofluoromethane	ND	0.0050	1	12/13/2017 14:58
1,2,3-Trichloropropane	ND	0.0050	1	12/13/2017 14:58
1,2,4-Trimethylbenzene	ND	0.0050	1	12/13/2017 14:58
1,3,5-Trimethylbenzene	ND	0.0050	1	12/13/2017 14:58
Vinyl Chloride	ND	0.0050	1	12/13/2017 14:58
Xylenes, Total	ND	0.0050	1	12/13/2017 14:58

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**GC28 12131713.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	115	82-136		12/13/2017 14:58
Toluene-d8	124	92-139		12/13/2017 14:58
4-BFB	112	82-135		12/13/2017 14:58
Benzene-d6	103	55-122		12/13/2017 14:58
Ethylbenzene-d10	104	58-141		12/13/2017 14:58
1,2-DCB-d4	84	51-107		12/13/2017 14:58

Analyst(s): AK

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	**1712382-006A**	**Soil**	**12/07/2017 12:50**	**GC28 12111709.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	12/11/2017 12:25
tert-Amyl methyl ether (TAME)	ND	0.0050	1	12/11/2017 12:25
Benzene	ND	0.0050	1	12/11/2017 12:25
Bromobenzene	ND	0.0050	1	12/11/2017 12:25
Bromochloromethane	ND	0.0050	1	12/11/2017 12:25
Bromodichloromethane	ND	0.0050	1	12/11/2017 12:25
Bromoform	ND	0.0050	1	12/11/2017 12:25
Bromomethane	ND	0.0050	1	12/11/2017 12:25
2-Butanone (MEK)	ND	0.020	1	12/11/2017 12:25
t-Butyl alcohol (TBA)	ND	0.050	1	12/11/2017 12:25
n-Butyl benzene	ND	0.0050	1	12/11/2017 12:25
sec-Butyl benzene	ND	0.0050	1	12/11/2017 12:25
tert-Butyl benzene	ND	0.0050	1	12/11/2017 12:25
Carbon Disulfide	ND	0.0050	1	12/11/2017 12:25
Carbon Tetrachloride	ND	0.0050	1	12/11/2017 12:25
Chlorobenzene	ND	0.0050	1	12/11/2017 12:25
Chloroethane	ND	0.0050	1	12/11/2017 12:25
Chloroform	ND	0.0050	1	12/11/2017 12:25
Chloromethane	ND	0.0050	1	12/11/2017 12:25
2-Chlorotoluene	ND	0.0050	1	12/11/2017 12:25
4-Chlorotoluene	ND	0.0050	1	12/11/2017 12:25
Dibromochloromethane	ND	0.0050	1	12/11/2017 12:25
1,2-Dibromo-3-chloropropane	ND	0.0040	1	12/11/2017 12:25
1,2-Dibromoethane (EDB)	ND	0.0040	1	12/11/2017 12:25
Dibromomethane	ND	0.0050	1	12/11/2017 12:25
1,2-Dichlorobenzene	ND	0.0050	1	12/11/2017 12:25
1,3-Dichlorobenzene	ND	0.0050	1	12/11/2017 12:25
1,4-Dichlorobenzene	ND	0.0050	1	12/11/2017 12:25
Dichlorodifluoromethane	ND	0.0050	1	12/11/2017 12:25
1,1-Dichloroethane	ND	0.0050	1	12/11/2017 12:25
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	12/11/2017 12:25
1,1-Dichloroethene	ND	0.0050	1	12/11/2017 12:25
cis-1,2-Dichloroethene	ND	0.0050	1	12/11/2017 12:25
trans-1,2-Dichloroethene	ND	0.0050	1	12/11/2017 12:25
1,2-Dichloropropane	ND	0.0050	1	12/11/2017 12:25
1,3-Dichloropropane	ND	0.0050	1	12/11/2017 12:25
2,2-Dichloropropane	ND	0.0050	1	12/11/2017 12:25

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	**1712382-006A**	**Soil**	**12/07/2017 12:50**	**GC28 12111709.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	12/11/2017 12:25
cis-1,3-Dichloropropene	ND	0.0050	1	12/11/2017 12:25
trans-1,3-Dichloropropene	ND	0.0050	1	12/11/2017 12:25
Diisopropyl ether (DIPE)	ND	0.0050	1	12/11/2017 12:25
Ethylbenzene	ND	0.0050	1	12/11/2017 12:25
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	12/11/2017 12:25
Freon 113	ND	0.0050	1	12/11/2017 12:25
Hexachlorobutadiene	ND	0.0050	1	12/11/2017 12:25
Hexachloroethane	ND	0.0050	1	12/11/2017 12:25
2-Hexanone	ND	0.0050	1	12/11/2017 12:25
Isopropylbenzene	ND	0.0050	1	12/11/2017 12:25
4-Isopropyl toluene	ND	0.0050	1	12/11/2017 12:25
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	12/11/2017 12:25
Methylene chloride	ND	0.0050	1	12/11/2017 12:25
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	12/11/2017 12:25
Naphthalene	ND	0.0050	1	12/11/2017 12:25
n-Propyl benzene	ND	0.0050	1	12/11/2017 12:25
Styrene	ND	0.0050	1	12/11/2017 12:25
1,1,1,2-Tetrachloroethane	ND	0.0050	1	12/11/2017 12:25
1,1,2,2-Tetrachloroethane	ND	0.0050	1	12/11/2017 12:25
Tetrachloroethene	ND	0.0050	1	12/11/2017 12:25
Toluene	ND	0.0050	1	12/11/2017 12:25
1,2,3-Trichlorobenzene	ND	0.0050	1	12/11/2017 12:25
1,2,4-Trichlorobenzene	ND	0.0050	1	12/11/2017 12:25
1,1,1-Trichloroethane	ND	0.0050	1	12/11/2017 12:25
1,1,2-Trichloroethane	ND	0.0050	1	12/11/2017 12:25
Trichloroethene	ND	0.0050	1	12/11/2017 12:25
Trichlorofluoromethane	ND	0.0050	1	12/11/2017 12:25
1,2,3-Trichloropropane	ND	0.0050	1	12/11/2017 12:25
1,2,4-Trimethylbenzene	ND	0.0050	1	12/11/2017 12:25
1,3,5-Trimethylbenzene	ND	0.0050	1	12/11/2017 12:25
Vinyl Chloride	ND	0.0050	1	12/11/2017 12:25
Xylenes, Total	ND	0.0050	1	12/11/2017 12:25

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	**1712382-006A**	**Soil**	**12/07/2017 12:50**	**GC28 12111709.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	120	82-136		12/11/2017 12:25
Toluene-d8	127	92-139		12/11/2017 12:25
4-BFB	126	82-135		12/11/2017 12:25
Benzene-d6	120	55-122		12/11/2017 12:25
Ethylbenzene-d10	114	58-141		12/11/2017 12:25
1,2-DCB-d4	91	51-107		12/11/2017 12:25

Analyst(s): KF

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**GC28 12131714.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	12/13/2017 15:35
tert-Amyl methyl ether (TAME)	ND	0.0050	1	12/13/2017 15:35
Benzene	ND	0.0050	1	12/13/2017 15:35
Bromobenzene	ND	0.0050	1	12/13/2017 15:35
Bromochloromethane	ND	0.0050	1	12/13/2017 15:35
Bromodichloromethane	ND	0.0050	1	12/13/2017 15:35
Bromoform	ND	0.0050	1	12/13/2017 15:35
Bromomethane	ND	0.0050	1	12/13/2017 15:35
2-Butanone (MEK)	ND	0.020	1	12/13/2017 15:35
t-Butyl alcohol (TBA)	ND	0.050	1	12/13/2017 15:35
n-Butyl benzene	ND	0.0050	1	12/13/2017 15:35
sec-Butyl benzene	ND	0.0050	1	12/13/2017 15:35
tert-Butyl benzene	ND	0.0050	1	12/13/2017 15:35
Carbon Disulfide	ND	0.0050	1	12/13/2017 15:35
Carbon Tetrachloride	ND	0.0050	1	12/13/2017 15:35
Chlorobenzene	ND	0.0050	1	12/13/2017 15:35
Chloroethane	ND	0.0050	1	12/13/2017 15:35
Chloroform	ND	0.0050	1	12/13/2017 15:35
Chloromethane	ND	0.0050	1	12/13/2017 15:35
2-Chlorotoluene	ND	0.0050	1	12/13/2017 15:35
4-Chlorotoluene	ND	0.0050	1	12/13/2017 15:35
Dibromochloromethane	ND	0.0050	1	12/13/2017 15:35
1,2-Dibromo-3-chloropropane	ND	0.0040	1	12/13/2017 15:35
1,2-Dibromoethane (EDB)	ND	0.0040	1	12/13/2017 15:35
Dibromomethane	ND	0.0050	1	12/13/2017 15:35
1,2-Dichlorobenzene	ND	0.0050	1	12/13/2017 15:35
1,3-Dichlorobenzene	ND	0.0050	1	12/13/2017 15:35
1,4-Dichlorobenzene	ND	0.0050	1	12/13/2017 15:35
Dichlorodifluoromethane	ND	0.0050	1	12/13/2017 15:35
1,1-Dichloroethane	ND	0.0050	1	12/13/2017 15:35
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	12/13/2017 15:35
1,1-Dichloroethene	ND	0.0050	1	12/13/2017 15:35
cis-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 15:35
trans-1,2-Dichloroethene	ND	0.0050	1	12/13/2017 15:35
1,2-Dichloropropane	ND	0.0050	1	12/13/2017 15:35
1,3-Dichloropropane	ND	0.0050	1	12/13/2017 15:35
2,2-Dichloropropane	ND	0.0050	1	12/13/2017 15:35

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**GC28 12131714.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	12/13/2017 15:35
cis-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 15:35
trans-1,3-Dichloropropene	ND	0.0050	1	12/13/2017 15:35
Diisopropyl ether (DIPE)	ND	0.0050	1	12/13/2017 15:35
Ethylbenzene	ND	0.0050	1	12/13/2017 15:35
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	12/13/2017 15:35
Freon 113	ND	0.0050	1	12/13/2017 15:35
Hexachlorobutadiene	ND	0.0050	1	12/13/2017 15:35
Hexachloroethane	ND	0.0050	1	12/13/2017 15:35
2-Hexanone	ND	0.0050	1	12/13/2017 15:35
Isopropylbenzene	ND	0.0050	1	12/13/2017 15:35
4-Isopropyl toluene	ND	0.0050	1	12/13/2017 15:35
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	12/13/2017 15:35
Methylene chloride	ND	0.0050	1	12/13/2017 15:35
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	12/13/2017 15:35
Naphthalene	ND	0.0050	1	12/13/2017 15:35
n-Propyl benzene	ND	0.0050	1	12/13/2017 15:35
Styrene	ND	0.0050	1	12/13/2017 15:35
1,1,1,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 15:35
1,1,2,2-Tetrachloroethane	ND	0.0050	1	12/13/2017 15:35
Tetrachloroethene	ND	0.0050	1	12/13/2017 15:35
Toluene	ND	0.0050	1	12/13/2017 15:35
1,2,3-Trichlorobenzene	ND	0.0050	1	12/13/2017 15:35
1,2,4-Trichlorobenzene	ND	0.0050	1	12/13/2017 15:35
1,1,1-Trichloroethane	ND	0.0050	1	12/13/2017 15:35
1,1,2-Trichloroethane	ND	0.0050	1	12/13/2017 15:35
Trichloroethene	ND	0.0050	1	12/13/2017 15:35
Trichlorofluoromethane	ND	0.0050	1	12/13/2017 15:35
1,2,3-Trichloropropane	ND	0.0050	1	12/13/2017 15:35
1,2,4-Trimethylbenzene	ND	0.0050	1	12/13/2017 15:35
1,3,5-Trimethylbenzene	ND	0.0050	1	12/13/2017 15:35
Vinyl Chloride	ND	0.0050	1	12/13/2017 15:35
Xylenes, Total	ND	0.0050	1	12/13/2017 15:35

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**GC28 12131714.D**	**149974**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	113	82-136		12/13/2017 15:35
Toluene-d8	124	92-139		12/13/2017 15:35
4-BFB	109	82-135		12/13/2017 15:35
Benzene-d6	100	55-122		12/13/2017 15:35
Ethylbenzene-d10	104	58-141		12/13/2017 15:35
1,2-DCB-d4	84	51-107		12/13/2017 15:35

Analyst(s): AK

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**GC17 12121710.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Acenaphthene	ND	0.14	0.25	1	12/12/2017 13:50
Acenaphthylene	ND	0.14	0.25	1	12/12/2017 13:50
Acetochlor	ND	0.25	0.25	1	12/12/2017 13:50
Anthracene	ND	0.14	0.25	1	12/12/2017 13:50
Benzidine	ND	0.23	1.3	1	12/12/2017 13:50
Benzo (a) anthracene	**0.075**	0.050	0.050	1	12/12/2017 13:50
Benzo (a) pyrene	**0.096**	0.0025	0.0025	1	12/12/2017 13:50
Benzo (b) fluoranthene	**0.12**	0.012	0.012	1	12/12/2017 13:50
Benzo (g,h,i) perylene	ND	0.15	0.25	1	12/12/2017 13:50
Benzo (k) fluoranthene	ND	0.16	0.25	1	12/12/2017 13:50
Benzyl Alcohol	ND	0.51	1.3	1	12/12/2017 13:50
1,1-Biphenyl	ND	0.15	0.25	1	12/12/2017 13:50
Bis (2-chloroethoxy) Methane	ND	0.14	0.25	1	12/12/2017 13:50
Bis (2-chloroethyl) Ether	ND	0.0012	0.0012	1	12/12/2017 13:50
Bis (2-chloroisopropyl) Ether	ND	0.0012	0.0012	1	12/12/2017 13:50
Bis (2-ethylhexyl) Adipate	ND	0.25	0.25	1	12/12/2017 13:50
Bis (2-ethylhexyl) Phthalate	ND	0.13	0.25	1	12/12/2017 13:50
4-Bromophenyl Phenyl Ether	ND	0.16	0.25	1	12/12/2017 13:50
Butylbenzyl Phthalate	ND	0.13	0.25	1	12/12/2017 13:50
4-Chloroaniline	ND	0.0012	0.0012	1	12/12/2017 13:50
4-Chloro-3-methylphenol	ND	0.12	0.25	1	12/12/2017 13:50
2-Chloronaphthalene	ND	0.16	0.25	1	12/12/2017 13:50
2-Chlorophenol	ND	0.0050	0.0050	1	12/12/2017 13:50
4-Chlorophenyl Phenyl Ether	ND	0.15	0.25	1	12/12/2017 13:50
Chrysene	ND	0.14	0.25	1	12/12/2017 13:50
Dibenzo (a,h) anthracene	**0.021**	0.0025	0.0025	1	12/12/2017 13:50
Dibenzofuran	ND	0.13	0.25	1	12/12/2017 13:50
Di-n-butyl Phthalate	ND	0.13	0.25	1	12/12/2017 13:50
1,2-Dichlorobenzene	ND	0.12	0.25	1	12/12/2017 13:50
1,3-Dichlorobenzene	ND	0.14	0.25	1	12/12/2017 13:50
1,4-Dichlorobenzene	ND	0.025	0.025	1	12/12/2017 13:50
3,3-Dichlorobenzidine	ND	0.0050	0.0050	1	12/12/2017 13:50
2,4-Dichlorophenol	ND	0.0025	0.0025	1	12/12/2017 13:50
Diethyl Phthalate	ND	0.010	0.010	1	12/12/2017 13:50
2,4-Dimethylphenol	ND	0.025	0.025	1	12/12/2017 13:50
Dimethyl Phthalate	ND	0.0025	0.0025	1	12/12/2017 13:50
4,6-Dinitro-2-methylphenol	ND	0.13	1.3	1	12/12/2017 13:50

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**GC17 12121710.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.62	0.62	1	12/12/2017 13:50
2,4-Dinitrotoluene	ND	0.025	0.025	1	12/12/2017 13:50
2,6-Dinitrotoluene	ND	0.14	0.25	1	12/12/2017 13:50
Di-n-octyl Phthalate	ND	0.14	0.50	1	12/12/2017 13:50
1,2-Diphenylhydrazine	ND	0.16	0.25	1	12/12/2017 13:50
Fluoranthene	ND	0.13	0.25	1	12/12/2017 13:50
Fluorene	ND	0.14	0.25	1	12/12/2017 13:50
Hexachlorobenzene	ND	0.025	0.025	1	12/12/2017 13:50
Hexachlorobutadiene	ND	0.025	0.025	1	12/12/2017 13:50
Hexachlorocyclopentadiene	ND	0.73	1.3	1	12/12/2017 13:50
Hexachloroethane	ND	0.14	0.25	1	12/12/2017 13:50
Indeno (1,2,3-cd) pyrene	**0.071**	0.012	0.012	1	12/12/2017 13:50
Isophorone	ND	0.12	0.25	1	12/12/2017 13:50
2-Methylnaphthalene	ND	0.025	0.025	1	12/12/2017 13:50
2-Methylphenol (o-Cresol)	ND	0.14	0.25	1	12/12/2017 13:50
3 & 4-Methylphenol (m,p-Cresol)	ND	0.12	0.25	1	12/12/2017 13:50
Naphthalene	ND	0.0025	0.0025	1	12/12/2017 13:50
2-Nitroaniline	ND	0.62	1.3	1	12/12/2017 13:50
3-Nitroaniline	ND	0.59	1.3	1	12/12/2017 13:50
4-Nitroaniline	ND	0.55	1.3	1	12/12/2017 13:50
Nitrobenzene	ND	0.14	0.25	1	12/12/2017 13:50
2-Nitrophenol	ND	0.64	1.3	1	12/12/2017 13:50
4-Nitrophenol	ND	0.41	1.3	1	12/12/2017 13:50
N-Nitrosodiphenylamine	ND	0.16	0.25	1	12/12/2017 13:50
N-Nitrosodi-n-propylamine	ND	0.012	0.012	1	12/12/2017 13:50
Pentachlorophenol	ND	0.32	1.3	1	12/12/2017 13:50
Phenanthrene	ND	0.14	0.25	1	12/12/2017 13:50
Phenol	ND	0.0050	0.0050	1	12/12/2017 13:50
Pyrene	ND	0.13	0.25	1	12/12/2017 13:50
Pyridine	ND	0.25	0.25	1	12/12/2017 13:50
1,2,4-Trichlorobenzene	ND	0.14	0.25	1	12/12/2017 13:50
2,4,5-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 13:50
2,4,6-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 13:50

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**GC17 12121710.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Surrogates	REC (%)		Limits		
2-Fluorophenol	102		30-130		12/12/2017 13:50
Phenol-d5	97		30-130		12/12/2017 13:50
Nitrobenzene-d5	97		30-130		12/12/2017 13:50
2-Fluorobiphenyl	92		30-130		12/12/2017 13:50
2,4,6-Tribromophenol	104		16-130		12/12/2017 13:50
4-Terphenyl-d14	104		30-130		12/12/2017 13:50

Analyst(s): REB

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**GC17 12121711.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Acenaphthene	ND	0.14	0.25	1	12/12/2017 14:17
Acenaphthylene	ND	0.14	0.25	1	12/12/2017 14:17
Acetochlor	ND	0.25	0.25	1	12/12/2017 14:17
Anthracene	ND	0.14	0.25	1	12/12/2017 14:17
Benzidine	ND	0.23	1.3	1	12/12/2017 14:17
Benzo (a) anthracene	ND	0.050	0.050	1	12/12/2017 14:17
Benzo (a) pyrene	ND	0.0025	0.0025	1	12/12/2017 14:17
Benzo (b) fluoranthene	ND	0.012	0.012	1	12/12/2017 14:17
Benzo (g,h,i) perylene	ND	0.15	0.25	1	12/12/2017 14:17
Benzo (k) fluoranthene	ND	0.16	0.25	1	12/12/2017 14:17
Benzyl Alcohol	ND	0.51	1.3	1	12/12/2017 14:17
1,1-Biphenyl	ND	0.15	0.25	1	12/12/2017 14:17
Bis (2-chloroethoxy) Methane	ND	0.14	0.25	1	12/12/2017 14:17
Bis (2-chloroethyl) Ether	ND	0.0012	0.0012	1	12/12/2017 14:17
Bis (2-chloroisopropyl) Ether	ND	0.0012	0.0012	1	12/12/2017 14:17
Bis (2-ethylhexyl) Adipate	ND	0.25	0.25	1	12/12/2017 14:17
Bis (2-ethylhexyl) Phthalate	ND	0.13	0.25	1	12/12/2017 14:17
4-Bromophenyl Phenyl Ether	ND	0.16	0.25	1	12/12/2017 14:17
Butylbenzyl Phthalate	ND	0.13	0.25	1	12/12/2017 14:17
4-Chloroaniline	ND	0.0012	0.0012	1	12/12/2017 14:17
4-Chloro-3-methylphenol	ND	0.12	0.25	1	12/12/2017 14:17
2-Chloronaphthalene	ND	0.16	0.25	1	12/12/2017 14:17
2-Chlorophenol	ND	0.0050	0.0050	1	12/12/2017 14:17
4-Chlorophenyl Phenyl Ether	ND	0.15	0.25	1	12/12/2017 14:17
Chrysene	ND	0.14	0.25	1	12/12/2017 14:17
Dibenzo (a,h) anthracene	ND	0.0025	0.0025	1	12/12/2017 14:17
Dibenzofuran	ND	0.13	0.25	1	12/12/2017 14:17
Di-n-butyl Phthalate	ND	0.13	0.25	1	12/12/2017 14:17
1,2-Dichlorobenzene	ND	0.12	0.25	1	12/12/2017 14:17
1,3-Dichlorobenzene	ND	0.14	0.25	1	12/12/2017 14:17
1,4-Dichlorobenzene	ND	0.025	0.025	1	12/12/2017 14:17
3,3-Dichlorobenzidine	ND	0.0050	0.0050	1	12/12/2017 14:17
2,4-Dichlorophenol	ND	0.0025	0.0025	1	12/12/2017 14:17
Diethyl Phthalate	ND	0.010	0.010	1	12/12/2017 14:17
2,4-Dimethylphenol	ND	0.025	0.025	1	12/12/2017 14:17
Dimethyl Phthalate	ND	0.0025	0.0025	1	12/12/2017 14:17
4,6-Dinitro-2-methylphenol	ND	0.13	1.3	1	12/12/2017 14:17

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**GC17 12121711.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.62	0.62	1	12/12/2017 14:17
2,4-Dinitrotoluene	ND	0.025	0.025	1	12/12/2017 14:17
2,6-Dinitrotoluene	ND	0.14	0.25	1	12/12/2017 14:17
Di-n-octyl Phthalate	ND	0.14	0.50	1	12/12/2017 14:17
1,2-Diphenylhydrazine	ND	0.16	0.25	1	12/12/2017 14:17
Fluoranthene	ND	0.13	0.25	1	12/12/2017 14:17
Fluorene	ND	0.14	0.25	1	12/12/2017 14:17
Hexachlorobenzene	ND	0.025	0.025	1	12/12/2017 14:17
Hexachlorobutadiene	ND	0.025	0.025	1	12/12/2017 14:17
Hexachlorocyclopentadiene	ND	0.73	1.3	1	12/12/2017 14:17
Hexachloroethane	ND	0.14	0.25	1	12/12/2017 14:17
Indeno (1,2,3-cd) pyrene	ND	0.012	0.012	1	12/12/2017 14:17
Isophorone	ND	0.12	0.25	1	12/12/2017 14:17
2-Methylnaphthalene	ND	0.025	0.025	1	12/12/2017 14:17
2-Methylphenol (o-Cresol)	ND	0.14	0.25	1	12/12/2017 14:17
3 & 4-Methylphenol (m,p-Cresol)	ND	0.12	0.25	1	12/12/2017 14:17
Naphthalene	ND	0.0025	0.0025	1	12/12/2017 14:17
2-Nitroaniline	ND	0.62	1.3	1	12/12/2017 14:17
3-Nitroaniline	ND	0.59	1.3	1	12/12/2017 14:17
4-Nitroaniline	ND	0.55	1.3	1	12/12/2017 14:17
Nitrobenzene	ND	0.14	0.25	1	12/12/2017 14:17
2-Nitrophenol	ND	0.64	1.3	1	12/12/2017 14:17
4-Nitrophenol	ND	0.41	1.3	1	12/12/2017 14:17
N-Nitrosodiphenylamine	ND	0.16	0.25	1	12/12/2017 14:17
N-Nitrosodi-n-propylamine	ND	0.012	0.012	1	12/12/2017 14:17
Pentachlorophenol	ND	0.32	1.3	1	12/12/2017 14:17
Phenanthrene	ND	0.14	0.25	1	12/12/2017 14:17
Phenol	ND	0.0050	0.0050	1	12/12/2017 14:17
Pyrene	ND	0.13	0.25	1	12/12/2017 14:17
Pyridine	ND	0.25	0.25	1	12/12/2017 14:17
1,2,4-Trichlorobenzene	ND	0.14	0.25	1	12/12/2017 14:17
2,4,5-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 14:17
2,4,6-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 14:17

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**GC17 12121711.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Surrogates	REC (%)		Limits		
2-Fluorophenol	91		30-130		12/12/2017 14:17
Phenol-d5	76		30-130		12/12/2017 14:17
Nitrobenzene-d5	75		30-130		12/12/2017 14:17
2-Fluorobiphenyl	75		30-130		12/12/2017 14:17
2,4,6-Tribromophenol	77		16-130		12/12/2017 14:17
4-Terphenyl-d14	70		30-130		12/12/2017 14:17

Analyst(s): REB

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**GC17 12121712.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Acenaphthene	ND	0.14	0.25	1	12/12/2017 14:44
Acenaphthylene	ND	0.14	0.25	1	12/12/2017 14:44
Acetochlor	ND	0.25	0.25	1	12/12/2017 14:44
Anthracene	ND	0.14	0.25	1	12/12/2017 14:44
Benzidine	ND	0.23	1.3	1	12/12/2017 14:44
Benzo (a) anthracene	ND	0.050	0.050	1	12/12/2017 14:44
Benzo (a) pyrene	ND	0.0025	0.0025	1	12/12/2017 14:44
Benzo (b) fluoranthene	ND	0.012	0.012	1	12/12/2017 14:44
Benzo (g,h,i) perylene	ND	0.15	0.25	1	12/12/2017 14:44
Benzo (k) fluoranthene	ND	0.16	0.25	1	12/12/2017 14:44
Benzyl Alcohol	ND	0.51	1.3	1	12/12/2017 14:44
1,1-Biphenyl	ND	0.15	0.25	1	12/12/2017 14:44
Bis (2-chloroethoxy) Methane	ND	0.14	0.25	1	12/12/2017 14:44
Bis (2-chloroethyl) Ether	ND	0.0012	0.0012	1	12/12/2017 14:44
Bis (2-chloroisopropyl) Ether	ND	0.0012	0.0012	1	12/12/2017 14:44
Bis (2-ethylhexyl) Adipate	ND	0.25	0.25	1	12/12/2017 14:44
Bis (2-ethylhexyl) Phthalate	ND	0.13	0.25	1	12/12/2017 14:44
4-Bromophenyl Phenyl Ether	ND	0.16	0.25	1	12/12/2017 14:44
Butylbenzyl Phthalate	ND	0.13	0.25	1	12/12/2017 14:44
4-Chloroaniline	ND	0.0012	0.0012	1	12/12/2017 14:44
4-Chloro-3-methylphenol	ND	0.12	0.25	1	12/12/2017 14:44
2-Chloronaphthalene	ND	0.16	0.25	1	12/12/2017 14:44
2-Chlorophenol	ND	0.0050	0.0050	1	12/12/2017 14:44
4-Chlorophenyl Phenyl Ether	ND	0.15	0.25	1	12/12/2017 14:44
Chrysene	ND	0.14	0.25	1	12/12/2017 14:44
Dibenzo (a,h) anthracene	ND	0.0025	0.0025	1	12/12/2017 14:44
Dibenzofuran	ND	0.13	0.25	1	12/12/2017 14:44
Di-n-butyl Phthalate	ND	0.13	0.25	1	12/12/2017 14:44
1,2-Dichlorobenzene	ND	0.12	0.25	1	12/12/2017 14:44
1,3-Dichlorobenzene	ND	0.14	0.25	1	12/12/2017 14:44
1,4-Dichlorobenzene	ND	0.025	0.025	1	12/12/2017 14:44
3,3-Dichlorobenzidine	ND	0.0050	0.0050	1	12/12/2017 14:44
2,4-Dichlorophenol	ND	0.0025	0.0025	1	12/12/2017 14:44
Diethyl Phthalate	ND	0.010	0.010	1	12/12/2017 14:44
2,4-Dimethylphenol	ND	0.025	0.025	1	12/12/2017 14:44
Dimethyl Phthalate	ND	0.0025	0.0025	1	12/12/2017 14:44
4,6-Dinitro-2-methylphenol	ND	0.13	1.3	1	12/12/2017 14:44

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**GC17 12121712.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.62	0.62	1	12/12/2017 14:44
2,4-Dinitrotoluene	ND	0.025	0.025	1	12/12/2017 14:44
2,6-Dinitrotoluene	ND	0.14	0.25	1	12/12/2017 14:44
Di-n-octyl Phthalate	ND	0.14	0.50	1	12/12/2017 14:44
1,2-Diphenylhydrazine	ND	0.16	0.25	1	12/12/2017 14:44
Fluoranthene	ND	0.13	0.25	1	12/12/2017 14:44
Fluorene	ND	0.14	0.25	1	12/12/2017 14:44
Hexachlorobenzene	ND	0.025	0.025	1	12/12/2017 14:44
Hexachlorobutadiene	ND	0.025	0.025	1	12/12/2017 14:44
Hexachlorocyclopentadiene	ND	0.73	1.3	1	12/12/2017 14:44
Hexachloroethane	ND	0.14	0.25	1	12/12/2017 14:44
Indeno (1,2,3-cd) pyrene	ND	0.012	0.012	1	12/12/2017 14:44
Isophorone	ND	0.12	0.25	1	12/12/2017 14:44
2-Methylnaphthalene	ND	0.025	0.025	1	12/12/2017 14:44
2-Methylphenol (o-Cresol)	ND	0.14	0.25	1	12/12/2017 14:44
3 & 4-Methylphenol (m,p-Cresol)	ND	0.12	0.25	1	12/12/2017 14:44
Naphthalene	ND	0.0025	0.0025	1	12/12/2017 14:44
2-Nitroaniline	ND	0.62	1.3	1	12/12/2017 14:44
3-Nitroaniline	ND	0.59	1.3	1	12/12/2017 14:44
4-Nitroaniline	ND	0.55	1.3	1	12/12/2017 14:44
Nitrobenzene	ND	0.14	0.25	1	12/12/2017 14:44
2-Nitrophenol	ND	0.64	1.3	1	12/12/2017 14:44
4-Nitrophenol	ND	0.41	1.3	1	12/12/2017 14:44
N-Nitrosodiphenylamine	ND	0.16	0.25	1	12/12/2017 14:44
N-Nitrosodi-n-propylamine	ND	0.012	0.012	1	12/12/2017 14:44
Pentachlorophenol	ND	0.32	1.3	1	12/12/2017 14:44
Phenanthrene	ND	0.14	0.25	1	12/12/2017 14:44
Phenol	ND	0.0050	0.0050	1	12/12/2017 14:44
Pyrene	ND	0.13	0.25	1	12/12/2017 14:44
Pyridine	ND	0.25	0.25	1	12/12/2017 14:44
1,2,4-Trichlorobenzene	ND	0.14	0.25	1	12/12/2017 14:44
2,4,5-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 14:44
2,4,6-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 14:44

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**GC17 12121712.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Surrogates	**REC (%)**		**Limits**		
2-Fluorophenol	52		30-130		12/12/2017 14:44
Phenol-d5	49		30-130		12/12/2017 14:44
Nitrobenzene-d5	57		30-130		12/12/2017 14:44
2-Fluorobiphenyl	54		30-130		12/12/2017 14:44
2,4,6-Tribromophenol	65		16-130		12/12/2017 14:44
4-Terphenyl-d14	57		30-130		12/12/2017 14:44

Analyst(s): REB

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**GC17 12121713.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Acenaphthene	ND	0.14	0.25	1	12/12/2017 15:12
Acenaphthylene	ND	0.14	0.25	1	12/12/2017 15:12
Acetochlor	ND	0.25	0.25	1	12/12/2017 15:12
Anthracene	ND	0.14	0.25	1	12/12/2017 15:12
Benzidine	ND	0.23	1.3	1	12/12/2017 15:12
Benzo (a) anthracene	ND	0.050	0.050	1	12/12/2017 15:12
Benzo (a) pyrene	ND	0.0025	0.0025	1	12/12/2017 15:12
Benzo (b) fluoranthene	ND	0.012	0.012	1	12/12/2017 15:12
Benzo (g,h,i) perylene	ND	0.15	0.25	1	12/12/2017 15:12
Benzo (k) fluoranthene	ND	0.16	0.25	1	12/12/2017 15:12
Benzyl Alcohol	ND	0.51	1.3	1	12/12/2017 15:12
1,1-Biphenyl	ND	0.15	0.25	1	12/12/2017 15:12
Bis (2-chloroethoxy) Methane	ND	0.14	0.25	1	12/12/2017 15:12
Bis (2-chloroethyl) Ether	ND	0.0012	0.0012	1	12/12/2017 15:12
Bis (2-chloroisopropyl) Ether	ND	0.0012	0.0012	1	12/12/2017 15:12
Bis (2-ethylhexyl) Adipate	ND	0.25	0.25	1	12/12/2017 15:12
Bis (2-ethylhexyl) Phthalate	ND	0.13	0.25	1	12/12/2017 15:12
4-Bromophenyl Phenyl Ether	ND	0.16	0.25	1	12/12/2017 15:12
Butylbenzyl Phthalate	ND	0.13	0.25	1	12/12/2017 15:12
4-Chloroaniline	ND	0.0012	0.0012	1	12/12/2017 15:12
4-Chloro-3-methylphenol	ND	0.12	0.25	1	12/12/2017 15:12
2-Chloronaphthalene	ND	0.16	0.25	1	12/12/2017 15:12
2-Chlorophenol	ND	0.0050	0.0050	1	12/12/2017 15:12
4-Chlorophenyl Phenyl Ether	ND	0.15	0.25	1	12/12/2017 15:12
Chrysene	ND	0.14	0.25	1	12/12/2017 15:12
Dibenzo (a,h) anthracene	ND	0.0025	0.0025	1	12/12/2017 15:12
Dibenzofuran	ND	0.13	0.25	1	12/12/2017 15:12
Di-n-butyl Phthalate	ND	0.13	0.25	1	12/12/2017 15:12
1,2-Dichlorobenzene	ND	0.12	0.25	1	12/12/2017 15:12
1,3-Dichlorobenzene	ND	0.14	0.25	1	12/12/2017 15:12
1,4-Dichlorobenzene	ND	0.025	0.025	1	12/12/2017 15:12
3,3-Dichlorobenzidine	ND	0.0050	0.0050	1	12/12/2017 15:12
2,4-Dichlorophenol	ND	0.0025	0.0025	1	12/12/2017 15:12
Diethyl Phthalate	ND	0.010	0.010	1	12/12/2017 15:12
2,4-Dimethylphenol	ND	0.025	0.025	1	12/12/2017 15:12
Dimethyl Phthalate	ND	0.0025	0.0025	1	12/12/2017 15:12
4,6-Dinitro-2-methylphenol	ND	0.13	1.3	1	12/12/2017 15:12

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**GC17 12121713.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.62	0.62	1	12/12/2017 15:12
2,4-Dinitrotoluene	ND	0.025	0.025	1	12/12/2017 15:12
2,6-Dinitrotoluene	ND	0.14	0.25	1	12/12/2017 15:12
Di-n-octyl Phthalate	ND	0.14	0.50	1	12/12/2017 15:12
1,2-Diphenylhydrazine	ND	0.16	0.25	1	12/12/2017 15:12
Fluoranthene	ND	0.13	0.25	1	12/12/2017 15:12
Fluorene	ND	0.14	0.25	1	12/12/2017 15:12
Hexachlorobenzene	ND	0.025	0.025	1	12/12/2017 15:12
Hexachlorobutadiene	ND	0.025	0.025	1	12/12/2017 15:12
Hexachlorocyclopentadiene	ND	0.73	1.3	1	12/12/2017 15:12
Hexachloroethane	ND	0.14	0.25	1	12/12/2017 15:12
Indeno (1,2,3-cd) pyrene	ND	0.012	0.012	1	12/12/2017 15:12
Isophorone	ND	0.12	0.25	1	12/12/2017 15:12
2-Methylnaphthalene	ND	0.025	0.025	1	12/12/2017 15:12
2-Methylphenol (o-Cresol)	ND	0.14	0.25	1	12/12/2017 15:12
3 & 4-Methylphenol (m,p-Cresol)	ND	0.12	0.25	1	12/12/2017 15:12
Naphthalene	ND	0.0025	0.0025	1	12/12/2017 15:12
2-Nitroaniline	ND	0.62	1.3	1	12/12/2017 15:12
3-Nitroaniline	ND	0.59	1.3	1	12/12/2017 15:12
4-Nitroaniline	ND	0.55	1.3	1	12/12/2017 15:12
Nitrobenzene	ND	0.14	0.25	1	12/12/2017 15:12
2-Nitrophenol	ND	0.64	1.3	1	12/12/2017 15:12
4-Nitrophenol	ND	0.41	1.3	1	12/12/2017 15:12
N-Nitrosodiphenylamine	ND	0.16	0.25	1	12/12/2017 15:12
N-Nitrosodi-n-propylamine	ND	0.012	0.012	1	12/12/2017 15:12
Pentachlorophenol	ND	0.32	1.3	1	12/12/2017 15:12
Phenanthrene	ND	0.14	0.25	1	12/12/2017 15:12
Phenol	ND	0.0050	0.0050	1	12/12/2017 15:12
Pyrene	ND	0.13	0.25	1	12/12/2017 15:12
Pyridine	ND	0.25	0.25	1	12/12/2017 15:12
1,2,4-Trichlorobenzene	ND	0.14	0.25	1	12/12/2017 15:12
2,4,5-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 15:12
2,4,6-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 15:12

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**GC17 12121713.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Surrogates	**REC (%)**		**Limits**		
2-Fluorophenol	119		30-130		12/12/2017 15:12
Phenol-d5	93		30-130		12/12/2017 15:12
Nitrobenzene-d5	95		30-130		12/12/2017 15:12
2-Fluorobiphenyl	84		30-130		12/12/2017 15:12
2,4,6-Tribromophenol	92		16-130		12/12/2017 15:12
4-Terphenyl-d14	97		30-130		12/12/2017 15:12

Analyst(s): REB

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**GC17 12121714.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Acenaphthene	ND	0.14	0.25	1	12/12/2017 15:39
Acenaphthylene	ND	0.14	0.25	1	12/12/2017 15:39
Acetochlor	ND	0.25	0.25	1	12/12/2017 15:39
Anthracene	ND	0.14	0.25	1	12/12/2017 15:39
Benzidine	ND	0.23	1.3	1	12/12/2017 15:39
Benzo (a) anthracene	ND	0.050	0.050	1	12/12/2017 15:39
Benzo (a) pyrene	ND	0.0025	0.0025	1	12/12/2017 15:39
Benzo (b) fluoranthene	ND	0.012	0.012	1	12/12/2017 15:39
Benzo (g,h,i) perylene	ND	0.15	0.25	1	12/12/2017 15:39
Benzo (k) fluoranthene	ND	0.16	0.25	1	12/12/2017 15:39
Benzyl Alcohol	ND	0.51	1.3	1	12/12/2017 15:39
1,1-Biphenyl	ND	0.15	0.25	1	12/12/2017 15:39
Bis (2-chloroethoxy) Methane	ND	0.14	0.25	1	12/12/2017 15:39
Bis (2-chloroethyl) Ether	ND	0.0012	0.0012	1	12/12/2017 15:39
Bis (2-chloroisopropyl) Ether	ND	0.0012	0.0012	1	12/12/2017 15:39
Bis (2-ethylhexyl) Adipate	ND	0.25	0.25	1	12/12/2017 15:39
Bis (2-ethylhexyl) Phthalate	ND	0.13	0.25	1	12/12/2017 15:39
4-Bromophenyl Phenyl Ether	ND	0.16	0.25	1	12/12/2017 15:39
Butylbenzyl Phthalate	ND	0.13	0.25	1	12/12/2017 15:39
4-Chloroaniline	ND	0.0012	0.0012	1	12/12/2017 15:39
4-Chloro-3-methylphenol	ND	0.12	0.25	1	12/12/2017 15:39
2-Chloronaphthalene	ND	0.16	0.25	1	12/12/2017 15:39
2-Chlorophenol	**0.0065**	0.0050	0.0050	1	12/12/2017 15:39
4-Chlorophenyl Phenyl Ether	ND	0.15	0.25	1	12/12/2017 15:39
Chrysene	ND	0.14	0.25	1	12/12/2017 15:39
Dibenzo (a,h) anthracene	ND	0.0025	0.0025	1	12/12/2017 15:39
Dibenzofuran	ND	0.13	0.25	1	12/12/2017 15:39
Di-n-butyl Phthalate	ND	0.13	0.25	1	12/12/2017 15:39
1,2-Dichlorobenzene	ND	0.12	0.25	1	12/12/2017 15:39
1,3-Dichlorobenzene	ND	0.14	0.25	1	12/12/2017 15:39
1,4-Dichlorobenzene	ND	0.025	0.025	1	12/12/2017 15:39
3,3-Dichlorobenzidine	ND	0.0050	0.0050	1	12/12/2017 15:39
2,4-Dichlorophenol	ND	0.0025	0.0025	1	12/12/2017 15:39
Diethyl Phthalate	ND	0.010	0.010	1	12/12/2017 15:39
2,4-Dimethylphenol	ND	0.025	0.025	1	12/12/2017 15:39
Dimethyl Phthalate	ND	0.0025	0.0025	1	12/12/2017 15:39
4,6-Dinitro-2-methylphenol	ND	0.13	1.3	1	12/12/2017 15:39

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**GC17 12121714.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.62	0.62	1	12/12/2017 15:39
2,4-Dinitrotoluene	ND	0.025	0.025	1	12/12/2017 15:39
2,6-Dinitrotoluene	ND	0.14	0.25	1	12/12/2017 15:39
Di-n-octyl Phthalate	ND	0.14	0.50	1	12/12/2017 15:39
1,2-Diphenylhydrazine	ND	0.16	0.25	1	12/12/2017 15:39
Fluoranthene	ND	0.13	0.25	1	12/12/2017 15:39
Fluorene	ND	0.14	0.25	1	12/12/2017 15:39
Hexachlorobenzene	ND	0.025	0.025	1	12/12/2017 15:39
Hexachlorobutadiene	ND	0.025	0.025	1	12/12/2017 15:39
Hexachlorocyclopentadiene	ND	0.73	1.3	1	12/12/2017 15:39
Hexachloroethane	ND	0.14	0.25	1	12/12/2017 15:39
Indeno (1,2,3-cd) pyrene	ND	0.012	0.012	1	12/12/2017 15:39
Isophorone	ND	0.12	0.25	1	12/12/2017 15:39
2-Methylnaphthalene	ND	0.025	0.025	1	12/12/2017 15:39
2-Methylphenol (o-Cresol)	ND	0.14	0.25	1	12/12/2017 15:39
3 & 4-Methylphenol (m,p-Cresol)	ND	0.12	0.25	1	12/12/2017 15:39
Naphthalene	ND	0.0025	0.0025	1	12/12/2017 15:39
2-Nitroaniline	ND	0.62	1.3	1	12/12/2017 15:39
3-Nitroaniline	ND	0.59	1.3	1	12/12/2017 15:39
4-Nitroaniline	ND	0.55	1.3	1	12/12/2017 15:39
Nitrobenzene	ND	0.14	0.25	1	12/12/2017 15:39
2-Nitrophenol	ND	0.64	1.3	1	12/12/2017 15:39
4-Nitrophenol	ND	0.41	1.3	1	12/12/2017 15:39
N-Nitrosodiphenylamine	ND	0.16	0.25	1	12/12/2017 15:39
N-Nitrosodi-n-propylamine	ND	0.012	0.012	1	12/12/2017 15:39
Pentachlorophenol	ND	0.32	1.3	1	12/12/2017 15:39
Phenanthrene	ND	0.14	0.25	1	12/12/2017 15:39
Phenol	ND	0.0050	0.0050	1	12/12/2017 15:39
Pyrene	ND	0.13	0.25	1	12/12/2017 15:39
Pyridine	ND	0.25	0.25	1	12/12/2017 15:39
1,2,4-Trichlorobenzene	ND	0.14	0.25	1	12/12/2017 15:39
2,4,5-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 15:39
2,4,6-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 15:39

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**GC17 12121714.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed

Surrogates	REC (%)	Qualifiers	Limits	
2-Fluorophenol	134	S	30-130	12/12/2017 15:39
Phenol-d5	111		30-130	12/12/2017 15:39
Nitrobenzene-d5	99		30-130	12/12/2017 15:39
2-Fluorobiphenyl	112		30-130	12/12/2017 15:39
2,4,6-Tribromophenol	114		16-130	12/12/2017 15:39
4-Terphenyl-d14	115		30-130	12/12/2017 15:39

Analyst(s): REB

Analytical Comments: c2

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	**1712382-006A**	**Soil**	**12/07/2017 12:50**	**GC17 12121715.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Acenaphthene	ND	0.14	0.25	1	12/12/2017 16:06
Acenaphthylene	ND	0.14	0.25	1	12/12/2017 16:06
Acetochlor	ND	0.25	0.25	1	12/12/2017 16:06
Anthracene	ND	0.14	0.25	1	12/12/2017 16:06
Benzidine	ND	0.23	1.3	1	12/12/2017 16:06
Benzo (a) anthracene	ND	0.050	0.050	1	12/12/2017 16:06
Benzo (a) pyrene	ND	0.0025	0.0025	1	12/12/2017 16:06
Benzo (b) fluoranthene	ND	0.012	0.012	1	12/12/2017 16:06
Benzo (g,h,i) perylene	ND	0.15	0.25	1	12/12/2017 16:06
Benzo (k) fluoranthene	ND	0.16	0.25	1	12/12/2017 16:06
Benzyl Alcohol	ND	0.51	1.3	1	12/12/2017 16:06
1,1-Biphenyl	ND	0.15	0.25	1	12/12/2017 16:06
Bis (2-chloroethoxy) Methane	ND	0.14	0.25	1	12/12/2017 16:06
Bis (2-chloroethyl) Ether	ND	0.0012	0.0012	1	12/12/2017 16:06
Bis (2-chloroisopropyl) Ether	ND	0.0012	0.0012	1	12/12/2017 16:06
Bis (2-ethylhexyl) Adipate	ND	0.25	0.25	1	12/12/2017 16:06
Bis (2-ethylhexyl) Phthalate	ND	0.13	0.25	1	12/12/2017 16:06
4-Bromophenyl Phenyl Ether	ND	0.16	0.25	1	12/12/2017 16:06
Butylbenzyl Phthalate	ND	0.13	0.25	1	12/12/2017 16:06
4-Chloroaniline	ND	0.0012	0.0012	1	12/12/2017 16:06
4-Chloro-3-methylphenol	ND	0.12	0.25	1	12/12/2017 16:06
2-Chloronaphthalene	ND	0.16	0.25	1	12/12/2017 16:06
2-Chlorophenol	ND	0.0050	0.0050	1	12/12/2017 16:06
4-Chlorophenyl Phenyl Ether	ND	0.15	0.25	1	12/12/2017 16:06
Chrysene	ND	0.14	0.25	1	12/12/2017 16:06
Dibenzo (a,h) anthracene	ND	0.0025	0.0025	1	12/12/2017 16:06
Dibenzofuran	ND	0.13	0.25	1	12/12/2017 16:06
Di-n-butyl Phthalate	ND	0.13	0.25	1	12/12/2017 16:06
1,2-Dichlorobenzene	ND	0.12	0.25	1	12/12/2017 16:06
1,3-Dichlorobenzene	ND	0.14	0.25	1	12/12/2017 16:06
1,4-Dichlorobenzene	ND	0.025	0.025	1	12/12/2017 16:06
3,3-Dichlorobenzidine	ND	0.0050	0.0050	1	12/12/2017 16:06
2,4-Dichlorophenol	ND	0.0025	0.0025	1	12/12/2017 16:06
Diethyl Phthalate	ND	0.010	0.010	1	12/12/2017 16:06
2,4-Dimethylphenol	ND	0.025	0.025	1	12/12/2017 16:06
Dimethyl Phthalate	ND	0.0025	0.0025	1	12/12/2017 16:06
4,6-Dinitro-2-methylphenol	ND	0.13	1.3	1	12/12/2017 16:06

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	1712382-006A	Soil	12/07/2017 12:50	GC17 12121715.D	150077

Analytes	Result	MDL	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.62	0.62	1	12/12/2017 16:06
2,4-Dinitrotoluene	ND	0.025	0.025	1	12/12/2017 16:06
2,6-Dinitrotoluene	ND	0.14	0.25	1	12/12/2017 16:06
Di-n-octyl Phthalate	ND	0.14	0.50	1	12/12/2017 16:06
1,2-Diphenylhydrazine	ND	0.16	0.25	1	12/12/2017 16:06
Fluoranthene	ND	0.13	0.25	1	12/12/2017 16:06
Fluorene	ND	0.14	0.25	1	12/12/2017 16:06
Hexachlorobenzene	ND	0.025	0.025	1	12/12/2017 16:06
Hexachlorobutadiene	ND	0.025	0.025	1	12/12/2017 16:06
Hexachlorocyclopentadiene	ND	0.73	1.3	1	12/12/2017 16:06
Hexachloroethane	ND	0.14	0.25	1	12/12/2017 16:06
Indeno (1,2,3-cd) pyrene	ND	0.012	0.012	1	12/12/2017 16:06
Isophorone	ND	0.12	0.25	1	12/12/2017 16:06
2-Methylnaphthalene	ND	0.025	0.025	1	12/12/2017 16:06
2-Methylphenol (o-Cresol)	ND	0.14	0.25	1	12/12/2017 16:06
3 & 4-Methylphenol (m,p-Cresol)	ND	0.12	0.25	1	12/12/2017 16:06
Naphthalene	ND	0.0025	0.0025	1	12/12/2017 16:06
2-Nitroaniline	ND	0.62	1.3	1	12/12/2017 16:06
3-Nitroaniline	ND	0.59	1.3	1	12/12/2017 16:06
4-Nitroaniline	ND	0.55	1.3	1	12/12/2017 16:06
Nitrobenzene	ND	0.14	0.25	1	12/12/2017 16:06
2-Nitrophenol	ND	0.64	1.3	1	12/12/2017 16:06
4-Nitrophenol	ND	0.41	1.3	1	12/12/2017 16:06
N-Nitrosodiphenylamine	ND	0.16	0.25	1	12/12/2017 16:06
N-Nitrosodi-n-propylamine	ND	0.012	0.012	1	12/12/2017 16:06
Pentachlorophenol	ND	0.32	1.3	1	12/12/2017 16:06
Phenanthrene	ND	0.14	0.25	1	12/12/2017 16:06
Phenol	ND	0.0050	0.0050	1	12/12/2017 16:06
Pyrene	ND	0.13	0.25	1	12/12/2017 16:06
Pyridine	ND	0.25	0.25	1	12/12/2017 16:06
1,2,4-Trichlorobenzene	ND	0.14	0.25	1	12/12/2017 16:06
2,4,5-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 16:06
2,4,6-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 16:06

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	**1712382-006A**	**Soil**	**12/07/2017 12:50**	**GC17 12121715.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Surrogates	REC (%)		Limits		
2-Fluorophenol	108		30-130		12/12/2017 16:06
Phenol-d5	91		30-130		12/12/2017 16:06
Nitrobenzene-d5	93		30-130		12/12/2017 16:06
2-Fluorobiphenyl	83		30-130		12/12/2017 16:06
2,4,6-Tribromophenol	96		16-130		12/12/2017 16:06
4-Terphenyl-d14	87		30-130		12/12/2017 16:06

Analyst(s): REB

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**GC17 12121716.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Acenaphthene	ND	0.14	0.25	1	12/12/2017 16:34
Acenaphthylene	ND	0.14	0.25	1	12/12/2017 16:34
Acetochlor	ND	0.25	0.25	1	12/12/2017 16:34
Anthracene	ND	0.14	0.25	1	12/12/2017 16:34
Benzidine	ND	0.23	1.3	1	12/12/2017 16:34
Benzo (a) anthracene	ND	0.050	0.050	1	12/12/2017 16:34
Benzo (a) pyrene	ND	0.0025	0.0025	1	12/12/2017 16:34
Benzo (b) fluoranthene	ND	0.012	0.012	1	12/12/2017 16:34
Benzo (g,h,i) perylene	ND	0.15	0.25	1	12/12/2017 16:34
Benzo (k) fluoranthene	ND	0.16	0.25	1	12/12/2017 16:34
Benzyl Alcohol	ND	0.51	1.3	1	12/12/2017 16:34
1,1-Biphenyl	ND	0.15	0.25	1	12/12/2017 16:34
Bis (2-chloroethoxy) Methane	ND	0.14	0.25	1	12/12/2017 16:34
Bis (2-chloroethyl) Ether	ND	0.0012	0.0012	1	12/12/2017 16:34
Bis (2-chloroisopropyl) Ether	ND	0.0012	0.0012	1	12/12/2017 16:34
Bis (2-ethylhexyl) Adipate	ND	0.25	0.25	1	12/12/2017 16:34
Bis (2-ethylhexyl) Phthalate	ND	0.13	0.25	1	12/12/2017 16:34
4-Bromophenyl Phenyl Ether	ND	0.16	0.25	1	12/12/2017 16:34
Butylbenzyl Phthalate	ND	0.13	0.25	1	12/12/2017 16:34
4-Chloroaniline	ND	0.0012	0.0012	1	12/12/2017 16:34
4-Chloro-3-methylphenol	ND	0.12	0.25	1	12/12/2017 16:34
2-Chloronaphthalene	ND	0.16	0.25	1	12/12/2017 16:34
2-Chlorophenol	ND	0.0050	0.0050	1	12/12/2017 16:34
4-Chlorophenyl Phenyl Ether	ND	0.15	0.25	1	12/12/2017 16:34
Chrysene	ND	0.14	0.25	1	12/12/2017 16:34
Dibenzo (a,h) anthracene	ND	0.0025	0.0025	1	12/12/2017 16:34
Dibenzofuran	ND	0.13	0.25	1	12/12/2017 16:34
Di-n-butyl Phthalate	ND	0.13	0.25	1	12/12/2017 16:34
1,2-Dichlorobenzene	ND	0.12	0.25	1	12/12/2017 16:34
1,3-Dichlorobenzene	ND	0.14	0.25	1	12/12/2017 16:34
1,4-Dichlorobenzene	ND	0.025	0.025	1	12/12/2017 16:34
3,3-Dichlorobenzidine	ND	0.0050	0.0050	1	12/12/2017 16:34
2,4-Dichlorophenol	ND	0.0025	0.0025	1	12/12/2017 16:34
Diethyl Phthalate	ND	0.010	0.010	1	12/12/2017 16:34
2,4-Dimethylphenol	ND	0.025	0.025	1	12/12/2017 16:34
Dimethyl Phthalate	ND	0.0025	0.0025	1	12/12/2017 16:34
4,6-Dinitro-2-methylphenol	ND	0.13	1.3	1	12/12/2017 16:34

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**GC17 12121716.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.62	0.62	1	12/12/2017 16:34
2,4-Dinitrotoluene	ND	0.025	0.025	1	12/12/2017 16:34
2,6-Dinitrotoluene	ND	0.14	0.25	1	12/12/2017 16:34
Di-n-octyl Phthalate	ND	0.14	0.50	1	12/12/2017 16:34
1,2-Diphenylhydrazine	ND	0.16	0.25	1	12/12/2017 16:34
Fluoranthene	ND	0.13	0.25	1	12/12/2017 16:34
Fluorene	ND	0.14	0.25	1	12/12/2017 16:34
Hexachlorobenzene	ND	0.025	0.025	1	12/12/2017 16:34
Hexachlorobutadiene	ND	0.025	0.025	1	12/12/2017 16:34
Hexachlorocyclopentadiene	ND	0.73	1.3	1	12/12/2017 16:34
Hexachloroethane	ND	0.14	0.25	1	12/12/2017 16:34
Indeno (1,2,3-cd) pyrene	ND	0.012	0.012	1	12/12/2017 16:34
Isophorone	ND	0.12	0.25	1	12/12/2017 16:34
2-Methylnaphthalene	ND	0.025	0.025	1	12/12/2017 16:34
2-Methylphenol (o-Cresol)	ND	0.14	0.25	1	12/12/2017 16:34
3 & 4-Methylphenol (m,p-Cresol)	ND	0.12	0.25	1	12/12/2017 16:34
Naphthalene	ND	0.0025	0.0025	1	12/12/2017 16:34
2-Nitroaniline	ND	0.62	1.3	1	12/12/2017 16:34
3-Nitroaniline	ND	0.59	1.3	1	12/12/2017 16:34
4-Nitroaniline	ND	0.55	1.3	1	12/12/2017 16:34
Nitrobenzene	ND	0.14	0.25	1	12/12/2017 16:34
2-Nitrophenol	ND	0.64	1.3	1	12/12/2017 16:34
4-Nitrophenol	ND	0.41	1.3	1	12/12/2017 16:34
N-Nitrosodiphenylamine	ND	0.16	0.25	1	12/12/2017 16:34
N-Nitrosodi-n-propylamine	ND	0.012	0.012	1	12/12/2017 16:34
Pentachlorophenol	ND	0.32	1.3	1	12/12/2017 16:34
Phenanthrene	ND	0.14	0.25	1	12/12/2017 16:34
Phenol	ND	0.0050	0.0050	1	12/12/2017 16:34
Pyrene	ND	0.13	0.25	1	12/12/2017 16:34
Pyridine	ND	0.25	0.25	1	12/12/2017 16:34
1,2,4-Trichlorobenzene	ND	0.14	0.25	1	12/12/2017 16:34
2,4,5-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 16:34
2,4,6-Trichlorophenol	ND	0.012	0.012	1	12/12/2017 16:34

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3640A
Date Prepared:	12/12/17	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**GC17 12121716.D**	**150077**

Analytes	Result	MDL	RL	DF	Date Analyzed
Surrogates	REC (%)		Limits		
2-Fluorophenol	71		30-130		12/12/2017 16:34
Phenol-d5	61		30-130		12/12/2017 16:34
Nitrobenzene-d5	60		30-130		12/12/2017 16:34
2-Fluorobiphenyl	58		30-130		12/12/2017 16:34
2,4,6-Tribromophenol	70		16-130		12/12/2017 16:34
4-Terphenyl-d14	70		30-130		12/12/2017 16:34

Analyst(s): REB

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3050B
Date Prepared:	12/8/17	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**ICP-MS1 094SMPL.D**	**149962**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.84**	0.50	1	12/11/2017 17:57
Arsenic	**4.5**	0.50	1	12/11/2017 17:57
Barium	**170**	5.0	1	12/11/2017 17:57
Beryllium	ND	0.50	1	12/11/2017 17:57
Cadmium	**0.38**	0.25	1	12/11/2017 17:57
Chromium	**30**	0.50	1	12/11/2017 17:57
Cobalt	**5.9**	0.50	1	12/11/2017 17:57
Copper	**31**	0.50	1	12/11/2017 17:57
Lead	**170**	0.50	1	12/11/2017 17:57
Mercury	**0.16**	0.050	1	12/11/2017 17:57
Molybdenum	ND	0.50	1	12/11/2017 17:57
Nickel	**39**	0.50	1	12/11/2017 17:57
Selenium	**0.98**	0.50	1	12/11/2017 17:57
Silver	ND	0.50	1	12/11/2017 17:57
Thallium	ND	0.50	1	12/11/2017 17:57
Vanadium	**25**	0.50	1	12/11/2017 17:57
Zinc	**160**	5.0	1	12/11/2017 17:57

Surrogates	REC (%)	Limits	
Terbium	99	70-130	12/11/2017 17:57

Analyst(s): ND

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3050B
Date Prepared:	12/8/17	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**ICP-MS1 095SMPL.D**	**149962**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	12/11/2017 18:03
Arsenic	**3.5**	0.50	1	12/11/2017 18:03
Barium	**110**	5.0	1	12/11/2017 18:03
Beryllium	ND	0.50	1	12/11/2017 18:03
Cadmium	ND	0.25	1	12/11/2017 18:03
Chromium	**50**	0.50	1	12/11/2017 18:03
Cobalt	**7.7**	0.50	1	12/11/2017 18:03
Copper	**13**	0.50	1	12/11/2017 18:03
Lead	**5.1**	0.50	1	12/11/2017 18:03
Mercury	ND	0.050	1	12/11/2017 18:03
Molybdenum	ND	0.50	1	12/11/2017 18:03
Nickel	**61**	0.50	1	12/11/2017 18:03
Selenium	ND	0.50	1	12/11/2017 18:03
Silver	ND	0.50	1	12/11/2017 18:03
Thallium	ND	0.50	1	12/11/2017 18:03
Vanadium	**30**	0.50	1	12/11/2017 18:03
Zinc	**35**	5.0	1	12/11/2017 18:03

Surrogates	REC (%)	Limits	
Terbium	100	70-130	12/11/2017 18:03

Analyst(s): ND

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3050B
Date Prepared:	12/8/17	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**ICP-MS1 096SMPL.D**	**149962**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.94**	0.50	1	12/11/2017 18:09
Arsenic	**7.6**	0.50	1	12/11/2017 18:09
Barium	**150**	5.0	1	12/11/2017 18:09
Beryllium	**0.72**	0.50	1	12/11/2017 18:09
Cadmium	**0.32**	0.25	1	12/11/2017 18:09
Chromium	**56**	0.50	1	12/11/2017 18:09
Cobalt	**14**	0.50	1	12/11/2017 18:09
Copper	**39**	0.50	1	12/11/2017 18:09
Lead	**11**	0.50	1	12/11/2017 18:09
Mercury	**0.062**	0.050	1	12/11/2017 18:09
Molybdenum	**1.1**	0.50	1	12/11/2017 18:09
Nickel	**81**	0.50	1	12/11/2017 18:09
Selenium	**0.88**	0.50	1	12/11/2017 18:09
Silver	ND	0.50	1	12/11/2017 18:09
Thallium	ND	0.50	1	12/11/2017 18:09
Vanadium	**56**	0.50	1	12/11/2017 18:09
Zinc	**77**	5.0	1	12/11/2017 18:09

Surrogates	REC (%)	Limits	
Terbium	100	70-130	12/11/2017 18:09

Analyst(s): ND

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3050B
Date Prepared:	12/8/17	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**ICP-MS1 097SMPL.D**	**149962**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	12/11/2017 18:15
Arsenic	**15**	0.50	1	12/11/2017 18:15
Barium	**150**	5.0	1	12/11/2017 18:15
Beryllium	**0.51**	0.50	1	12/11/2017 18:15
Cadmium	ND	0.25	1	12/11/2017 18:15
Chromium	**47**	0.50	1	12/11/2017 18:15
Cobalt	**11**	0.50	1	12/11/2017 18:15
Copper	**23**	0.50	1	12/11/2017 18:15
Lead	**6.3**	0.50	1	12/11/2017 18:15
Mercury	ND	0.050	1	12/11/2017 18:15
Molybdenum	**0.63**	0.50	1	12/11/2017 18:15
Nickel	**69**	0.50	1	12/11/2017 18:15
Selenium	**1.2**	0.50	1	12/11/2017 18:15
Silver	ND	0.50	1	12/11/2017 18:15
Thallium	ND	0.50	1	12/11/2017 18:15
Vanadium	**40**	0.50	1	12/11/2017 18:15
Zinc	**53**	5.0	1	12/11/2017 18:15

Surrogates	REC (%)	Limits	
Terbium	100	70-130	12/11/2017 18:15

Analyst(s): ND

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3050B
Date Prepared:	12/8/17	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**ICP-MS1 098SMPL.D**	**149973**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.52**	0.50	1	12/11/2017 18:21
Arsenic	**3.2**	0.50	1	12/11/2017 18:21
Barium	**150**	5.0	1	12/11/2017 18:21
Beryllium	**0.61**	0.50	1	12/11/2017 18:21
Cadmium	ND	0.25	1	12/11/2017 18:21
Chromium	**56**	0.50	1	12/11/2017 18:21
Cobalt	**14**	0.50	1	12/11/2017 18:21
Copper	**36**	0.50	1	12/11/2017 18:21
Lead	**8.1**	0.50	1	12/11/2017 18:21
Mercury	**0.068**	0.050	1	12/11/2017 18:21
Molybdenum	**0.56**	0.50	1	12/11/2017 18:21
Nickel	**90**	0.50	1	12/11/2017 18:21
Selenium	**0.66**	0.50	1	12/11/2017 18:21
Silver	ND	0.50	1	12/11/2017 18:21
Thallium	ND	0.50	1	12/11/2017 18:21
Vanadium	**45**	0.50	1	12/11/2017 18:21
Zinc	**79**	5.0	1	12/11/2017 18:21

Surrogates	REC (%)	Limits	
Terbium	107	70-130	12/11/2017 18:21

Analyst(s): ND

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3050B
Date Prepared:	12/8/17	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	**1712382-006A**	**Soil**	**12/07/2017 12:50**	**ICP-MS1 099SMPL.D**	**149973**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	12/11/2017 18:27
Arsenic	**2.8**	0.50	1	12/11/2017 18:27
Barium	**96**	5.0	1	12/11/2017 18:27
Beryllium	ND	0.50	1	12/11/2017 18:27
Cadmium	ND	0.25	1	12/11/2017 18:27
Chromium	**40**	0.50	1	12/11/2017 18:27
Cobalt	**9.2**	0.50	1	12/11/2017 18:27
Copper	**21**	0.50	1	12/11/2017 18:27
Lead	**5.5**	0.50	1	12/11/2017 18:27
Mercury	**0.058**	0.050	1	12/11/2017 18:27
Molybdenum	ND	0.50	1	12/11/2017 18:27
Nickel	**54**	0.50	1	12/11/2017 18:27
Selenium	ND	0.50	1	12/11/2017 18:27
Silver	ND	0.50	1	12/11/2017 18:27
Thallium	ND	0.50	1	12/11/2017 18:27
Vanadium	**35**	0.50	1	12/11/2017 18:27
Zinc	**51**	5.0	1	12/11/2017 18:27

Surrogates	REC (%)	Limits	
Terbium	102	70-130	12/11/2017 18:27

Analyst(s): ND

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3050B
Date Prepared:	12/8/17	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**ICP-MS1 058SMPL.D**	**149973**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.60**	0.50	1	12/11/2017 14:14
Arsenic	**8.2**	0.50	1	12/11/2017 14:14
Barium	**150**	5.0	1	12/11/2017 14:14
Beryllium	**0.79**	0.50	1	12/11/2017 14:14
Cadmium	ND	0.25	1	12/11/2017 14:14
Chromium	**60**	0.50	1	12/11/2017 14:14
Cobalt	**14**	0.50	1	12/11/2017 14:14
Copper	**35**	0.50	1	12/11/2017 14:14
Lead	**8.8**	0.50	1	12/11/2017 14:14
Mercury	ND	0.050	1	12/11/2017 14:14
Molybdenum	**0.81**	0.50	1	12/11/2017 14:14
Nickel	**78**	0.50	1	12/11/2017 14:14
Selenium	**2.0**	0.50	1	12/11/2017 14:14
Silver	ND	0.50	1	12/11/2017 14:14
Thallium	ND	0.50	1	12/11/2017 14:14
Vanadium	**58**	0.50	1	12/11/2017 14:14
Zinc	**84**	5.0	1	12/11/2017 14:14

Surrogates	REC (%)	Limits	
Terbium	103	70-130	12/11/2017 14:14

Analyst(s): ND

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8021B/8015Bm
Project:	DEROY-01-00; Environmental Characterization in situ soils	**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-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**GC3 12141710.D**	**149957**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	12/14/2017 16:24
MTBE	ND	0.050	1	12/14/2017 16:24
Benzene	ND	0.0050	1	12/14/2017 16:24
Toluene	ND	0.0050	1	12/14/2017 16:24
Ethylbenzene	ND	0.0050	1	12/14/2017 16:24
Xylenes	ND	0.0050	1	12/14/2017 16:24

Surrogates	REC (%)	Limits	
2-Fluorotoluene	101	62-126	12/14/2017 16:24

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**GC3 12141711.D**	**149957**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	12/14/2017 16:54
MTBE	ND	0.050	1	12/14/2017 16:54
Benzene	ND	0.0050	1	12/14/2017 16:54
Toluene	ND	0.0050	1	12/14/2017 16:54
Ethylbenzene	ND	0.0050	1	12/14/2017 16:54
Xylenes	ND	0.0050	1	12/14/2017 16:54

Surrogates	REC (%)	Limits	
2-Fluorotoluene	110	62-126	12/14/2017 16:54

Analyst(s): IA

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8021B/8015Bm
Project:	DEROY-01-00; Environmental Characterization in situ soils	**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-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**GC3 12141714.D**	**149957**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	12/14/2017 18:25
MTBE	ND	0.050	1	12/14/2017 18:25
Benzene	ND	0.0050	1	12/14/2017 18:25
Toluene	ND	0.0050	1	12/14/2017 18:25
Ethylbenzene	ND	0.0050	1	12/14/2017 18:25
Xylenes	ND	0.0050	1	12/14/2017 18:25

Surrogates	REC (%)	Limits	
2-Fluorotoluene	96	62-126	12/14/2017 18:25

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**GC3 12141715.D**	**149957**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	12/14/2017 18:55
MTBE	ND	0.050	1	12/14/2017 18:55
Benzene	ND	0.0050	1	12/14/2017 18:55
Toluene	ND	0.0050	1	12/14/2017 18:55
Ethylbenzene	ND	0.0050	1	12/14/2017 18:55
Xylenes	ND	0.0050	1	12/14/2017 18:55

Surrogates	REC (%)	Limits	
2-Fluorotoluene	101	62-126	12/14/2017 18:55

Analyst(s): IA

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8021B/8015Bm
Project:	DEROY-01-00; Environmental Characterization in situ soils	**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-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**GC3 12141716.D**	**149957**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	12/14/2017 19:25
MTBE	ND	0.050	1	12/14/2017 19:25
Benzene	ND	0.0050	1	12/14/2017 19:25
Toluene	ND	0.0050	1	12/14/2017 19:25
Ethylbenzene	ND	0.0050	1	12/14/2017 19:25
Xylenes	ND	0.0050	1	12/14/2017 19:25

Surrogates	REC (%)	Limits	
2-Fluorotoluene	99	62-126	12/14/2017 19:25

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	**1712382-006A**	**Soil**	**12/07/2017 12:50**	**GC3 12141718.D**	**149957**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	12/14/2017 20:25
MTBE	ND	0.050	1	12/14/2017 20:25
Benzene	ND	0.0050	1	12/14/2017 20:25
Toluene	ND	0.0050	1	12/14/2017 20:25
Ethylbenzene	ND	0.0050	1	12/14/2017 20:25
Xylenes	ND	0.0050	1	12/14/2017 20:25

Surrogates	REC (%)	Limits	
2-Fluorotoluene	100	62-126	12/14/2017 20:25

Analyst(s): IA

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW5030B
Date Prepared:	12/8/17	**Analytical Method:**	SW8021B/8015Bm
Project:	DEROY-01-00; Environmental Characterization in situ soils	**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-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**GC3 12141719.D**	**149957**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	12/14/2017 20:55
MTBE	ND	0.050	1	12/14/2017 20:55
Benzene	ND	0.0050	1	12/14/2017 20:55
Toluene	ND	0.0050	1	12/14/2017 20:55
Ethylbenzene	ND	0.0050	1	12/14/2017 20:55
Xylenes	ND	0.0050	1	12/14/2017 20:55

Surrogates	REC (%)	Limits	
2-Fluorotoluene	95	62-126	12/14/2017 20:55

Analyst(s): IA

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3630C
Date Prepared:	12/8/17	**Analytical Method:**	SW8015B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**GC39B 12131741.D**	**149963**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	12/14/2017 07:18
TPH-Motor Oil (C18-C36)	ND	5.0	1	12/14/2017 07:18

Surrogates	REC (%)	Limits	
C9	101	74-123	12/14/2017 07:18

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**GC39A 12131732.D**	**149963**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	12/14/2017 04:04
TPH-Motor Oil (C18-C36)	ND	5.0	1	12/14/2017 04:04

Surrogates	REC (%)	Limits	
C9	84	74-123	12/14/2017 04:04

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**GC39A 12131736.D**	**149963**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	12/14/2017 05:21
TPH-Motor Oil (C18-C36)	ND	5.0	1	12/14/2017 05:21

Surrogates	REC (%)	Limits	
C9	83	74-123	12/14/2017 05:21

Analyst(s): JIS

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3630C
Date Prepared:	12/8/17	**Analytical Method:**	SW8015B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-7B@16'	**1712382-004A**	**Soil**	**12/07/2017 12:30**	**GC11A 12151726.D**	**149963**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	12/15/2017 17:44
TPH-Motor Oil (C18-C36)	ND	5.0	1	12/15/2017 17:44

Surrogates	REC (%)	Limits	
C9	102	74-123	12/15/2017 17:44

Analyst(s): TK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**GC39A 12131760.D**	**149963**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	12/14/2017 13:07
TPH-Motor Oil (C18-C36)	ND	5.0	1	12/14/2017 13:07

Surrogates	REC (%)	Limits	
C9	83	74-123	12/14/2017 13:07

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-11@25½' ,26'	**1712382-006A**	**Soil**	**12/07/2017 12:50**	**GC39A 12131762.D**	**149963**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	12/14/2017 13:46
TPH-Motor Oil (C18-C36)	ND	5.0	1	12/14/2017 13:46

Surrogates	REC (%)	Limits	
C9	84	74-123	12/14/2017 13:46

Analyst(s): JIS

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW3550B/3630C
Date Prepared:	12/8/17	**Analytical Method:**	SW8015B
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**GC39A 12131764.D**	**149963**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	12/14/2017 14:25
TPH-Motor Oil (C18-C36)	ND	5.0	1	12/14/2017 14:25

Surrogates	REC (%)	Limits	
C9	84	74-123	12/14/2017 14:25

Analyst(s): JIS

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/12/17	**BatchID:**	150087
Date Analyzed:	12/13/17	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC23	**Analytical Method:**	SW8081A/8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS/LCSD-150087

QC Summary Report for SW8081A/8082

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Aldrin	ND	0.00010	-	-	-
a-BHC	ND	0.00010	-	-	-
b-BHC	ND	0.00010	-	-	-
d-BHC	ND	0.00010	-	-	-
g-BHC	ND	0.00010	-	-	-
Chlordane (Technical)	ND	0.0025	-	-	-
a-Chlordane	ND	0.00010	-	-	-
g-Chlordane	ND	0.00010	-	-	-
p,p-DDD	ND	0.00010	-	-	-
p,p-DDE	ND	0.00010	-	-	-
p,p-DDT	ND	0.00010	-	-	-
Dieldrin	ND	0.00010	-	-	-
Endosulfan I	ND	0.00010	-	-	-
Endosulfan II	ND	0.00010	-	-	-
Endosulfan sulfate	ND	0.00010	-	-	-
Endrin	ND	0.00010	-	-	-
Endrin aldehyde	ND	0.00010	-	-	-
Endrin ketone	ND	0.00010	-	-	-
Heptachlor	ND	0.00010	-	-	-
Heptachlor epoxide	ND	0.00010	-	-	-
Hexachlorobenzene	ND	0.0010	-	-	-
Hexachlorocyclopentadiene	ND	0.0020	-	-	-
Methoxychlor	ND	0.00010	-	-	-
Toxaphene	ND	0.0050	-	-	-
Aroclor1016	ND	0.0050	-	-	-
Aroclor1016	ND	0.0050	-	-	-
Aroclor1221	ND	0.0050	-	-	-
Aroclor1232	ND	0.0050	-	-	-
Aroclor1242	ND	0.0050	-	-	-
Aroclor1248	ND	0.0050	-	-	-
Aroclor1254	ND	0.0050	-	-	-
Aroclor1260	ND	0.0050	-	-	-
PCBs, total	ND	0.0050	-	-	-
Surrogate Recovery					
Decachlorobiphenyl	0.004926		0.0050	99	32-138

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/12/17	**BatchID:**	150087
Date Analyzed:	12/13/17	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC23	**Analytical Method:**	SW8081A/8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS/LCSD-150087

QC Summary Report for SW8081A/8082

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.00533	-	0.0050	107	-	70-130	-	-
a-BHC	0.00507	-	0.0050	101	-	70-130	-	-
b-BHC	0.00539	-	0.0050	108	-	70-130	-	-
d-BHC	0.00544	-	0.0050	109	-	70-130	-	-
g-BHC	0.00518	-	0.0050	104	-	70-130	-	-
a-Chlordane	0.00581	-	0.0050	116	-	70-130	-	-
g-Chlordane	0.00574	-	0.0050	115	-	70-130	-	-
p,p-DDD	0.00639	-	0.0050	128	-	70-130	-	-
p,p-DDE	0.00599	-	0.0050	120	-	70-130	-	-
p,p-DDT	0.00761	-	0.0050	152, F2	-	70-130	-	-
Dieldrin	0.00583	-	0.0050	117	-	70-130	-	-
Endosulfan I	0.00606	-	0.0050	121	-	70-130	-	-
Endosulfan II	0.00635	-	0.0050	127	-	70-130	-	-
Endosulfan sulfate	0.00522	-	0.0050	104	-	70-130	-	-
Endrin	0.00624	-	0.0050	125	-	70-130	-	-
Endrin aldehyde	0.00537	-	0.0050	107	-	70-130	-	-
Endrin ketone	0.00606	-	0.0050	121	-	70-130	-	-
Heptachlor	0.00633	-	0.0050	127	-	70-130	-	-
Heptachlor epoxide	0.00554	-	0.0050	111	-	70-130	-	-
Hexachlorobenzene	0.00478	-	0.0050	96	-	70-130	-	-
Hexachlorocyclopentadiene	0.00413	-	0.0050	83	-	70-130	-	-
Methoxychlor	0.00531	-	0.0050	106	-	70-130	-	-
Aroclor1016	0.0113	0.0122	0.015	75	81	70-130	7.97	30
Aroclor1260	0.0165	0.0183	0.015	110	122	70-130	10.1	30
Surrogate Recovery								
Decachlorobiphenyl	0.00451	0.00453	0.0050	90	91	32-138	0.549	30

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/19/17	**BatchID:**	150481
Date Analyzed:	12/21/17	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC23	**Analytical Method:**	SW8081A/8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS/LCSD-150481

QC Summary Report for SW8081A/8082

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Aldrin	ND	0.00010	-	-	-
a-BHC	ND	0.00010	-	-	-
b-BHC	ND	0.00010	-	-	-
d-BHC	ND	0.00010	-	-	-
g-BHC	ND	0.00010	-	-	-
Chlordane (Technical)	ND	0.0025	-	-	-
a-Chlordane	ND	0.00010	-	-	-
g-Chlordane	ND	0.00010	-	-	-
p,p-DDD	ND	0.00010	-	-	-
p,p-DDE	ND	0.00010	-	-	-
p,p-DDT	ND	0.00010	-	-	-
Dieldrin	ND	0.00010	-	-	-
Endosulfan I	ND	0.00010	-	-	-
Endosulfan II	ND	0.00010	-	-	-
Endosulfan sulfate	ND	0.00010	-	-	-
Endrin	ND	0.00010	-	-	-
Endrin aldehyde	ND	0.00010	-	-	-
Endrin ketone	ND	0.00010	-	-	-
Heptachlor	ND	0.00010	-	-	-
Heptachlor epoxide	ND	0.00010	-	-	-
Hexachlorobenzene	ND	0.0010	-	-	-
Hexachlorocyclopentadiene	ND	0.0020	-	-	-
Methoxychlor	ND	0.00010	-	-	-
Toxaphene	ND	0.0050	-	-	-
Aroclor1016	ND	0.0050	-	-	-
Aroclor1016	ND	0.0050	-	-	-
Aroclor1221	ND	0.0050	-	-	-
Aroclor1232	ND	0.0050	-	-	-
Aroclor1242	ND	0.0050	-	-	-
Aroclor1248	ND	0.0050	-	-	-
Aroclor1254	ND	0.0050	-	-	-
Aroclor1260	ND	0.0050	-	-	-
PCBs, total	ND	0.0050	-	-	-
Surrogate Recovery					
Decachlorobiphenyl	0.0037		0.0050	74	32-138

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/19/17	**BatchID:**	150481
Date Analyzed:	12/21/17	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC23	**Analytical Method:**	SW8081A/8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS/LCSD-150481

QC Summary Report for SW8081A/8082

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.00366	0.00429	0.0050	73	86	70-130	15.9	30
a-BHC	0.00398	0.00472	0.0050	80	94	70-130	17.0	30
b-BHC	0.00448	0.00525	0.0050	90	105	70-130	15.8	30
d-BHC	0.00408	0.00499	0.0050	82	100	70-130	20.2	30
g-BHC	0.00391	0.00491	0.0050	78	98	70-130	22.8	30
a-Chlordane	0.00377	0.00443	0.0050	75	89	70-130	16.1	30
g-Chlordane	0.00422	0.00507	0.0050	84	101	70-130	18.4	30
p,p-DDD	0.00464	0.00559	0.0050	93	112	70-130	18.5	30
p,p-DDE	0.00414	0.00489	0.0050	83	98	70-130	16.7	30
p,p-DDT	0.00569	0.00670	0.0050	114	134, F3	70-130	16.3	30
Dieldrin	0.00469	0.00557	0.0050	94	111	70-130	17.1	30
Endosulfan I	0.00422	0.00496	0.0050	84	99	70-130	16.0	30
Endosulfan II	0.00438	0.00516	0.0050	88	103	70-130	16.2	30
Endosulfan sulfate	0.00458	0.00523	0.0050	91	105	70-130	13.4	30
Endrin	0.00476	0.00553	0.0050	95	111	70-130	15.0	30
Endrin aldehyde	0.00416	0.00475	0.0050	83	95	70-130	13.1	30
Endrin ketone	0.00406	0.00478	0.0050	81	96	70-130	16.3	30
Heptachlor	0.00531	0.00610	0.0050	106	122	70-130	13.9	30
Heptachlor epoxide	0.00422	0.00501	0.0050	84	100	70-130	17.0	30
Hexachlorobenzene	0.00258	0.00368	0.0050	52, F3	74	70-130	35.1,F2	30
Hexachlorocyclopentadiene	0.00389	0.00449	0.0050	78	90	70-130	14.3	30
Methoxychlor	0.00533	0.00624	0.0050	107	125	70-130	15.8	30
Aroclor1016	0.0111	0.0118	0.015	74	79	70-130	0	30
Aroclor1260	0.0172	0.0131	0.015	115	87	70-130	0	30
Surrogate Recovery								
Decachlorobiphenyl	0.00283	0.00353	0.0050	57	71	32-138	22.0	30

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149974
Date Analyzed:	12/11/17	**Extraction Method:**	SW5030B
Instrument:	GC28	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149974 1712382-006AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	0.952	0.10	1	-	95	48-156
tert-Amyl methyl ether (TAME)	ND	0.0536	0.0050	0.050	-	107	56-115
Benzene	ND	0.0584	0.0050	0.050	-	117	63-131
Bromobenzene	ND	0.0597	0.0050	0.050	-	119	66-127
Bromochloromethane	ND	0.0566	0.0050	0.050	-	113	64-124
Bromodichloromethane	ND	0.0534	0.0050	0.050	-	107	64-120
Bromoform	ND	0.0378	0.0050	0.050	-	76	48-92
Bromomethane	ND	0.0518	0.0050	0.050	-	104	25-163
2-Butanone (MEK)	ND	0.120	0.020	0.20	-	60	51-133
t-Butyl alcohol (TBA)	ND	0.169	0.050	0.20	-	85	52-129
n-Butyl benzene	ND	0.0660	0.0050	0.050	-	132	83-200
sec-Butyl benzene	ND	0.0692	0.0050	0.050	-	138	81-199
tert-Butyl benzene	ND	0.0804	0.0050	0.050	-	161	79-178
Carbon Disulfide	ND	0.0570	0.0050	0.050	-	114	64-136
Carbon Tetrachloride	ND	0.0564	0.0050	0.050	-	113	66-140
Chlorobenzene	ND	0.0579	0.0050	0.050	-	116	73-116
Chloroethane	ND	0.0423	0.0050	0.050	-	85	35-147
Chloroform	ND	0.0594	0.0050	0.050	-	119	65-130
Chloromethane	ND	0.0425	0.0050	0.050	-	85	30-137
2-Chlorotoluene	ND	0.0703	0.0050	0.050	-	141	75-152
4-Chlorotoluene	ND	0.0710	0.0050	0.050	-	142	71-148
Dibromochloromethane	ND	0.0491	0.0050	0.050	-	98	61-106
1,2-Dibromo-3-chloropropane	ND	0.0169	0.0040	0.020	-	85	36-120
1,2-Dibromoethane (EDB)	ND	0.0554	0.0040	0.050	-	111	67-118
Dibromomethane	ND	0.0536	0.0050	0.050	-	107	61-116
1,2-Dichlorobenzene	ND	0.0480	0.0050	0.050	-	96	59-106
1,3-Dichlorobenzene	ND	0.0604	0.0050	0.050	-	121	75-129
1,4-Dichlorobenzene	ND	0.0572	0.0050	0.050	-	114	66-127
Dichlorodifluoromethane	ND	0.0256	0.0050	0.050	-	51	13-74
1,1-Dichloroethane	ND	0.0492	0.0050	0.050	-	98	65-134
1,2-Dichloroethane (1,2-DCA)	ND	0.0581	0.0040	0.050	-	116	57-131
1,1-Dichloroethene	ND	0.0489	0.0050	0.050	-	98	62-127
cis-1,2-Dichloroethene	ND	0.0582	0.0050	0.050	-	116	66-130
trans-1,2-Dichloroethene	ND	0.0498	0.0050	0.050	-	100	60-131
1,2-Dichloropropane	ND	0.0587	0.0050	0.050	-	117	63-127
1,3-Dichloropropane	ND	0.0595	0.0050	0.050	-	119	68-124
2,2-Dichloropropane	ND	0.0704	0.0050	0.050	-	141	63-150

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149974
Date Analyzed:	12/11/17	**Extraction Method:**	SW5030B
Instrument:	GC28	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149974 1712382-006AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
1,1-Dichloropropene	ND	0.0617	0.0050	0.050	-	123	67-134
cis-1,3-Dichloropropene	ND	0.0603	0.0050	0.050	-	121	65-138
trans-1,3-Dichloropropene	ND	0.0582	0.0050	0.050	-	116	66-124
Diisopropyl ether (DIPE)	ND	0.0566	0.0050	0.050	-	113	58-129
Ethylbenzene	ND	0.0622	0.0050	0.050	-	124	73-145
Ethyl tert-butyl ether (ETBE)	ND	0.0576	0.0050	0.050	-	115	62-125
Freon 113	ND	0.0448	0.0050	0.050	-	90	55-116
Hexachlorobutadiene	ND	0.0756	0.0050	0.050	-	151	75-178
Hexachloroethane	ND	0.0672	0.0050	0.050	-	134	75-152
2-Hexanone	ND	0.0432	0.0050	0.050	-	86	41-113
Isopropylbenzene	ND	0.0759	0.0050	0.050	-	152	67-172
4-Isopropyl toluene	ND	0.0714	0.0050	0.050	-	143	88-171
Methyl-t-butyl ether (MTBE)	ND	0.0441	0.0050	0.050	-	88	58-122
Methylene chloride	ND	0.0474	0.0050	0.050	-	95	57-140
4-Methyl-2-pentanone (MIBK)	ND	0.0448	0.0050	0.050	-	90	42-117
Naphthalene	ND	0.0283	0.0050	0.050	-	57	29-65
n-Propyl benzene	ND	0.0786	0.0050	0.050	-	157	85-174
Styrene	ND	0.0602	0.0050	0.050	-	120	63-126
1,1,1,2-Tetrachloroethane	ND	0.0535	0.0050	0.050	-	107	68-131
1,1,2,2-Tetrachloroethane	ND	0.0420	0.0050	0.050	-	84	45-121
Tetrachloroethene	ND	0.0655	0.0050	0.050	-	131	65-150
Toluene	ND	0.0583	0.0050	0.050	-	117	72-135
1,2,3-Trichlorobenzene	ND	0.0327	0.0050	0.050	-	65	35-80
1,2,4-Trichlorobenzene	ND	0.0434	0.0050	0.050	-	87	45-103
1,1,1-Trichloroethane	ND	0.0636	0.0050	0.050	-	127	67-137
1,1,2-Trichloroethane	ND	0.0547	0.0050	0.050	-	109	67-117
Trichloroethene	ND	0.0614	0.0050	0.050	-	123	62-135
Trichlorofluoromethane	ND	0.0434	0.0050	0.050	-	87	56-124
1,2,3-Trichloropropane	ND	0.0528	0.0050	0.050	-	106	58-133
1,2,4-Trimethylbenzene	ND	0.0679	0.0050	0.050	-	136	78-161
1,3,5-Trimethylbenzene	ND	0.0728	0.0050	0.050	-	146	85-170
Vinyl Chloride	ND	0.0479	0.0050	0.050	-	96	32-142
Xylenes, Total	ND	0.189	0.0050	0.15	-	126	70-137

(Cont.)

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149974
Date Analyzed:	12/11/17	**Extraction Method:**	SW5030B
Instrument:	GC28	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149974 1712382-006AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery							
Dibromofluoromethane	0.1498	0.152		0.12	120	121	87-127
Toluene-d8	0.1599	0.164		0.12	128	131	93-141
4-BFB	0.01527	0.0168		0.012	122	134	84-137
Benzene-d6	0.1264	0.135		0.10	126	135, F3	67-131
Ethylbenzene-d10	0.119	0.125		0.10	119	125	78-153
1,2-DCB-d4	0.09398	0.0984		0.10	94	98	63-109

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149974
Date Analyzed:	12/11/17	**Extraction Method:**	SW5030B
Instrument:	GC28	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149974 1712382-006AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acetone	0.783	0.838	1	ND	78	84	36-141	6.71	20
tert-Amyl methyl ether (TAME)	0.0481	0.0499	0.050	ND	96	100	46-105	3.58	20
Benzene	0.0533	0.0540	0.050	ND	107	108	46-124	1.26	20
Bromobenzene	0.0553	0.0562	0.050	ND	111	112	50-119	1.64	20
Bromochloromethane	0.0523	0.0537	0.050	ND	105	107	42-122	2.54	20
Bromodichloromethane	0.0465	0.0480	0.050	ND	90	93	48-112	3.02	20
Bromoform	0.0330	0.0332	0.050	ND	66	66	36-90	0	20
Bromomethane	0.0446	0.0461	0.050	ND	89	92	10-149	3.22	20
2-Butanone (MEK)	0.163	0.116	0.20	ND	82	58	43-114	33.6,F1	20
t-Butyl alcohol (TBA)	0.147	0.162	0.20	ND	73	81	33-123	10.2	20
n-Butyl benzene	0.0605	0.0604	0.050	ND	121	121	40-185	0	20
sec-Butyl benzene	0.0629	0.0629	0.050	ND	126	126	40-183	0	20
tert-Butyl benzene	0.0712	0.0710	0.050	ND	142	142	44-168	0	20
Carbon Disulfide	0.0510	0.0515	0.050	ND	102	103	23-139	0.995	20
Carbon Tetrachloride	0.0494	0.0502	0.050	ND	99	100	43-133	1.64	20
Chlorobenzene	0.0530	0.0534	0.050	ND	106	107	51-115	0.740	20
Chloroethane	0.0383	0.0386	0.050	ND	77	77	16-138	0	20
Chloroform	0.0548	0.0555	0.050	ND	110	111	54-117	1.24	20
Chloromethane	0.0376	0.0380	0.050	ND	75	76	14-128	1.07	20
2-Chlorotoluene	0.0642	0.0636	0.050	ND	128	127	54-141	0.790	20
4-Chlorotoluene	0.0638	0.0635	0.050	ND	128	127	52-134	0.550	20
Dibromochloromethane	0.0414	0.0426	0.050	ND	83	85	46-102	2.87	20
1,2-Dibromo-3-chloropropane	0.0155	0.0164	0.020	ND	78	82	16-120	5.28	20
1,2-Dibromoethane (EDB)	0.0498	0.0510	0.050	ND	100	102	48-113	2.36	20
Dibromomethane	0.0494	0.0512	0.050	ND	99	102	44-110	3.73	20
1,2-Dichlorobenzene	0.0457	0.0466	0.050	ND	91	93	43-106	1.96	20
1,3-Dichlorobenzene	0.0556	0.0563	0.050	ND	111	113	49-128	1.25	20
1,4-Dichlorobenzene	0.0524	0.0528	0.050	ND	105	106	48-120	0.813	20
Dichlorodifluoromethane	0.0223	0.0222	0.050	ND	45	44	8-63	0.482	20
1,1-Dichloroethane	0.0447	0.0454	0.050	ND	89	91	50-122	1.45	20
1,2-Dichloroethane (1,2-DCA)	0.0522	0.0533	0.050	ND	104	107	46-116	2.15	20
1,1-Dichloroethene	0.0447	0.0453	0.050	ND	89	91	37-124	1.38	20
cis-1,2-Dichloroethene	0.0528	0.0536	0.050	ND	106	107	47-123	1.45	20
trans-1,2-Dichloroethene	0.0458	0.0464	0.050	ND	92	93	31-131	1.24	20
1,2-Dichloropropane	0.0540	0.0546	0.050	ND	108	109	50-116	1.08	20
1,3-Dichloropropane	0.0529	0.0536	0.050	ND	106	107	52-115	1.38	20
2,2-Dichloropropane	0.0631	0.0636	0.050	ND	126	127	43-137	0.789	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149974
Date Analyzed:	12/11/17	**Extraction Method:**	SW5030B
Instrument:	GC28	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149974 1712382-006AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,1-Dichloropropene	0.0564	0.0568	0.050	ND	113	114	43-126	0.688	20
cis-1,3-Dichloropropene	0.0518	0.0532	0.050	ND	104	106	35-134	2.76	20
trans-1,3-Dichloropropene	0.0513	0.0524	0.050	ND	103	105	35-124	2.15	20
Diisopropyl ether (DIPE)	0.0506	0.0523	0.050	ND	101	105	49-116	3.46	20
Ethylbenzene	0.0566	0.0567	0.050	ND	113	113	49-137	0	20
Ethyl tert-butyl ether (ETBE)	0.0510	0.0533	0.050	ND	102	107	50-113	4.25	20
Freon 113	0.0394	0.0401	0.050	ND	79	80	28-114	1.82	20
Hexachlorobutadiene	0.0691	0.0692	0.050	ND	138	138	22-180	0	20
Hexachloroethane	0.0587	0.0592	0.050	ND	117	118	28-158	0.870	20
2-Hexanone	0.0380	0.0411	0.050	ND	76	82	31-102	7.76	20
Isopropylbenzene	0.0684	0.0684	0.050	ND	137	137	50-153	0	20
4-Isopropyl toluene	0.0651	0.0652	0.050	ND	130	130	41-171	0	20
Methyl-t-butyl ether (MTBE)	0.0392	0.0411	0.050	ND	78	82	48-110	4.70	20
Methylene chloride	0.0427	0.0433	0.050	ND	85	87	42-127	1.27	20
4-Methyl-2-pentanone (MIBK)	0.0391	0.0408	0.050	ND	76	80	24-114	4.41	20
Naphthalene	0.0269	0.0277	0.050	ND	54	55	19-69	2.75	20
n-Propyl benzene	0.0703	0.0706	0.050	ND	141	141	46-168	0	20
Styrene	0.0544	0.0547	0.050	ND	109	109	42-122	0	20
1,1,1,2-Tetrachloroethane	0.0483	0.0494	0.050	ND	97	99	52-121	2.24	20
1,1,2,2-Tetrachloroethane	0.0391	0.0417	0.050	ND	78	83	27-116	6.54	20
Tetrachloroethene	0.0595	0.0597	0.050	ND	119	119	37-149	0	20
Toluene	0.0527	0.0526	0.050	ND	105	105	52-124	0	20
1,2,3-Trichlorobenzene	0.0326	0.0335	0.050	ND	65	67	20-86	2.96	20
1,2,4-Trichlorobenzene	0.0421	0.0430	0.050	ND	84	86	24-107	2.06	20
1,1,1-Trichloroethane	0.0582	0.0584	0.050	ND	116	117	48-128	0.200	20
1,1,2-Trichloroethane	0.0492	0.0502	0.050	ND	98	100	51-110	1.89	20
Trichloroethene	0.0565	0.0571	0.050	ND	113	114	42-128	1.12	20
Trichlorofluoromethane	0.0392	0.0398	0.050	ND	78	80	31-121	1.55	20
1,2,3-Trichloropropane	0.0478	0.0489	0.050	ND	96	98	50-115	2.40	20
1,2,4-Trimethylbenzene	0.0613	0.0619	0.050	ND	123	124	48-151	0.869	20
1,3,5-Trimethylbenzene	0.0654	0.0656	0.050	ND	131	131	51-159	0	20
Vinyl Chloride	0.0434	0.0432	0.050	ND	87	86	11-136	0.413	20
Xylenes, Total	0.172	0.172	0.15	ND	114	115	38-141	0.113	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149974
Date Analyzed:	12/11/17	**Extraction Method:**	SW5030B
Instrument:	GC28	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149974 1712382-006AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
Dibromofluoromethane	0.153	0.153	0.12		122	123	82-136	0.450	20
Toluene-d8	0.160	0.159	0.12		128	127	92-139	0.960	20
4-BFB	0.0164	0.0168	0.012		131	134	82-135	2.53	20
Benzene-d6	0.126	0.127	0.10		126,F3	127,F3	55-122	0.250	20
Ethylbenzene-d10	0.117	0.116	0.10		117	116	58-141	0.740	20
1,2-DCB-d4	0.0942	0.0955	0.10		94	95	51-107	1.35	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/12/17	**BatchID:**	150077
Date Analyzed:	12/12/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-150077 1712278-060AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acenaphthene	ND	3.56	0.14	0.25	5	-	71	32-118
Acenaphthylene	ND	3.72	0.14	0.25	5	-	74	32-122
Acetochlor	ND	-	0.25	0.25	-	-	-	-
Anthracene	ND	3.54	0.14	0.25	5	-	71	36-125
Benzidine	ND	2.03	0.23	1.3	5	-	41	4-83
Benzo (a) anthracene	ND	3.80	0.050	0.050	5	-	76	35-117
Benzo (a) pyrene	ND	3.89	0.0025	0.0025	5	-	78	42-138
Benzo (b) fluoranthene	ND	3.75	0.012	0.012	5	-	75	37-125
Benzo (g,h,i) perylene	ND	3.63	0.15	0.25	5	-	73	45-146
Benzo (k) fluoranthene	ND	4.26	0.16	0.25	5	-	85	39-124
Benzyl Alcohol	ND	4.52	0.51	1.3	5	-	90	5-105
1,1-Biphenyl	ND	-	0.15	0.25	-	-	-	-
Bis (2-chloroethoxy) Methane	ND	3.47	0.14	0.25	5	-	69	35-115
Bis (2-chloroethyl) Ether	ND	4.28	0.0012	0.0012	5	-	86	35-105
Bis (2-chloroisopropyl) Ether	ND	4.26	0.0012	0.0012	5	-	85	34-119
Bis (2-ethylhexyl) Adipate	ND	3.54	0.25	0.25	5	-	71	27-117
Bis (2-ethylhexyl) Phthalate	ND	3.40	0.13	0.25	5	-	68	34-124
4-Bromophenyl Phenyl Ether	ND	3.54	0.16	0.25	5	-	71	33-112
Butylbenzyl Phthalate	ND	3.92	0.13	0.25	5	-	78	35-127
4-Chloroaniline	ND	2.44	0.0012	0.0012	5	-	49	12-77
4-Chloro-3-methylphenol	ND	4.30	0.12	0.25	5	-	86	35-123
2-Chloronaphthalene	ND	3.81	0.16	0.25	5	-	76	28-109
2-Chlorophenol	ND	4.35	0.0050	0.0050	5	-	87	38-116
4-Chlorophenyl Phenyl Ether	ND	4.08	0.15	0.25	5	-	82	33-122
Chrysene	ND	3.89	0.14	0.25	5	-	78	37-116
Dibenzo (a,h) anthracene	ND	3.44	0.0025	0.0025	5	-	69	43-141
Dibenzofuran	ND	3.99	0.13	0.25	5	-	80	33-117
Di-n-butyl Phthalate	ND	3.18	0.13	0.25	5	-	64	38-126
1,2-Dichlorobenzene	ND	3.99	0.12	0.25	5	-	80	34-105
1,3-Dichlorobenzene	ND	3.72	0.14	0.25	5	-	74	33-104
1,4-Dichlorobenzene	ND	3.69	0.025	0.025	5	-	74	31-102
3,3-Dichlorobenzidine	ND	2.50	0.0050	0.0050	5	-	50	14-84
2,4-Dichlorophenol	ND	4.44	0.0025	0.0025	5	-	89	31-124
Diethyl Phthalate	ND	3.59	0.010	0.010	5	-	72	35-118
2,4-Dimethylphenol	ND	4.76	0.025	0.025	5	-	95	30-120
Dimethyl Phthalate	ND	3.54	0.0025	0.0025	5	-	71	33-118
4,6-Dinitro-2-methylphenol	ND	4.30	0.13	1.3	5	-	86	12-126

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/12/17	**BatchID:**	150077
Date Analyzed:	12/12/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-150077 1712278-060AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
2,4-Dinitrophenol	ND	5.11	0.62	0.62	5	-	102	8-130
2,4-Dinitrotoluene	ND	4.77	0.025	0.025	5	-	95	38-117
2,6-Dinitrotoluene	ND	4.52	0.14	0.25	5	-	90	35-121
Di-n-octyl Phthalate	ND	4.02	0.14	0.50	5	-	80	42-150
1,2-Diphenylhydrazine	ND	3.56	0.16	0.25	5	-	71	0-117
Fluoranthene	ND	3.84	0.13	0.25	5	-	77	38-126
Fluorene	ND	3.69	0.14	0.25	5	-	74	34-118
Hexachlorobenzene	ND	3.60	0.025	0.025	5	-	72	30-130
Hexachlorobutadiene	ND	3.45	0.025	0.025	5	-	69	33-121
Hexachlorocyclopentadiene	ND	2.20	0.73	1.3	5	-	44	8-89
Hexachloroethane	ND	3.52	0.14	0.25	5	-	70	32-106
Indeno (1,2,3-cd) pyrene	ND	3.47	0.012	0.012	5	-	69	43-138
Isophorone	ND	3.12	0.12	0.25	5	-	62	26-92
2-Methylnaphthalene	ND	4.16	0.025	0.025	5	-	83	30-121
2-Methylphenol (o-Cresol)	ND	4.11	0.14	0.25	5	-	82	34-114
3 & 4-Methylphenol (m,p-Cresol)	ND	4.18	0.12	0.25	5	-	84	26-130
Naphthalene	ND	3.66	0.0025	0.0025	5	-	73	33-113
2-Nitroaniline	ND	4.30	0.62	1.3	5	-	86	29-115
3-Nitroaniline	ND	3.75	0.59	1.3	5	-	75	25-93
4-Nitroaniline	ND	4.91	0.55	1.3	5	-	98	31-108
Nitrobenzene	ND	3.87	0.14	0.25	5	-	77	33-122
2-Nitrophenol	ND	4.51	0.64	1.3	5	-	90	32-121
4-Nitrophenol	ND	4.07	0.41	1.3	5	-	81	27-102
N-Nitrosodiphenylamine	ND	-	0.16	0.25	-	-	-	-
N-Nitrosodi-n-propylamine	ND	4.25	0.012	0.012	5	-	85	25-108
Pentachlorophenol	ND	4.80	0.32	1.3	5	-	96	28-134
Phenanthrene	ND	3.53	0.14	0.25	5	-	71	36-123
Phenol	ND	4.16	0.0050	0.0050	5	-	83	33-107
Pyrene	ND	3.71	0.13	0.25	5	-	74	38-124
Pyridine	ND	5.42	0.25	0.25	5	-	108	30-130
1,2,4-Trichlorobenzene	ND	4.15	0.14	0.25	5	-	83	34-121
2,4,5-Trichlorophenol	ND	3.65	0.012	0.012	5	-	73	31-126
2,4,6-Trichlorophenol	ND	3.93	0.012	0.012	5	-	79	32-128

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/12/17	**BatchID:**	150077
Date Analyzed:	12/12/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-150077 1712278-060AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery								
2-Fluorophenol	4.157	4.23			5	83	85	31-108
Phenol-d5	3.933	4.48			5	79	90	32-106
Nitrobenzene-d5	3.325	3.86			5	66	77	27-109
2-Fluorobiphenyl	3.509	3.79			5	70	76	26-100
2,4,6-Tribromophenol	3.542	3.94			5	71	79	25-106
4-Terphenyl-d14	3.249	4.15			5	65	83	27-113

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/12/17	**BatchID:**	150077
Date Analyzed:	12/12/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-150077 1712278-060AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acenaphthene	NR	NR		ND<0.5	NR	NR	-	NR	-
Acenaphthylene	NR	NR		ND<0.5	NR	NR	-	NR	-
Anthracene	NR	NR		ND<0.5	NR	NR	-	NR	-
Benzidine	NR	NR		ND<2.6	NR	NR	-	NR	-
Benzo (a) anthracene	NR	NR		ND<0.1	NR	NR	-	NR	-
Benzo (a) pyrene	NR	NR		ND<0.005	NR	NR	-	NR	-
Benzo (b) fluoranthene	NR	NR		ND<0.025	NR	NR	-	NR	-
Benzo (g,h,i) perylene	NR	NR		ND<0.5	NR	NR	-	NR	-
Benzo (k) fluoranthene	NR	NR		ND<0.5	NR	NR	-	NR	-
Benzyl Alcohol	NR	NR		ND<2.6	NR	NR	-	NR	-
Bis (2-chloroethoxy) Methane	NR	NR		ND<0.5	NR	NR	-	NR	-
Bis (2-chloroethyl) Ether	NR	NR		ND<0.0025	NR	NR	-	NR	-
Bis (2-chloroisopropyl) Ether	NR	NR		ND<0.0025	NR	NR	-	NR	-
Bis (2-ethylhexyl) Adipate	NR	NR		ND<0.5	NR	NR	-	NR	-
Bis (2-ethylhexyl) Phthalate	NR	NR		ND<0.5	NR	NR	-	NR	-
4-Bromophenyl Phenyl Ether	NR	NR		ND<0.5	NR	NR	-	NR	-
Butylbenzyl Phthalate	NR	NR		ND<0.5	NR	NR	-	NR	-
4-Chloroaniline	NR	NR		ND<0.0025	NR	NR	-	NR	-
4-Chloro-3-methylphenol	NR	NR		ND<0.5	NR	NR	-	NR	-
2-Chloronaphthalene	NR	NR		ND<0.5	NR	NR	-	NR	-
2-Chlorophenol	NR	NR		ND<0.01	NR	NR	-	NR	-
4-Chlorophenyl Phenyl Ether	NR	NR		ND<0.5	NR	NR	-	NR	-
Chrysene	NR	NR		ND<0.5	NR	NR	-	NR	-
Dibenzo (a,h) anthracene	NR	NR		ND<0.005	NR	NR	-	NR	-
Dibenzofuran	NR	NR		ND<0.5	NR	NR	-	NR	-
Di-n-butyl Phthalate	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2-Dichlorobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
1,3-Dichlorobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
1,4-Dichlorobenzene	NR	NR		ND<0.05	NR	NR	-	NR	-
3,3-Dichlorobenzidine	NR	NR		ND<0.01	NR	NR	-	NR	-
2,4-Dichlorophenol	NR	NR		ND<0.005	NR	NR	-	NR	-
Diethyl Phthalate	NR	NR		ND<0.02	NR	NR	-	NR	-
2,4-Dimethylphenol	NR	NR		ND<0.05	NR	NR	-	NR	-
Dimethyl Phthalate	NR	NR		ND<0.005	NR	NR	-	NR	-
4,6-Dinitro-2-methylphenol	NR	NR		ND<2.6	NR	NR	-	NR	-
2,4-Dinitrophenol	NR	NR		ND<1.2	NR	NR	-	NR	-
2,4-Dinitrotoluene	NR	NR		ND<0.05	NR	NR	-	NR	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/12/17	**BatchID:**	150077
Date Analyzed:	12/12/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-150077 1712278-060AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
2,6-Dinitrotoluene	NR	NR		ND<0.5	NR	NR	-	NR	-
Di-n-octyl Phthalate	NR	NR		ND<1	NR	NR	-	NR	-
1,2-Diphenylhydrazine	NR	NR		ND<0.5	NR	NR	-	NR	-
Fluoranthene	NR	NR		ND<0.5	NR	NR	-	NR	-
Fluorene	NR	NR		ND<0.5	NR	NR	-	NR	-
Hexachlorobenzene	NR	NR		ND<0.05	NR	NR	-	NR	-
Hexachlorobutadiene	NR	NR		ND<0.05	NR	NR	-	NR	-
Hexachlorocyclopentadiene	NR	NR		ND<2.6	NR	NR	-	NR	-
Hexachloroethane	NR	NR		ND<0.5	NR	NR	-	NR	-
Indeno (1,2,3-cd) pyrene	NR	NR		ND<0.025	NR	NR	-	NR	-
Isophorone	NR	NR		ND<0.5	NR	NR	-	NR	-
2-Methylnaphthalene	NR	NR		ND<0.05	NR	NR	-	NR	-
2-Methylphenol (o-Cresol)	NR	NR		ND<0.5	NR	NR	-	NR	-
3 & 4-Methylphenol (m,p-Cresol)	NR	NR		ND<0.5	NR	NR	-	NR	-
Naphthalene	NR	NR		ND<0.005	NR	NR	-	NR	-
2-Nitroaniline	NR	NR		ND<2.6	NR	NR	-	NR	-
3-Nitroaniline	NR	NR		ND<2.6	NR	NR	-	NR	-
4-Nitroaniline	NR	NR		ND<2.6	NR	NR	-	NR	-
Nitrobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
2-Nitrophenol	NR	NR		ND<2.6	NR	NR	-	NR	-
4-Nitrophenol	NR	NR		ND<2.6	NR	NR	-	NR	-
N-Nitrosodi-n-propylamine	NR	NR		ND<0.025	NR	NR	-	NR	-
Pentachlorophenol	NR	NR		ND<2.6	NR	NR	-	NR	-
Phenanthrene	NR	NR		ND<0.5	NR	NR	-	NR	-
Phenol	NR	NR		0.93	NR	NR	-	NR	-
Pyrene	NR	NR		ND<0.5	NR	NR	-	NR	-
Pyridine	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2,4-Trichlorobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
2,4,5-Trichlorophenol	NR	NR		ND<0.025	NR	NR	-	NR	-
2,4,6-Trichlorophenol	NR	NR		ND<0.025	NR	NR	-	NR	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/12/17	**BatchID:**	150077
Date Analyzed:	12/12/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-150077 1712278-060AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
2-Fluorophenol	NR	NR			NR	NR	-	NR	-
Phenol-d5	NR	NR			NR	NR	-	NR	-
Nitrobenzene-d5	NR	NR			NR	NR	-	NR	-
2-Fluorobiphenyl	NR	NR			NR	NR	-	NR	-
2,4,6-Tribromophenol	NR	NR			NR	NR	-	NR	-
4-Terphenyl-d14	NR	NR			NR	NR	-	NR	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149962
Date Analyzed:	12/8/17 - 12/11/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149962 1712278-099AMS/MSD

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	49.0	0.50	50	-	98	75-125
Arsenic	ND	45.1	0.50	50	-	90	75-125
Barium	ND	464	5.0	500	-	93	75-125
Beryllium	ND	43.2	0.50	50	-	86	75-125
Cadmium	ND	48.2	0.25	50	-	96	75-125
Chromium	ND	48.8	0.50	50	-	98	75-125
Cobalt	ND	45.6	0.50	50	-	91	75-125
Copper	ND	49.6	0.50	50	-	99	75-125
Lead	ND	47.0	0.50	50	-	94	75-125
Mercury	ND	1.25	0.050	1.25	-	100	75-125
Molybdenum	ND	46.3	0.50	50	-	93	75-125
Nickel	ND	49.7	0.50	50	-	99	75-125
Selenium	ND	46.9	0.50	50	-	94	75-125
Silver	ND	44.8	0.50	50	-	90	75-125
Thallium	ND	45.9	0.50	50	-	92	75-125
Vanadium	ND	47.2	0.50	50	-	94	75-125
Zinc	ND	472	5.0	500	-	94	75-125
Surrogate Recovery							
Terbium	538.6	533		500	108	107	70-130

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149962
Date Analyzed:	12/8/17 - 12/11/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149962 1712278-099AMS/MSD

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	54.3	52.0	50	1.102	106	102	75-125	4.44	20
Arsenic	59.0	57.5	50	9.468	99	96	75-125	2.56	20
Barium	731	730	500	225.2	101	101	75-125	0	20
Beryllium	46.8	44.4	50	ND	93	88	75-125	5.42	20
Cadmium	47.8	48.0	50	ND	95	96	75-125	0.355	20
Chromium	99.8	101	50	53.02	94	95	75-125	0.908	20
Cobalt	59.2	58.9	50	14.90	88	88	75-125	0	20
Copper	84.2	85.7	50	37.86	93	96	75-125	1.75	20
Lead	60.8	64.8	50	12.35	97	105	75-125	6.39	20
Mercury	1.32	1.32	1.25	0.07430	99	100	75-125	0.530	20
Molybdenum	51.8	49.8	50	0.8852	102	98	75-125	3.90	20
Nickel	137	141	50	89.48	96	104	75-125	2.87	20
Selenium	46.8	45.8	50	ND	93	91	75-125	2.23	20
Silver	50.3	49.8	50	ND	100	99	75-125	1.16	20
Thallium	48.5	48.2	50	ND	97	96	75-125	0.558	20
Vanadium	86.8	86.8	50	39.17	95	95	75-125	0	20
Zinc	559	565	500	79.13	96	97	75-125	1.05	20
Surrogate Recovery									
Terbium	533	507	500		107	101	70-130	4.98	20

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	ND<2.5	1.102	-	-
Arsenic	10.3	9.468	8.79	-
Barium	227	225.2	0.799	20
Beryllium	ND<2.5	ND	-	-
Cadmium	ND<1.2	ND	-	-
Chromium	55.6	53.02	4.87	20
Cobalt	16.0	14.90	7.38	20
Copper	37.1	37.86	2.01	20
Lead	12.6	12.35	2.02	20
Mercury	ND<0.25	0.07430	-	-
Molybdenum	ND<2.5	0.8852	-	-
Nickel	89.9	89.48	0.469	20
Selenium	ND<2.5	ND	-	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149962
Date Analyzed:	12/8/17 - 12/11/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149962 1712278-099AMS/MSD

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	40.6	39.17	3.65	20
Zinc	81.0	79.13	2.36	-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149973
Date Analyzed:	12/11/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149973 1712382-007AMS/MSD 1712382-007APDS

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	49.6	0.50	50	-	99	75-125
Arsenic	ND	48.9	0.50	50	-	98	75-125
Barium	ND	489	5.0	500	-	98	75-125
Beryllium	ND	47.4	0.50	50	-	95	75-125
Cadmium	ND	47.0	0.25	50	-	94	75-125
Chromium	ND	46.4	0.50	50	-	93	75-125
Cobalt	ND	46.5	0.50	50	-	93	75-125
Copper	ND	47.9	0.50	50	-	96	75-125
Lead	ND	48.1	0.50	50	-	96	75-125
Mercury	ND	1.16	0.050	1.25	-	93	75-125
Molybdenum	ND	47.8	0.50	50	-	96	75-125
Nickel	ND	48.3	0.50	50	-	97	75-125
Selenium	ND	48.1	0.50	50	-	96	75-125
Silver	ND	47.2	0.50	50	-	94	75-125
Thallium	ND	46.2	0.50	50	-	92	75-125
Vanadium	ND	46.8	0.50	50	-	94	75-125
Zinc	ND	483	5.0	500	-	97	75-125
Surrogate Recovery							
Terbium	525.4	509		500	105	102	70-130

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149973
Date Analyzed:	12/11/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149973 1712382-007AMS/MSD 1712382-007APDS

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	45.9	49.7	50	0.6031	91	98	75-125	8.01	20
Arsenic	54.8	58.5	50	8.209	93	101	75-125	6.59	20
Barium	560	625	500	150.6	82	95	75-125	11.0	20
Beryllium	42.1	45.0	50	0.7889	83	89	75-125	6.77	20
Cadmium	43.3	46.8	50	ND	86	93	75-125	7.79	20
Chromium	92.7	98.6	50	60.16	65,F10	77	75-125	6.22	20
Cobalt	50.7	54.2	50	13.55	74,F10	81	75-125	6.54	20
Copper	69.5	76.1	50	35.44	68,F10	81	75-125	9.13	20
Lead	52.9	57.7	50	8.834	88	98	75-125	8.70	20
Mercury	1.18	1.22	1.25	ND	91	94	75-125	3.08	20
Molybdenum	44.8	48.4	50	0.8128	88	95	75-125	7.73	20
Nickel	102	111	50	77.82	48,F10	66,F10	75-125	8.48	20
Selenium	45.8	48.4	50	2.048	87	93	75-125	5.65	20
Silver	43.1	46.8	50	ND	86	93	75-125	8.03	20
Thallium	42.9	46.5	50	ND	85	93	75-125	8.05	20
Vanadium	96.2	103	50	58.24	76	89	75-125	6.72	20
Zinc	498	543	500	84.27	83	92	75-125	8.66	20
Surrogate Recovery									
Terbium	470	512	500		94	102	70-130	8.63	20

Analyte	PDS Result	SPK Val	SPKRef Val	PDS %REC	PDS Limits
Cobalt	59.5	50	13.55	92	75-125
Copper	85.1	50	35.44	99	75-125

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	ND<2.5	0.6031	-	-
Arsenic	7.60	8.209	7.42	-
Barium	148	150.6	1.73	20
Beryllium	ND<2.5	0.7889	-	-
Cadmium	ND<1.2	ND	-	-
Chromium	62.3	60.16	3.56	20
Cobalt	14.4	13.55	6.27	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149973
Date Analyzed:	12/11/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149973 1712382-007AMS/MSD 1712382-007APDS

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Copper	35.6	35.44	0.451	20
Lead	8.78	8.834	0.611	-
Mercury	ND<0.25	ND	-	-
Molybdenum	ND<2.5	0.8128	-	-
Nickel	78.2	77.82	0.488	20
Selenium	ND<2.5	2.048	-	-
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	60.2	58.24	3.37	20
Zinc	87.8	84.27	4.19	-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149957
Date Analyzed:	12/11/17	**Extraction Method:**	SW5030B
Instrument:	GC7	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149957 1712358-005AMS/MSD

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	0.08242		0.10	82	75-134

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	0.601	-	0.60	100	-	82-118	-	-
MTBE	0.0928	-	0.10	93	-	61-119	-	-
Benzene	0.105	-	0.10	105	-	77-128	-	-
Toluene	0.0988	-	0.10	99	-	74-132	-	-
Ethylbenzene	0.103	-	0.10	103	-	84-127	-	-
Xylenes	0.311	-	0.30	104	-	86-129	-	-
Surrogate Recovery								
2-Fluorotoluene	0.0856	-	0.10	86	-	75-134	-	-

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	0.520	0.556	0.60	ND	87	93	58-129	6.88	20
MTBE	0.0838	0.0842	0.10	ND	79	79	47-118	0	20
Benzene	0.0862	0.0876	0.10	ND	86	88	55-129	1.62	20
Toluene	0.0851	0.0853	0.10	ND	81	81	56-130	0	20
Ethylbenzene	0.0895	0.0884	0.10	ND	89	88	63-129	1.22	20
Xylenes	0.269	0.266	0.30	ND	89	88	64-131	1.07	20
Surrogate Recovery									
2-Fluorotoluene	0.0757	0.0757	0.10		76	76	62-126	0	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/8/17	**BatchID:**	149963
Date Analyzed:	12/9/17	**Extraction Method:**	SW3550B/3630C
Instrument:	GC39A, GC9a	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149963 1712370-001AMS/MSD

QC Report for SW8015B w/ Silica Gel Clean-Up

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	34.8	1.0	40	-	87	75-128
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	21.02	21.1		25	84	85	72-122

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	32.3	32.7	40	1.618	77	78	71-134	1.42	30
Surrogate Recovery									
C9	21.0	20.8	25		84	83	78-126	0.744	30

NELAP 4033ORELAP

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1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1712382 **ClientCode: BAGT**

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

Report to:
Evan Wolf
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
(650) 630-3923 FAX: 650-852-9138

Email: ewolf@baggengineers.com; ebbi@baggen
cc/3rd Party: ajay@baggengineers.com;
PO:
ProjectNo: DEROY-01-00; Environmental Characterization in situ soils

Bill to:
Accounts Payable
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
accounting@baggengineers.com

Requested TAT: 5 days;

Date Received: 12/08/2017
Date Logged: 12/08/2017

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
1712382-001	B-1,2-1A,B@1½' ,2'	Soil	12/7/2017 12:00	☐	A	A	A	A	A	A	A					
1712382-002	B-1,2-3A,B@5½' ,6'	Soil	12/7/2017 12:10	☐	A	A	A	A	A	A	A					
1712382-003	B-1,2-5B@11'	Soil	12/7/2017 12:20	☐	A	A	A	A	A	A	A					
1712382-004	B-1,2-7B@16'	Soil	12/7/2017 12:30	☐	A	A	A	A	A	A	A					
1712382-005	B-1,2-9A,B@20½' ,21'	Soil	12/7/2017 12:40	☐	A	A	A	A	A	A	A					
1712382-006	B-1,2-11@25½' ,26'	Soil	12/7/2017 12:50	☐	A	A	A	A	A	A	A					
1712382-007	B-1,2-13,13A@30½'	Soil	12/7/2017 13:00	☐	A	A	A	A	A	A	A					

Test Legend:

1	8081pcB_ESL_LL_S	2	8260B_S	3	8270_SCSM_S [J]	4	CAM17MS_TTLC_S
5	G-MBTEX_S	6	STLC_MSEXTRACTONLY	7	TPH(DMO)WSG_S	8	
9		10		11		12	

Prepared by: Alexandra Iniguez

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: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email: ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Environmental Characterization in situ soils
Comments:

Work Order: 1712382
QC Level: LEVEL 2
Date Logged: 12/8/2017

☐ 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
1712382-001A	B-1,2-1A,B@1½' ,2'	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 12:00	5 days		☐	
			STLC (rotated) Extraction			☐		5 days*		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (Low Level SVOCs) with GPC Cleanup			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐		5 days		☐	
1712382-002A	B-1,2-3A,B@5½' ,6'	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 12:10	5 days		☐	
			STLC (rotated) Extraction			☐		5 days*		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (Low Level SVOCs) with GPC Cleanup			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐		5 days		☐	
1712382-003A	B-1,2-5B@11'	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 12:20	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: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email: ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Environmental Characterization in situ soils
Comments:

Work Order: 1712382
QC Level: LEVEL 2
Date Logged: 12/8/2017

☐ 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
1712382-003A	B-1,2-5B@11'	Soil	STLC (rotated) Extraction	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 12:20	5 days*		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (Low Level SVOCs) with GPC Cleanup			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐		5 days		☐	
1712382-004A	B-1,2-7B@16'	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 12:30	5 days		☐	
			STLC (rotated) Extraction			☐		5 days*		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (Low Level SVOCs) with GPC Cleanup			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐		5 days		☐	
1712382-005A	B-1,2-9A,B@20½' ,21'	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 12:40	5 days		☐	
			STLC (rotated) Extraction			☐		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).

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WORK ORDER SUMMARY

Client Name: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email: ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Environmental Characterization in situ soils
Comments:

Work Order: 1712382
QC Level: LEVEL 2
Date Logged: 12/8/2017

☐ 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
1712382-005A	B-1,2-9A,B@20½' ,21'	Soil	SW8021B/8015Bm (G/MBTEX)	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 12:40	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (Low Level SVOCs) with GPC Cleanup			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐		5 days		☐	
1712382-006A	B-1,2-11@25½' ,26'	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 12:50	5 days		☐	
			STLC (rotated) Extraction			☐		5 days*		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (Low Level SVOCs) with GPC Cleanup			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐		5 days		☐	
1712382-007A	B-1,2-13,13A@30½'	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 13:00	5 days		☐	
			STLC (rotated) Extraction			☐		5 days*		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		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).

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WORK ORDER SUMMARY

Client Name: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email: ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Environmental Characterization in situ soils
Comments:

Work Order: 1712382
QC Level: LEVEL 2
Date Logged: 12/8/2017

☐ 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
1712382-007A	B-1,2-13,13A@30½'	Soil	SW6020 (CAM 17)	2 / (2:1)	Stainless Steel tube 2.5"x6"	☐	12/7/2017 13:00	5 days		☐	
			SW8270C (Low Level SVOCs) with GPC Cleanup			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			☐		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).

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1712382

CHAIN OF CUSTODY RECORD

BAGG ENGINEERS
www.baggengineers.com
phone: 650.852.9133 fax: 650.852.9138 info@baggengineers.com
138 Charcot Avenue, San Jose, California 95131

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To: Evan Wolf — Bill To: BAGG Engineers

Company: BAGG Engineers

138 Charcot Ave — E-Mail: ewolf@baggengineers.com

San Jose, CA 95131 — E-Mail: ajay@baggengineers.com

Tele: (650) 852-9133 — Fax: (650) 852-9138

Project #: DEROY-01-00 — Project Name: Environmental Characterization

Project Location: 292 Stockton Ave, San Jose, CA — In situ soils

Sampler Signature: Evan Wolf

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	HCL	HNO_3	Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015) & Motor Oil - extractables w/ SGC	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides) + PCBs w/ florisil clean up if necessary	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs) w/ GPC if necessary	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	Other: WET STLC (Extract & Hold. Run 10x)	Other: CARB 435 Asbestos	Other: Hexachrom	Comments
DEROY-01-00	B-1-1A @ 1½'	12/7/17	8:50AM	1	S. Steel		X				X				X	X					X				X	X		X			X			Filter Samples for Metals analysis: Yes / No
	B-2-1B @ 2'		12:00PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-3A @ 5½'		9:00AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-3B @ 6'		12:10PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-5B @ 11'		9:10AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-5B @ 11'		12:20PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-7B @ 16'		9:20AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-7B @ 16'		12:30PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-9A @ 20½'		9:30AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-9B @ 21'		12:40PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-11 @ 25½		9:40AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-11 @ 26'		12:50PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-13 @ 30½'		9:50AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-13A @ 30½'		1:00PM	1	S. Steel		X				X				X	X					X				X	X		X			X			

Relinquished By:	Date:	Time:	Received By:
Evan Wolf	12/8/17	1410	[illegible]
[illegible]	12/8/17	1700	[illegible]

ICE/t°_____
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS:

PRESERVATION	VOAS	O&G	METALS	OTHER
			pH<2	

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**BAGG Engineers**	Date and Time Received	**12/8/2017 17:00**
Project Name:	**DEROY-01-00; Environmental Characterization in situ soils**	Date Logged:	**12/8/2017**
		Received by:	Alexandra Iniguez
WorkOrder №:	**1712382** Matrix: Soil	Logged by:	Alexandra Iniguez
Carrier:	Benjamin Yslas (MAI Courier)		

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 ☐
Sample/Temp Blank temperature	Temp: 5.3°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 ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1712382 A

Report Created for: BAGG Engineers

138 Charcot Ave
San Jose, CA 95131

Project Contact: Evan Wolf
Project P.O.:
Project: DEROY-01-00; Environmental Characterization in situ soils
Project Received: 12/08/2017

Analytical Report reviewed & approved for release on 12/29/2017 by:

Angela Rydelius
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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CA ELAP 1644 ♦ NELAP 4033 ORELAP

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Glossary of Terms & Qualifier Definitions

Client: BAGG Engineers
Project: DEROY-01-00; Environmental Characterization in situ soils
WorkOrder: 1712382 A

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)

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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:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	CA Title 22
Date Prepared:	12/9/17	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/L

Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-3A,B@5½' ,6'	**1712382-002A**	**Soil**	**12/07/2017 12:10**	**ICP-MS1 047SMPL.D**	**149987**

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	12/23/2017 01:33

Analyst(s): JC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-5B@11'	**1712382-003A**	**Soil**	**12/07/2017 12:20**	**ICP-MS1 048SMPL.D**	**149988**

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	12/23/2017 01:39

Analyst(s): JC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-9A,B@20½' ,21'	**1712382-005A**	**Soil**	**12/07/2017 12:40**	**ICP-MS1 046SMPL.D**	**149988**

Analytes	Result	RL	DF	Date Analyzed
Chromium	**0.36**	0.10	1	12/23/2017 01:27

Analyst(s): JC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-13,13A@30½'	**1712382-007A**	**Soil**	**12/07/2017 13:00**	**ICP-MS1 045SMPL.D**	**149987**

Analytes	Result	RL	DF	Date Analyzed
Chromium	**0.11**	0.10	1	12/23/2017 01:21

Analyst(s): JC

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	CA Title 22
Date Prepared:	12/9/17	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/L

Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**ICP-MS1 044SMPL.D**	**149988**

Analytes	Result	RL	DF	Date Analyzed
Lead	**7.1**	0.10	1	12/23/2017 01:14

Analyst(s): JC

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/9/17	**BatchID:**	149987
Date Analyzed:	12/11/17	**Extraction Method:**	CA Title 22
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/L
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149987 1711917-018AMS/MSD

QC Summary Report for Metals (STLC)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Chromium	ND	9.82	0.10	10	-	98	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Chromium	11.9	11.4	10	1.476	104	100	75-125	3.52	20

(Cont.)

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/9/17	**BatchID:**	149988
Date Analyzed:	12/11/17	**Extraction Method:**	CA Title 22
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/L
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149988 1712056-004AMS/MSD

QC Summary Report for Metals (STLC)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Chromium	ND	10.2	0.10	10	-	103	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Chromium	10.3	10.1	10	0.53	98	96	75-125	1.64	20

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	12/9/17	**BatchID:**	149988
Date Analyzed:	12/11/17	**Extraction Method:**	CA Title 22
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/L
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-149988 1712056-004AMS/MSD

QC Summary Report for Metals (STLC)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Lead	ND	10.6	0.10	10	-	106	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Lead	10.3	10.2	10	0.29	100	100	75-125	0	20

McCampbell Analytical, Inc.
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Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1712382 A **ClientCode: BAGT**

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

Report to:
Evan Wolf
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
(650) 630-3923 FAX: 650-852-9138

Email: ewolf@baggengineers.com; ebbi@baggen
cc/3rd Party: ajay@baggengineers.com;
PO:
Project: DEROY-01-00; Environmental Characterization in situ soils

Bill to:
Accounts Payable
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
accounting@baggengineers.com

Requested TAT: 5 days;

Date Received: 12/08/2017
Date Logged: 12/08/2017
Date Add-On: 12/22/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	1	2	3	4	5	6	7	8	9	10	11	12
					Requested Tests (See legend below)											
1712382-001	B-1,2-1A,B@1½' ,2'	Soil	12/7/2017 12:00	☐		A										
1712382-002	B-1,2-3A,B@5½' ,6'	Soil	12/7/2017 12:10	☐	A											
1712382-003	B-1,2-5B@11'	Soil	12/7/2017 12:20	☐	A											
1712382-005	B-1,2-9A,B@20½' ,21'	Soil	12/7/2017 12:40	☐	A											
1712382-007	B-1,2-13,13A@30½'	Soil	12/7/2017 13:00	☐	A											

Test Legend:

1	CRMS_STLC_S	2	PBMS_STLC_S	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Alexandra Iniguez

Add-On Prepared By: Kena Ponce

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: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Environmental Characterization in situ soils
Comments:

Work Order: 1712382
QC Level: LEVEL 2
Date Logged: 12/8/2017
Date Add-On: 12/22/2017

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1712382-001A	B-1,2-1A,B@1½' ,2'	Soil	SW6020 (Lead) (STLC)	2 / (2:1)	Stainless Steel tube 2.5"x6"	12/7/2017 12:00	5 days*		☐	
1712382-002A	B-1,2-3A,B@5½' ,6'	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	Stainless Steel tube 2.5"x6"	12/7/2017 12:10	5 days*		☐	
1712382-003A	B-1,2-5B@11'	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	Stainless Steel tube 2.5"x6"	12/7/2017 12:20	5 days*		☐	
1712382-005A	B-1,2-9A,B@20½' ,21'	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	Stainless Steel tube 2.5"x6"	12/7/2017 12:40	5 days*		☐	
1712382-007A	B-1,2-13,13A@30½'	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	Stainless Steel tube 2.5"x6"	12/7/2017 13:00	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.

1712382

CHAIN OF CUSTODY RECORD

BAGG ENGINEERS
www.baggengineers.com
phone: 650.852.9133 fax: 650.852.9138 info@baggengineers.com
138 Charcot Avenue, San Jose, California 95131

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To: Evan Wolf — Bill To: BAGG Engineers

Company: BAGG Engineers

138 Charcot Ave — E-Mail: ewolf@baggengineers.com

San Jose, CA 95131 — E-Mail: ajay@baggengineers.com

Tele: (650) 852-9133 — Fax: (650) 852-9138

Project #: DEROY-01-00 — Project Name: Environmental Characterization In situ soils

Project Location: 292 Stockton Ave, San Jose, CA

Sampler Signature: Evan Wolf

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	HCL	HNO_3	Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015) & Motor Oil - extractables w/ SGC	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides) + PCBs w/ florisil clean up if necessary	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs) w/ GPC if necessary	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	WET STLC (Extract & Hold. Run 10x)	~~GARB 435 Asbestos~~ STLC 12/11/17	~~Hexachrom~~ STLC 12/11/17	Comments
DEROY-01-00	B-1-1A @ 1½'	12/7/17	8:50AM	1	S. Steel		X				X				X	X					X				X	X		X			X		X	Filter Samples for Metals analysis: Yes / No
	B-2-1B @ 2'		12:00PM	1	S. Steel		X				X				X	X					X				X	X		X			X		X	
	B-1-3A @ 5½'		9:00AM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-2-3B @ 6'		12:10PM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-1-5B @ 11'		9:10AM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-2-5B @ 11'		12:20PM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-1-7B @ 16'		9:20AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-7B @ 16'		12:30PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-9A @ 20½'		9:30AM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-2-9B @ 21'		12:40PM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-1-11 @ 25½		9:40AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-11 @ 26'		12:50PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-13 @ 30½'		9:50AM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-2-13A @ 30½'		1:00PM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		

Relinquished By:	Date:	Time:	Received By:
Evan Wolf	12/8/17	1410	[illegible]
[illegible]	12/8/17	1700	[illegible]

ICE/t°_____
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS:

	VOAS	O&G	METALS	OTHER
PRESERVATION			pH<2	

McCampbell Analytical, Inc.

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Analytical Report

WorkOrder: 1712382 B

Report Created for: BAGG Engineers

138 Charcot Ave
San Jose, CA 95131

Project Contact: Evan Wolf
Project P.O.:
Project: DEROY-01-00; Environmental Characterization in situ soils
Project Received: 12/08/2017

Analytical Report reviewed & approved for release on 01/10/2018 by:

Christine Askari
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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CA ELAP 1644 ♦ NELAP 4033 ORELAP

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: BAGG Engineers
Project: DEROY-01-00; Environmental Characterization in situ soils
WorkOrder: 1712382 B

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)

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Received:	12/8/17 17:00	**Extraction Method:**	SW1311/SW3010
Date Prepared:	1/8/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Unit:**	mg/L

Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1,2-1A,B@1½' ,2'	**1712382-001A**	**Soil**	**12/07/2017 12:00**	**ICP-MS2 128SMPL.D**	**151322**

Analytes	Result	RL	DF	Date Analyzed
Lead	ND	0.10	1	01/09/2018 21:44

Analyst(s): ND

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1712382
Date Prepared:	1/8/18	**BatchID:**	151322
Date Analyzed:	1/9/18	**Extraction Method:**	SW1311/SW3010
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/L
Project:	DEROY-01-00; Environmental Characterization in situ soils	**Sample ID:**	MB/LCS-151322 1712C92-001AMS/MSD

QC Summary Report for Metals (TCLP)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Lead	ND	9.73	0.10	10	-	97	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Lead	9.62	9.72	10	ND	96	97	75-125	1.10	20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1712382 B **ClientCode: BAGT**

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

Report to:
Evan Wolf
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
(650) 630-3923 FAX: 650-852-9138

Email: ewolf@baggengineers.com; ebbi@baggen
cc/3rd Party: ajay@baggengineers.com;
PO:
Project: DEROY-01-00; Environmental Characterization in situ soils

Bill to:
Accounts Payable
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
accounting@baggengineers.com

Requested TAT: 5 days;

Date Received: 12/08/2017
Date Logged: 12/08/2017
Date Add-On: 01/04/2018

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
1712382-001	B-1,2-1A,B@1½' ,2'	Soil	12/7/2017 12:00	☐	A											

Test Legend:

1	PBMS_TCLP_S	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Alexandra Iniguez

Add-On Prepared By: Kena Ponce

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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http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Environmental Characterization in situ soils
Comments:

Work Order: 1712382
QC Level: LEVEL 2
Date Logged: 12/8/2017
Date Add-On: 1/4/2018

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1712382-001A	B-1,2-1A,B@1½' ,2'	Soil	SW6020 (Lead) (TCLP)	2 / (2:1)	Stainless Steel tube 2.5"x6"	12/7/2017 12:00	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.

1712382

CHAIN OF CUSTODY RECORD

BAGG ENGINEERS
www.baggengineers.com
phone: 650.852.9133 fax: 650.852.9138 info@baggengineers.com
138 Charcot Avenue, San Jose, California 95131

TURN AROUND TIME: ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To: Evan Wolf — Bill To: BAGG Engineers

Company: BAGG Engineers

138 Charcot Ave — E-Mail: ewolf@baggengineers.com

San Jose, CA 95131 — E-Mail: ajay@baggengineers.com

Tele: (650) 852-9133 — Fax: (650) 852-9138

Project #: DEROY-01-00 — Project Name: Environmental Characterization

Project Location: 292 Stockton Ave, San Jose, CA — In situ soils

Sampler Signature: Evan Wolf

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	HCL	HNO_3	Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015) & Motor Oil - extractables w/ SGC	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides) + PCBs w/ florisil clean up if necessary	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs) w/ GPC if necessary	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	~~Lead (200.7 / 200.8 / 6010 / 6020)~~ TCLP Pb 1/4/18 STLC	WET STLC (Extract & Hold. Run 10x)	~~CARB 435 Asbestos~~ STLC Cr 12/21/17	~~Hexachrom~~ STLC Cr 12/21/17 STLC	Comments
DEROY-01-00	B-1-1A @ 1½'	12/7/17	8:50AM	1	S. Steel		X				X				X	X					X				X	X		X		X	X		X	Filter Samples for Metals analysis: Yes / No
	B-2-1B @ 2'		12:00PM	1	S. Steel		X				X				X	X					X				X	X		X		X	X		X	
	B-1-3A @ 5½'		9:00AM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-2-3B @ 6'		12:10PM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-1-5B @ 11'		9:10AM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-2-5B @ 11'		12:20PM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-1-7B @ 16'		9:20AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-7B @ 16'		12:30PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-9A @ 20½'		9:30AM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-2-9B @ 21'		12:40PM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-1-11 @ 25½		9:40AM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-2-11 @ 26'		12:50PM	1	S. Steel		X				X				X	X					X				X	X		X			X			
	B-1-13 @ 30½'		9:50AM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		
	B-2-13A @ 30½'		1:00PM	1	S. Steel		X				X				X	X					X				X	X		X			X	X		

Relinquished By:	Date:	Time:	Received By:
Evan Wolf	12/8/17	1410	[illegible]
[illegible]	12/8/17	1700	[illegible]

ICE/t°_____
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS:

	VOAS	O&G	METALS	OTHER
PRESERVATION			pH<2	

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1802893

Report Created for: BAGG Engineers

138 Charcot Ave
San Jose, CA 95131

Project Contact: Evan Wolf
Project P.O.:
Project: DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils
Project Received: 02/16/2018

Analytical Report reviewed & approved for release on 02/26/2018 by:

Yen Cao
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: BAGG Engineers
Project: DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils
WorkOrder: 1802893

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)

Quality Control Qualifiers

F10	MS/MSD outside control limits. Physical or chemical interferences exist due to sample matrix.

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3050B
Date Prepared:	2/16/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2B-1 @ 2'	**1802893-001A**	**Soil**	**02/15/2018 08:50**	**ICP-MS1 174SMPL.D**	**153390**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**1.5**	0.50	1	02/21/2018 02:37
Arsenic	**5.6**	0.50	1	02/21/2018 02:37
Barium	**150**	5.0	1	02/21/2018 02:37
Beryllium	ND	0.50	1	02/21/2018 02:37
Cadmium	ND	0.25	1	02/21/2018 02:37
Chromium	**150**	0.50	1	02/21/2018 02:37
Cobalt	**22**	0.50	1	02/21/2018 02:37
Copper	**30**	0.50	1	02/21/2018 02:37
Lead	**39**	0.50	1	02/21/2018 02:37
Mercury	**4.1**	0.050	1	02/21/2018 02:37
Molybdenum	ND	0.50	1	02/21/2018 02:37
Nickel	**230**	0.50	1	02/21/2018 02:37
Selenium	ND	0.50	1	02/21/2018 02:37
Silver	ND	0.50	1	02/21/2018 02:37
Thallium	ND	0.50	1	02/21/2018 02:37
Vanadium	**73**	0.50	1	02/21/2018 02:37
Zinc	**71**	5.0	1	02/21/2018 02:37

Surrogates	REC (%)	Limits	
Terbium	103	70-130	02/21/2018 02:37

Analyst(s): JC

(Cont.)

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3050B
Date Prepared:	2/16/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-1-1 @ 2½'	**1802893-002A**	**Soil**	**02/15/2018 10:30**	**ICP-MS1 175SMPL.D**	**153390**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**1.4**	0.50	1	02/21/2018 02:43
Arsenic	**9.4**	0.50	1	02/21/2018 02:43
Barium	**210**	5.0	1	02/21/2018 02:43
Beryllium	ND	0.50	1	02/21/2018 02:43
Cadmium	**0.38**	0.25	1	02/21/2018 02:43
Chromium	**37**	0.50	1	02/21/2018 02:43
Cobalt	**11**	0.50	1	02/21/2018 02:43
Copper	**39**	0.50	1	02/21/2018 02:43
Lead	**160**	0.50	1	02/21/2018 02:43
Mercury	**0.49**	0.050	1	02/21/2018 02:43
Molybdenum	**0.65**	0.50	1	02/21/2018 02:43
Nickel	**70**	0.50	1	02/21/2018 02:43
Selenium	**1.0**	0.50	1	02/21/2018 02:43
Silver	ND	0.50	1	02/21/2018 02:43
Thallium	ND	0.50	1	02/21/2018 02:43
Vanadium	**38**	0.50	1	02/21/2018 02:43
Zinc	**210**	5.0	1	02/21/2018 02:43

Surrogates	REC (%)	Limits	
Terbium	99	70-130	02/21/2018 02:43

Analyst(s): JC

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3050B
Date Prepared:	2/16/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-2-1 @ 3'	**1802893-003A**	**Soil**	**02/15/2018 10:45**	**ICP-MS1 176SMPL.D**	**153390**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.87**	0.50	1	02/21/2018 02:49
Arsenic	**6.3**	0.50	1	02/21/2018 02:49
Barium	**150**	5.0	1	02/21/2018 02:49
Beryllium	ND	0.50	1	02/21/2018 02:49
Cadmium	ND	0.25	1	02/21/2018 02:49
Chromium	**54**	0.50	1	02/21/2018 02:49
Cobalt	**11**	0.50	1	02/21/2018 02:49
Copper	**30**	0.50	1	02/21/2018 02:49
Lead	**78**	0.50	1	02/21/2018 02:49
Mercury	**2.2**	0.050	1	02/21/2018 02:49
Molybdenum	**0.60**	0.50	1	02/21/2018 02:49
Nickel	**84**	0.50	1	02/21/2018 02:49
Selenium	ND	0.50	1	02/21/2018 02:49
Silver	**0.69**	0.50	1	02/21/2018 02:49
Thallium	ND	0.50	1	02/21/2018 02:49
Vanadium	**34**	0.50	1	02/21/2018 02:49
Zinc	**86**	5.0	1	02/21/2018 02:49

Surrogates	REC (%)	Limits	
Terbium	105	70-130	02/21/2018 02:49

Analyst(s): JC

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3050B
Date Prepared:	2/16/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-3-1 @ 3½'	**1802893-004A**	**Soil**	**02/15/2018 11:00**	**ICP-MS1 164SMPL.D**	**153394**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	02/21/2018 01:35
Arsenic	**5.4**	0.50	1	02/21/2018 01:35
Barium	**190**	5.0	1	02/21/2018 01:35
Beryllium	ND	0.50	1	02/21/2018 01:35
Cadmium	ND	0.25	1	02/21/2018 01:35
Chromium	**35**	0.50	1	02/21/2018 01:35
Cobalt	**16**	0.50	1	02/21/2018 01:35
Copper	**17**	0.50	1	02/21/2018 01:35
Lead	**4.6**	0.50	1	02/21/2018 01:35
Mercury	**0.79**	0.050	1	02/21/2018 01:35
Molybdenum	**1.3**	0.50	1	02/21/2018 01:35
Nickel	**69**	0.50	1	02/21/2018 01:35
Selenium	ND	0.50	1	02/21/2018 01:35
Silver	ND	0.50	1	02/21/2018 01:35
Thallium	ND	0.50	1	02/21/2018 01:35
Vanadium	**35**	0.50	1	02/21/2018 01:35
Zinc	**36**	5.0	1	02/21/2018 01:35

Surrogates	REC (%)	Limits	
Terbium	87	70-130	02/21/2018 01:35

Analyst(s): JC

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3050B
Date Prepared:	2/16/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-4-1 @ 3'	**1802893-005A**	**Soil**	**02/15/2018 11:15**	**ICP-MS1 177SMPL.D**	**153394**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	02/21/2018 02:55
Arsenic	**2.1**	0.50	1	02/21/2018 02:55
Barium	**150**	5.0	1	02/21/2018 02:55
Beryllium	ND	0.50	1	02/21/2018 02:55
Cadmium	ND	0.25	1	02/21/2018 02:55
Chromium	**26**	0.50	1	02/21/2018 02:55
Cobalt	**5.7**	0.50	1	02/21/2018 02:55
Copper	**23**	0.50	1	02/21/2018 02:55
Lead	**6.2**	0.50	1	02/21/2018 02:55
Mercury	**0.16**	0.050	1	02/21/2018 02:55
Molybdenum	**0.62**	0.50	1	02/21/2018 02:55
Nickel	**36**	0.50	1	02/21/2018 02:55
Selenium	**0.95**	0.50	1	02/21/2018 02:55
Silver	ND	0.50	1	02/21/2018 02:55
Thallium	ND	0.50	1	02/21/2018 02:55
Vanadium	**20**	0.50	1	02/21/2018 02:55
Zinc	**46**	5.0	1	02/21/2018 02:55

Surrogates	REC (%)	Limits	
Terbium	102	70-130	02/21/2018 02:55

Analyst(s): JC

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3050B
Date Prepared:	2/16/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-5-1 @ 2'	**1802893-006A**	**Soil**	**02/15/2018 11:30**	**ICP-MS1 178SMPL.D**	**153394**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.56**	0.50	1	02/21/2018 03:01
Arsenic	**6.0**	0.50	1	02/21/2018 03:01
Barium	**140**	5.0	1	02/21/2018 03:01
Beryllium	ND	0.50	1	02/21/2018 03:01
Cadmium	ND	0.25	1	02/21/2018 03:01
Chromium	**36**	0.50	1	02/21/2018 03:01
Cobalt	**10**	0.50	1	02/21/2018 03:01
Copper	**22**	0.50	1	02/21/2018 03:01
Lead	**110**	0.50	1	02/21/2018 03:01
Mercury	**0.077**	0.050	1	02/21/2018 03:01
Molybdenum	**0.78**	0.50	1	02/21/2018 03:01
Nickel	**58**	0.50	1	02/21/2018 03:01
Selenium	ND	0.50	1	02/21/2018 03:01
Silver	ND	0.50	1	02/21/2018 03:01
Thallium	ND	0.50	1	02/21/2018 03:01
Vanadium	**41**	0.50	1	02/21/2018 03:01
Zinc	**73**	5.0	1	02/21/2018 03:01

Surrogates	REC (%)	Limits	
Terbium	98	70-130	02/21/2018 03:01

Analyst(s): JC

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3050B
Date Prepared:	2/16/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-6-1 @ 2½'	**1802893-007A**	**Soil**	**02/15/2018 12:00**	**ICP-MS1 179SMPL.D**	**153394**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.55**	0.50	1	02/21/2018 03:08
Arsenic	**3.1**	0.50	1	02/21/2018 03:08
Barium	**130**	5.0	1	02/21/2018 03:08
Beryllium	ND	0.50	1	02/21/2018 03:08
Cadmium	ND	0.25	1	02/21/2018 03:08
Chromium	**30**	0.50	1	02/21/2018 03:08
Cobalt	**5.6**	0.50	1	02/21/2018 03:08
Copper	**22**	0.50	1	02/21/2018 03:08
Lead	**61**	0.50	1	02/21/2018 03:08
Mercury	**0.14**	0.050	1	02/21/2018 03:08
Molybdenum	ND	0.50	1	02/21/2018 03:08
Nickel	**37**	0.50	1	02/21/2018 03:08
Selenium	ND	0.50	1	02/21/2018 03:08
Silver	ND	0.50	1	02/21/2018 03:08
Thallium	ND	0.50	1	02/21/2018 03:08
Vanadium	**25**	0.50	1	02/21/2018 03:08
Zinc	**74**	5.0	1	02/21/2018 03:08

Surrogates	REC (%)	Limits	
Terbium	95	70-130	02/21/2018 03:08

Analyst(s): JC

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3050B
Date Prepared:	2/16/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-7-1 @ 3'	**1802893-008A**	**Soil**	**02/15/2018 12:10**	**ICP-MS1 180SMPL.D**	**153394**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	02/21/2018 03:14
Arsenic	**2.7**	0.50	1	02/21/2018 03:14
Barium	**130**	5.0	1	02/21/2018 03:14
Beryllium	ND	0.50	1	02/21/2018 03:14
Cadmium	ND	0.25	1	02/21/2018 03:14
Chromium	**36**	0.50	1	02/21/2018 03:14
Cobalt	**5.0**	0.50	1	02/21/2018 03:14
Copper	**19**	0.50	1	02/21/2018 03:14
Lead	**4.5**	0.50	1	02/21/2018 03:14
Mercury	**0.060**	0.050	1	02/21/2018 03:14
Molybdenum	ND	0.50	1	02/21/2018 03:14
Nickel	**37**	0.50	1	02/21/2018 03:14
Selenium	ND	0.50	1	02/21/2018 03:14
Silver	ND	0.50	1	02/21/2018 03:14
Thallium	ND	0.50	1	02/21/2018 03:14
Vanadium	**32**	0.50	1	02/21/2018 03:14
Zinc	**37**	5.0	1	02/21/2018 03:14

Surrogates	REC (%)	Limits	
Terbium	98	70-130	02/21/2018 03:14

Analyst(s): JC

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Prepared:	2/16/18	**BatchID:**	153390
Date Analyzed:	2/20/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2, ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Sample ID:**	MB/LCS-153390 1802890-009AMS/MSD 1802890-009APDS

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	53.4	0.50	50	-	107	75-125
Arsenic	ND	51.6	0.50	50	-	103	75-125
Barium	ND	534	5.0	500	-	107	75-125
Beryllium	ND	52.6	0.50	50	-	105	75-125
Cadmium	ND	52.4	0.25	50	-	105	75-125
Chromium	ND	52.9	0.50	50	-	106	75-125
Cobalt	ND	51.1	0.50	50	-	102	75-125
Copper	ND	51.5	0.50	50	-	103	75-125
Lead	ND	52.4	0.50	50	-	105	75-125
Mercury	ND	1.28	0.050	1.25	-	102	75-125
Molybdenum	ND	52.8	0.50	50	-	106	75-125
Nickel	ND	53.3	0.50	50	-	107	75-125
Selenium	ND	50.3	0.50	50	-	101	75-125
Silver	ND	50.8	0.50	50	-	102	75-125
Thallium	ND	49.9	0.50	50	-	100	75-125
Vanadium	ND	52.9	0.50	50	-	106	75-125
Zinc	ND	521	5.0	500	-	104	75-125
Surrogate Recovery							
Terbium	486	540		500	97	108	70-130

(Cont.)

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Prepared:	2/16/18	**BatchID:**	153390
Date Analyzed:	2/20/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2, ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Sample ID:**	MB/LCS-153390 1802890-009AMS/MSD 1802890-009APDS

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	48.4	53.5	50	0.81	95	105	75-125	9.89	20
Arsenic	51.9	58.0	50	8.3	87	99	75-125	11.1	20
Barium	627	706	500	170	92	108	75-125	11.9	20
Beryllium	44.1	48.8	50	0.77	87	96	75-125	10.1	20
Cadmium	49.3	53.0	50	1.4	96	103	75-125	7.16	20
Chromium	110	123	50	66	88	114	75-125	11.3	20
Cobalt	52.8	62.7	50	17	71,F10	90	75-125	17.1	20
Copper	71.9	79.2	50	30	83	98	75-125	9.70	20
Lead	56.4	61.4	50	9.757	93	103	75-125	8.42	20
Mercury	1.30	1.38	1.25	0.080	98	104	75-125	5.82	20
Molybdenum	49.1	54.6	50	2.0	94	105	75-125	10.6	20
Nickel	144	164	50	120	43,F10	82	75-125	12.7	20
Selenium	46.1	51.1	50	ND	91	101	75-125	10.3	20
Silver	48.5	50.7	50	ND	97	101	75-125	4.44	20
Thallium	49.4	53.3	50	ND	98	106	75-125	7.53	20
Vanadium	104	116	50	58	92	116	75-125	11.0	20
Zinc	556	588	500	88	93	100	75-125	5.58	20
Surrogate Recovery									
Terbium	487	543	500		97	109	70-130	11.0	20

Analyte	PDS Result	SPK Val	SPKRef Val	PDS %REC	PDS Limits
Cobalt	66.5	50	17	98	75-125

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	0.900	0.81	11.1	-
Arsenic	8.25	8.3	0.602	-
Barium	171	170	0.588	20
Beryllium	0.832	0.77	8.05	-
Cadmium	1.31	1.4	6.43	-
Chromium	71.0	66	7.58	20
Cobalt	19.6	17	15.3	20
Copper	31.3	30	4.33	20

(Cont.)

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Prepared:	2/16/18	**BatchID:**	153390
Date Analyzed:	2/20/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2, ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Sample ID:**	MB/LCS-153390 1802890-009AMS/MSD 1802890-009APDS

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Lead	10.1	9.757	3.52	-
Mercury	0.118	0.080	47.5	-
Molybdenum	2.27	2.0	13.5	-
Nickel	126	120	5.00	20
Selenium	ND<2.5	ND	-	-
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	62.4	58	7.59	20
Zinc	84.9	88	3.52	-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

(Cont.)

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Prepared:	2/16/18	**BatchID:**	153394
Date Analyzed:	2/21/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Sample ID:**	MB/LCS-153394 1802893-004AMS/MSD 1802893-004APDS

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	46.6	0.50	50	-	93	75-125
Arsenic	ND	45.7	0.50	50	-	91	75-125
Barium	ND	449	5.0	500	-	90	75-125
Beryllium	ND	46.5	0.50	50	-	93	75-125
Cadmium	ND	44.9	0.25	50	-	90	75-125
Chromium	ND	45.5	0.50	50	-	91	75-125
Cobalt	ND	45.8	0.50	50	-	92	75-125
Copper	ND	44.4	0.50	50	-	89	75-125
Lead	ND	45.5	0.50	50	-	91	75-125
Mercury	ND	1.09	0.050	1.25	-	87	75-125
Molybdenum	ND	44.8	0.50	50	-	90	75-125
Nickel	ND	45.2	0.50	50	-	90	75-125
Selenium	ND	45.6	0.50	50	-	91	75-125
Silver	ND	45.9	0.50	50	-	92	75-125
Thallium	ND	43.6	0.50	50	-	87	75-125
Vanadium	ND	45.4	0.50	50	-	91	75-125
Zinc	ND	456	5.0	500	-	91	75-125
Surrogate Recovery							
Terbium	544	484		500	109	97	70-130

(Cont.)

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Prepared:	2/16/18	**BatchID:**	153394
Date Analyzed:	2/21/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Sample ID:**	MB/LCS-153394 1802893-004AMS/MSD 1802893-004APDS

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	45.9	51.1	50	ND	91	102	75-125	10.6	20
Arsenic	45.9	50.7	50	5.409	81	91	75-125	9.92	20
Barium	603	676	500	194.3	82	96	75-125	11.4	20
Beryllium	44.5	48.6	50	ND	88	96	75-125	8.66	20
Cadmium	44.0	48.3	50	ND	88	96	75-125	9.36	20
Chromium	81.1	96.5	50	34.77	93	123	75-125	17.3	20
Cobalt	49.0	54.5	50	15.65	67,F10	78	75-125	10.6	20
Copper	60.8	66.1	50	17.22	87	98	75-125	8.34	20
Lead	49.2	55.2	50	4.622	89	101	75-125	11.4	20
Mercury	1.23	1.29	1.25	0.7892	36,F10	40,F10	75-125	4.36	20
Molybdenum	44.9	49.6	50	1.316	87	97	75-125	10.0	20
Nickel	90.8	106	50	69.10	43,F10	73,F10	75-125	15.2	20
Selenium	43.8	47.3	50	ND	87	94	75-125	7.72	20
Silver	45.2	48.5	50	ND	90	97	75-125	7.13	20
Thallium	42.9	47.9	50	ND	86	96	75-125	10.9	20
Vanadium	75.2	86.8	50	34.82	81	104	75-125	14.3	20
Zinc	480	526	500	35.60	89	98	75-125	9.15	20
Surrogate Recovery									
Terbium	478	532	500		96	106	70-130	10.8	20

Analyte	PDS Result	SPK Val	SPKRef Val	PDS %REC	PDS Limits
Cobalt	63.2	50	15.65	95	75-125
Mercury	2.02	1.25	0.7892	99	75-125

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	0.612	ND	-	-
Arsenic	4.92	5.409	9.04	-
Barium	188	194.3	3.24	20
Beryllium	0.578	ND	-	-
Cadmium	ND<1.2	ND	-	-
Chromium	35.6	34.77	2.39	20
Cobalt	16.4	15.65	4.79	20

(Cont.)

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Prepared:	2/16/18	**BatchID:**	153394
Date Analyzed:	2/21/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Sample ID:**	MB/LCS-153394 1802893-004AMS/MSD 1802893-004APDS

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Copper	17.4	17.22	1.05	20
Lead	4.63	4.622	0.173	-
Mercury	0.811	0.7892	2.76	-
Molybdenum	1.51	1.316	14.7	-
Nickel	67.1	69.10	2.89	20
Selenium	ND<2.5	ND	-	-
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	34.4	34.82	1.21	20
Zinc	38.6	35.60	8.43	-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1802893 **ClientCode: BAGT**

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

Report to:
Evan Wolf
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
(650) 630-3923 FAX: 650-852-9138

Email: ewolf@baggengineers.com; ebbi@baggen
cc/3rd Party: ajay@baggengineers.com;
PO:
Project: DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils

Bill to:
Accounts Payable
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
accounting@baggengineers.com

Requested TAT: 5 days;

Date Received: 02/16/2018
Date Logged: 02/16/2018

Lab ID	Client ID	Matrix	Collection Date	Hold	1	2	3	4	5	6	7	8	9	10	11	12
					Requested Tests (See legend below)											
1802893-001	B-2B-1 @ 2'	Soil	2/15/2018 08:50	☐	A	A										
1802893-002	EB-1-1 @ 2½'	Soil	2/15/2018 10:30	☐	A	A										
1802893-003	EB-2-1 @ 3'	Soil	2/15/2018 10:45	☐	A	A										
1802893-004	EB-3-1 @ 3½'	Soil	2/15/2018 11:00	☐	A	A										
1802893-005	EB-4-1 @ 3'	Soil	2/15/2018 11:15	☐	A	A										
1802893-006	EB-5-1 @ 2'	Soil	2/15/2018 11:30	☐	A	A										
1802893-007	EB-6-1 @ 2½'	Soil	2/15/2018 12:00	☐	A	A										
1802893-008	EB-7-1 @ 3'	Soil	2/15/2018 12:10	☐	A	A										

Test Legend:

1	CAM17MS_TTLC_S	2	STLC_MSEXTRACTONLY	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Agustina Venegas

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: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email: ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils
Comments:

Work Order: 1802893
QC Level: LEVEL 2
Date Logged: 2/16/2018

☐ 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
1802893-001A	B-2B-1 @ 2'	Soil	STLC (rotated) Extraction	1	Stainless Steel tube 2 1/2"x6"	☐	2/15/2018 8:50	5 days*		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
1802893-002A	EB-1-1 @ 2½'	Soil	STLC (rotated) Extraction	1	Stainless Steel tube 2 1/2"x6"	☐	2/15/2018 10:30	5 days*		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
1802893-003A	EB-2-1 @ 3'	Soil	STLC (rotated) Extraction	1	Stainless Steel tube 2 1/2"x6"	☐	2/15/2018 10:45	5 days*		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
1802893-004A	EB-3-1 @ 3½'	Soil	STLC (rotated) Extraction	1	Stainless Steel tube 2 1/2"x6"	☐	2/15/2018 11:00	5 days*		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
1802893-005A	EB-4-1 @ 3'	Soil	STLC (rotated) Extraction	1	Stainless Steel tube 2 1/2"x6"	☐	2/15/2018 11:15	5 days*		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
1802893-006A	EB-5-1 @ 2'	Soil	STLC (rotated) Extraction	1	Stainless Steel tube 2 1/2"x6"	☐	2/15/2018 11:30	5 days*		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
1802893-007A	EB-6-1 @ 2½'	Soil	STLC (rotated) Extraction	1	Stainless Steel tube 2 1/2"x6"	☐	2/15/2018 12:00	5 days*		☐	
			SW6020 (CAM 17)			☐		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: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email: ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils
Comments:

Work Order: 1802893
QC Level: LEVEL 2
Date Logged: 2/16/2018

☐ 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
1802893-008A	EB-7-1 @ 3'	Soil	STLC (rotated) Extraction	1	Stainless Steel tube 2 1/2"x6"	☐	2/15/2018 12:10	5 days*		☐	
			SW6020 (CAM 17)			☐		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.

1802893

CHAIN OF CUSTODY RECORD

BAGG ENGINEERS

www.baggengineers.com
phone: 650.852.9133 fax: 650.852.9138 info@baggengineers.com
138 Charcot Avenue, San Jose, California 95131

TURN AROUND TIME: ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To: Evan Wolf — Bill To: BAGG Engineers

Company: BAGG Engineers

138 Charcot Ave — E-Mail: ewolf@baggengineers.com

San Jose, CA 95131 — E-Mail: ajay@baggengineers.com

Tele: (650) 852-9133 — Fax: (650) 852-9138

Project #: DEROY-01-00 — Project Name: Follow-up Environmental Characterization of In Situ Shallow Soils

Project Location: 292 Stockton Ave, San Jose, CA

Sampler Signature: Evan Wolf

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	HCL	HNO_3	Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015) & Motor Oil - extractables w/ SGC	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides) + PCBs w/ florisil clean up if necessary	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs) w/ GPC if necessary	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	Other: WET STLC (Extract & Hold. Run 10x)	Other: CARB 435 Asbestos	Other: Hexachrom	Comments: Filter Samples for Metals analysis: Yes / No
DEROY-01-00	B-2B-1 @ 2'	2/15/18	8:50AM	1	S. Steel		X				X																	X			X			
	EB-1-1 @ 2½'		10:30AM	1	S. Steel		X				X																	X			X			
	EB-2-1 @ 3'		10:45AM	1	S. Steel		X				X																	X			X			
	EB-3-1 @ 3½'		11:00AM	1	S. Steel		X				X																	X			X			
	EB-4-1 @ 3'		11:15AM	1	S. Steel		X				X																	X			X			
	EB-5-1 @ 2'		11:30AM	1	S. Steel		X				X																	X			X			
	EB-6-1 @ 2½'		12:00PM	1	S. Steel		X				X																	X			X			
	EB-7-1 @ 3'		12:10PM	1	S. Steel		X				X																	X			X			

Relinquished By:	Date:	Time:	Received By:
Evan Wolf	2/16/18	1420	C Moon
C Moore	2/16/18	1900	Agustin V
Relinquished By:	Date:	Time:	Received By:

ICE/t° 3.1

GOOD CONDITION_____

HEAD SPACE ABSENT_____

DECHLORINATED IN LAB_____

APPROPRIATE CONTAINERS_____

PRESERVED IN LAB_____

PRESERVATION	VOAS	O&G	METALS	OTHER
			pH<2	

COMMENTS:

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Sample Receipt Checklist

Client Name:	**BAGG Engineers**	Date and Time Received	**2/16/2018 19:00**
Project:	**DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils**	Date Logged:	**2/16/2018**
		Received by:	Agustina Venegas
WorkOrder №:	**1802893** Matrix: Soil	Logged by:	Agustina Venegas
Carrier:	Laurie Moore (MAI Courier)		

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 ☐
Sample/Temp Blank temperature	Temp: 3.1°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 ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		
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:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1802893 A

Report Created for: BAGG Engineers

138 Charcot Ave
San Jose, CA 95131

Project Contact: Evan Wolf
Project P.O.:
Project: DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils
Project Received: 02/16/2018

Analytical Report reviewed & approved for release on 03/05/2018 by:

Yen Cao
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: BAGG Engineers
Project: DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils
WorkOrder: 1802893 A

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)

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	CA Title 22
Date Prepared:	2/20/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/L

Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2B-1 @ 2'	**1802893-001A**	**Soil**	**02/15/2018 08:50**	**ICP-MS1 037SMPL.D**	**153410**

Analytes	Result	RL	DF	Date Analyzed
Chromium	**0.43**	0.10	1	02/27/2018 11:32
Mercury	ND	0.010	1	02/27/2018 11:32
Nickel	**2.0**	0.10	1	02/27/2018 11:32

Analyst(s): JC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-2-1 @ 3'	**1802893-003A**	**Soil**	**02/15/2018 10:45**	**ICP-MS1 039SMPL.D**	**153410**

Analytes	Result	RL	DF	Date Analyzed
Chromium	**0.15**	0.10	1	02/27/2018 11:44
Lead	**5.2**	0.10	1	02/27/2018 11:44
Mercury	ND	0.010	1	02/27/2018 11:44

Analyst(s): JC

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW1311/SW3010
Date Prepared:	2/26/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/L

Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-2B-1 @ 2'	**1802893-001A**	**Soil**	**02/15/2018 08:50**	**ICP-MS1 130SMPL.D**	**153757**

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	02/27/2018 21:02
Mercury	ND	0.010	1	02/27/2018 21:02

Analyst(s): JC

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	CA Title 22
Date Prepared:	2/20/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/L

Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-1-1 @ 2½'	**1802893-002A**	**Soil**	**02/15/2018 10:30**	**ICP-MS1 038SMPL.D**	**153410**

Analytes	Result	RL	DF	Date Analyzed
Lead	**5.6**	0.10	1	02/27/2018 11:38

Analyst(s): JC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-5-1 @ 2'	**1802893-006A**	**Soil**	**02/15/2018 11:30**	**ICP-MS1 040SMPL.D**	**153410**

Analytes	Result	RL	DF	Date Analyzed
Lead	**2.6**	0.10	1	02/27/2018 11:50

Analyst(s): JC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-6-1 @ 2½'	**1802893-007A**	**Soil**	**02/15/2018 12:00**	**ICP-MS1 044SMPL.D**	**153410**

Analytes	Result	RL	DF	Date Analyzed
Lead	**2.2**	0.10	1	02/27/2018 12:15

Analyst(s): ND

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Received:	2/16/18 19:00	**Extraction Method:**	SW1311/SW3010
Date Prepared:	2/26/18	**Analytical Method:**	SW6020
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Unit:**	mg/L

Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-1-1 @ 2½'	**1802893-002A**	**Soil**	**02/15/2018 10:30**	**ICP-MS1 140SMPL.D**	**153757**

Analytes	Result	RL	DF	Date Analyzed
Lead	ND	0.10	1	02/27/2018 22:04

Analyst(s): JC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
EB-5-1 @ 2'	**1802893-006A**	**Soil**	**02/15/2018 11:30**	**ICP-MS1 141SMPL.D**	**153757**

Analytes	Result	RL	DF	Date Analyzed
Lead	**0.21**	0.10	1	02/27/2018 22:10

Analyst(s): JC

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Prepared:	2/20/18	**BatchID:**	153410
Date Analyzed:	2/22/18	**Extraction Method:**	CA Title 22
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/L
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Sample ID:**	MB/LCS-153410 1802906-001AMS/MSD

QC Summary Report for Metals (STLC)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Chromium	ND	9.93	0.10	10	-	99	75-125
Lead	ND	9.92	0.10	10	-	99	75-125
Mercury	ND	0.249	0.010	0.25	-	100	75-125
Nickel	ND	9.89	0.10	10	-	99	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Chromium	10.1	9.90	10	0.18	99	97	75-125	1.58	20
Lead	9.84	9.93	10	ND	98	99	75-125	0.911	20
Mercury	0.241	0.249	0.25	ND	96	100	75-125	3.10	20
Nickel	10.5	10.5	10	0.71	98	98	75-125	0	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802893
Date Prepared:	2/26/18	**BatchID:**	153757
Date Analyzed:	2/27/18	**Extraction Method:**	SW1311/SW3010
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/L
Project:	DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils	**Sample ID:**	MB/LCS-153757 1802893-001AMS/MSD

QC Summary Report for Metals (TCLP)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Chromium	ND	9.84	0.10	10	-	98	75-125
Mercury	ND	0.235	0.010	0.25	-	94	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Chromium	10.0	9.77	10	ND	100	98	75-125	2.47	20
Mercury	0.241	0.243	0.25	ND	97	97	75-125	0	20

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Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1802893 A **ClientCode: BAGT**

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

Report to:
Evan Wolf
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
(650) 630-3923 FAX: 650-852-9138

Email: ewolf@baggengineers.com; ebbi@baggen
cc/3rd Party: ajay@baggengineers.com;
PO:
Project: DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils

Bill to:
Accounts Payable
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
accounting@baggengineers.com

Requested TAT: 5 days;

Date Received: 02/16/2018
Date Logged: 02/16/2018
Date Add-On: 02/26/2018

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
1802893-001	B-2B-1 @ 2'	Soil	2/15/2018 08:50	☐	A	A										
1802893-002	EB-1-1 @ 2½'	Soil	2/15/2018 10:30	☐			A	A								
1802893-003	EB-2-1 @ 3'	Soil	2/15/2018 10:45	☐	A											
1802893-006	EB-5-1 @ 2'	Soil	2/15/2018 11:30	☐			A	A								
1802893-007	EB-6-1 @ 2½'	Soil	2/15/2018 12:00	☐			A									

Test Legend:

1	METALSMS_STLC_S	2	METALSMS_TCLP_S	3	PBMS_STLC_S	4	PBMS_TCLP_S
5		6		7		8	
9		10		11		12	

Prepared by: Agustina Venegas

Add-On Prepared By: Maria Venegas

Comments: STLC's & TCLP's added 2/26/18 STAT.

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: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Follow-up Environmental Characterization of In Situ Shallow Soils
Comments: STLC's & TCLP's added 2/26/18 STAT.

Work Order: 1802893
QC Level: LEVEL 2
Date Logged: 2/16/2018
Date Add-On: 2/26/2018

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1802893-001A	B-2B-1 @ 2'	Soil	SW6020 (Metals) (TCLP) <Chromium, Mercury>	1	Stainless Steel tube 2 1/2"x6"	2/15/2018 8:50	5 days*		☐	
			SW6020 (Metals) (STLC) <Chromium, Mercury, Nickel>				5 days*		☐	
1802893-002A	EB-1-1 @ 2½'	Soil	SW6020 (Lead) (TCLP)	1	Stainless Steel tube 2 1/2"x6"	2/15/2018 10:30	5 days*		☐	
			SW6020 (Lead) (STLC)				5 days*		☐	
1802893-003A	EB-2-1 @ 3'	Soil	SW6020 (Metals) (STLC) <Chromium, Lead, Mercury>	1	Stainless Steel tube 2 1/2"x6"	2/15/2018 10:45	5 days*		☐	
1802893-006A	EB-5-1 @ 2'	Soil	SW6020 (Lead) (TCLP)	1	Stainless Steel tube 2 1/2"x6"	2/15/2018 11:30	5 days*		☐	
			SW6020 (Lead) (STLC)				5 days*		☐	
1802893-007A	EB-6-1 @ 2½'	Soil	SW6020 (Lead) (STLC)	1	Stainless Steel tube 2 1/2"x6"	2/15/2018 12:00	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.

1802893

CHAIN OF CUSTODY RECORD

BAGG ENGINEERS

www.baggengineers.com
phone: 650.852.9133 fax: 650.852.9138 info@baggengineers.com
138 Charcot Avenue, San Jose, California 95131

TURN AROUND TIME: ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To: Evan Wolf — Bill To: BAGG Engineers

Company: BAGG Engineers

138 Charcot Ave — E-Mail: ewolf@baggengineers.com

San Jose, CA 95131 — E-Mail: ajay@baggengineers.com

Tele: (650) 852-9133 — Fax: (650) 852-9138

Project #: DEROY-01-00 — Project Name: Follow-up Environmental Characterization of In Situ Shallow Soils

Project Location: 292 Stockton Ave, San Jose, CA

Sampler Signature: Evan Wolf

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	HCL	HNO_3	Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015) & Motor Oil - extractables w/ SGC	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides) + PCBs w/ florisil clean up if necessary	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	~~EPA 507 / 8141 (NP Pesticides)~~ STLC Cr, Hg	~~EPA 515 / 8151 (Acidic Cl Herbicides)~~ TCLP Cr, Hg	~~EPA 524.2 / 624 / 8260 (VOCs)~~ STLC Ni	EPA 525.2 / 625 / 8270 (SVOCs) w/ GPC if necessary	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	~~LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)~~ STLC Pb	~~Lead (200.7 / 200.8 / 6010 / 6020)~~ TCLP Pb	WET STLC (Extract & Hold. Run 10x)	CARB 435 Asbestos	Hexachrom	Comments
DEROY-01-00	B-2B-1 @ 2'	2/15/18	8:50AM	1	S. Steel		X				X												X	X	X			X			X			Filter Samples for Metals analysis: Yes / No
	EB-1-1 @ 2½'		10:30AM	1	S. Steel		X				X																	X	X	X	X			
	EB-2-1 @ 3'		10:45AM	1	S. Steel		X				X												X					X	X		X			
	EB-3-1 @ 3½'		11:00AM	1	S. Steel		X				X																	X			X			
	EB-4-1 @ 3'		11:15AM	1	S. Steel		X				X																	X			X			
	EB-5-1 @ 2'		11:30AM	1	S. Steel		X				X																	X	X	X	X			
	EB-6-1 @ 2½'		12:00PM	1	S. Steel		X				X																	X	X		X			
	EB-7-1 @ 3'		12:10PM	1	S. Steel		X				X																	X			X			

Relinquished By:	Date:	Time:	Received By:
Evan Wolf	2/16/18	1420	C Moon
C Moore	2/16/18	1900	Agustin V
Relinquished By:	Date:	Time:	Received By:

ICE/t° 3.1
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

	VOAS	O&G	METALS	OTHER
PRESERVATION			pH<2	

COMMENTS:
added 2/26/18 STAT

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1802895

Report Created for: BAGG Engineers

138 Charcot Ave
San Jose, CA 95131

Project Contact: Evan Wolf
Project P.O.:
Project: DEROY-01-00; Environmental Characterization of Groundwater
Project Received: 02/16/2018

Analytical Report reviewed & approved for release on 02/23/2018 by:

Heidi Fruhlinger
Project Manager

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Glossary of Terms & Qualifier Definitions

Client: BAGG Engineers
Project: DEROY-01-00; Environmental Characterization of Groundwater
WorkOrder: 1802895

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)

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Glossary of Terms & Qualifier Definitions

Client: BAGG Engineers
Project: DEROY-01-00; Environmental Characterization of Groundwater
WorkOrder: 1802895

Analytical Qualifiers

b1	Aqueous sample that contains greater than ~1 vol. % sediment
d6	One to a few isolated non-target peaks present in the TPH(g) chromatogram

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD is out of acceptance criteria.

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3510C
Date Prepared:	2/16/18	**Analytical Method:**	SW8081A/8082
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001B**	**Water**	**02/15/2018 13:50**	**GC20 02201854.D**	**153398**

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0050	1	02/21/2018 02:10
a-BHC	ND	0.010	1	02/21/2018 02:10
b-BHC	ND	0.0050	1	02/21/2018 02:10
d-BHC	ND	0.0050	1	02/21/2018 02:10
g-BHC	ND	0.020	1	02/21/2018 02:10
Chlordane (Technical)	ND	0.10	1	02/21/2018 02:10
a-Chlordane	ND	0.050	1	02/21/2018 02:10
g-Chlordane	ND	0.050	1	02/21/2018 02:10
p,p-DDD	ND	0.010	1	02/21/2018 02:10
p,p-DDE	ND	0.010	1	02/21/2018 02:10
p,p-DDT	ND	0.010	1	02/21/2018 02:10
Dieldrin	ND	0.010	1	02/21/2018 02:10
Endosulfan I	ND	0.020	1	02/21/2018 02:10
Endosulfan II	ND	0.020	1	02/21/2018 02:10
Endosulfan sulfate	ND	0.050	1	02/21/2018 02:10
Endrin	ND	0.010	1	02/21/2018 02:10
Endrin aldehyde	ND	0.050	1	02/21/2018 02:10
Endrin ketone	ND	0.050	1	02/21/2018 02:10
Heptachlor	ND	0.010	1	02/21/2018 02:10
Heptachlor epoxide	ND	0.010	1	02/21/2018 02:10
Hexachlorobenzene	ND	0.50	1	02/21/2018 02:10
Hexachlorocyclopentadiene	ND	1.0	1	02/21/2018 02:10
Methoxychlor	ND	0.10	1	02/21/2018 02:10
Toxaphene	ND	0.50	1	02/21/2018 02:10
Aroclor1016	ND	0.50	1	02/21/2018 02:10
Aroclor1221	ND	0.50	1	02/21/2018 02:10
Aroclor1232	ND	0.50	1	02/21/2018 02:10
Aroclor1242	ND	0.50	1	02/21/2018 02:10
Aroclor1248	ND	0.50	1	02/21/2018 02:10
Aroclor1254	ND	0.50	1	02/21/2018 02:10
Aroclor1260	ND	0.50	1	02/21/2018 02:10
PCBs, total	ND	0.50	1	02/21/2018 02:10

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	101	70-130	02/21/2018 02:10

Analyst(s): CK

Analytical Comments: b1

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NELAP 4033ORELAP

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3510C
Date Prepared:	2/16/18	**Analytical Method:**	SW8081A/8082
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002B**	**Water**	**02/15/2018 12:40**	**GC20 02201855.D**	**153398**

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0050	1	02/21/2018 02:26
a-BHC	ND	0.010	1	02/21/2018 02:26
b-BHC	ND	0.0050	1	02/21/2018 02:26
d-BHC	ND	0.0050	1	02/21/2018 02:26
g-BHC	ND	0.020	1	02/21/2018 02:26
Chlordane (Technical)	ND	0.10	1	02/21/2018 02:26
a-Chlordane	ND	0.050	1	02/21/2018 02:26
g-Chlordane	ND	0.050	1	02/21/2018 02:26
p,p-DDD	ND	0.010	1	02/21/2018 02:26
p,p-DDE	ND	0.010	1	02/21/2018 02:26
p,p-DDT	ND	0.010	1	02/21/2018 02:26
Dieldrin	ND	0.010	1	02/21/2018 02:26
Endosulfan I	ND	0.020	1	02/21/2018 02:26
Endosulfan II	ND	0.020	1	02/21/2018 02:26
Endosulfan sulfate	ND	0.050	1	02/21/2018 02:26
Endrin	ND	0.010	1	02/21/2018 02:26
Endrin aldehyde	ND	0.050	1	02/21/2018 02:26
Endrin ketone	ND	0.050	1	02/21/2018 02:26
Heptachlor	ND	0.010	1	02/21/2018 02:26
Heptachlor epoxide	ND	0.010	1	02/21/2018 02:26
Hexachlorobenzene	ND	0.50	1	02/21/2018 02:26
Hexachlorocyclopentadiene	ND	1.0	1	02/21/2018 02:26
Methoxychlor	ND	0.10	1	02/21/2018 02:26
Toxaphene	ND	0.50	1	02/21/2018 02:26
Aroclor1016	ND	0.50	1	02/21/2018 02:26
Aroclor1221	ND	0.50	1	02/21/2018 02:26
Aroclor1232	ND	0.50	1	02/21/2018 02:26
Aroclor1242	ND	0.50	1	02/21/2018 02:26
Aroclor1248	ND	0.50	1	02/21/2018 02:26
Aroclor1254	ND	0.50	1	02/21/2018 02:26
Aroclor1260	ND	0.50	1	02/21/2018 02:26
PCBs, total	ND	0.50	1	02/21/2018 02:26

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	104	70-130	02/21/2018 02:26

Analyst(s): CK

Analytical Comments: b1

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW5030B
Date Prepared:	2/20/18-2/21/18	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001C**	**Water**	**02/15/2018 13:50**	**GC16 02201834.D**	**153499**

Analytes	Result	RL	DF	Date Analyzed
Acetone	**68**	10	1	02/21/2018 04:51
tert-Amyl methyl ether (TAME)	ND	0.50	1	02/21/2018 04:51
Benzene	ND	0.50	1	02/21/2018 04:51
Bromobenzene	ND	0.50	1	02/21/2018 04:51
Bromochloromethane	ND	0.50	1	02/21/2018 04:51
Bromodichloromethane	ND	0.50	1	02/21/2018 04:51
Bromoform	ND	0.50	1	02/21/2018 04:51
Bromomethane	ND	0.50	1	02/21/2018 04:51
2-Butanone (MEK)	**130**	2.0	1	02/21/2018 04:51
t-Butyl alcohol (TBA)	ND	2.0	1	02/21/2018 04:51
n-Butyl benzene	ND	0.50	1	02/21/2018 04:51
sec-Butyl benzene	ND	0.50	1	02/21/2018 04:51
tert-Butyl benzene	ND	0.50	1	02/21/2018 04:51
Carbon Disulfide	ND	0.50	1	02/21/2018 04:51
Carbon Tetrachloride	ND	0.50	1	02/21/2018 04:51
Chlorobenzene	ND	0.50	1	02/21/2018 04:51
Chloroethane	ND	0.50	1	02/21/2018 04:51
Chloroform	ND	0.50	1	02/21/2018 04:51
Chloromethane	ND	0.50	1	02/21/2018 04:51
2-Chlorotoluene	ND	0.50	1	02/21/2018 04:51
4-Chlorotoluene	ND	0.50	1	02/21/2018 04:51
Dibromochloromethane	ND	0.50	1	02/21/2018 04:51
1,2-Dibromo-3-chloropropane	ND	0.20	1	02/21/2018 04:51
1,2-Dibromoethane (EDB)	ND	0.50	1	02/21/2018 04:51
Dibromomethane	ND	0.50	1	02/21/2018 04:51
1,2-Dichlorobenzene	ND	0.50	1	02/21/2018 04:51
1,3-Dichlorobenzene	ND	0.50	1	02/21/2018 04:51
1,4-Dichlorobenzene	ND	0.50	1	02/21/2018 04:51
Dichlorodifluoromethane	ND	0.50	1	02/21/2018 04:51
1,1-Dichloroethane	ND	0.50	1	02/21/2018 04:51
1,2-Dichloroethane (1,2-DCA)	ND	0.50	1	02/21/2018 04:51
1,1-Dichloroethene	ND	0.50	1	02/21/2018 04:51
cis-1,2-Dichloroethene	ND	0.50	1	02/21/2018 04:51
trans-1,2-Dichloroethene	ND	0.50	1	02/21/2018 04:51
1,2-Dichloropropane	ND	0.50	1	02/21/2018 04:51
1,3-Dichloropropane	ND	0.50	1	02/21/2018 04:51
2,2-Dichloropropane	ND	0.50	1	02/21/2018 04:51

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW5030B
Date Prepared:	2/20/18-2/21/18	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001C**	**Water**	**02/15/2018 13:50**	**GC16 02201834.D**	**153499**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.50	1	02/21/2018 04:51
cis-1,3-Dichloropropene	ND	0.50	1	02/21/2018 04:51
trans-1,3-Dichloropropene	ND	0.50	1	02/21/2018 04:51
Diisopropyl ether (DIPE)	ND	0.50	1	02/21/2018 04:51
Ethylbenzene	ND	0.50	1	02/21/2018 04:51
Ethyl tert-butyl ether (ETBE)	ND	0.50	1	02/21/2018 04:51
Freon 113	ND	0.50	1	02/21/2018 04:51
Hexachlorobutadiene	ND	0.50	1	02/21/2018 04:51
Hexachloroethane	ND	0.50	1	02/21/2018 04:51
2-Hexanone	ND	0.50	1	02/21/2018 04:51
Isopropylbenzene	ND	0.50	1	02/21/2018 04:51
4-Isopropyl toluene	ND	0.50	1	02/21/2018 04:51
Methyl-t-butyl ether (MTBE)	ND	0.50	1	02/21/2018 04:51
Methylene chloride	ND	0.50	1	02/21/2018 04:51
4-Methyl-2-pentanone (MIBK)	ND	0.50	1	02/21/2018 04:51
Naphthalene	ND	0.50	1	02/21/2018 04:51
n-Propyl benzene	ND	0.50	1	02/21/2018 04:51
Styrene	ND	0.50	1	02/21/2018 04:51
1,1,1,2-Tetrachloroethane	ND	0.50	1	02/21/2018 04:51
1,1,2,2-Tetrachloroethane	ND	0.50	1	02/21/2018 04:51
Tetrachloroethene	ND	0.50	1	02/21/2018 04:51
Toluene	ND	0.50	1	02/21/2018 04:51
1,2,3-Trichlorobenzene	ND	0.50	1	02/21/2018 04:51
1,2,4-Trichlorobenzene	ND	0.50	1	02/21/2018 04:51
1,1,1-Trichloroethane	ND	0.50	1	02/21/2018 04:51
1,1,2-Trichloroethane	ND	0.50	1	02/21/2018 04:51
Trichloroethene	ND	0.50	1	02/21/2018 04:51
Trichlorofluoromethane	ND	0.50	1	02/21/2018 04:51
1,2,3-Trichloropropane	ND	0.50	1	02/21/2018 04:51
1,2,4-Trimethylbenzene	ND	0.50	1	02/21/2018 04:51
1,3,5-Trimethylbenzene	ND	0.50	1	02/21/2018 04:51
Vinyl Chloride	ND	0.50	1	02/21/2018 04:51
Xylenes, Total	ND	0.50	1	02/21/2018 04:51

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW5030B
Date Prepared:	2/20/18-2/21/18	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001C**	**Water**	**02/15/2018 13:50**	**GC16 02201834.D**	**153499**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	100	78-134		02/21/2018 04:51
Toluene-d8	107	82-120		02/21/2018 04:51
4-BFB	80	69-131		02/21/2018 04:51

Analyst(s): AK Analytical Comments: b1

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW5030B
Date Prepared:	2/20/18-2/21/18	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002C**	**Water**	**02/15/2018 12:40**	**GC10 02201822.D**	**153449**

Analytes	Result	RL	DF	Date Analyzed
Acetone	**780**	100	10	02/20/2018 20:53
tert-Amyl methyl ether (TAME)	ND	5.0	10	02/20/2018 20:53
Benzene	ND	5.0	10	02/20/2018 20:53
Bromobenzene	ND	5.0	10	02/20/2018 20:53
Bromochloromethane	ND	5.0	10	02/20/2018 20:53
Bromodichloromethane	ND	5.0	10	02/20/2018 20:53
Bromoform	ND	5.0	10	02/20/2018 20:53
Bromomethane	ND	5.0	10	02/20/2018 20:53
2-Butanone (MEK)	**1400**	20	10	02/20/2018 20:53
t-Butyl alcohol (TBA)	ND	20	10	02/20/2018 20:53
n-Butyl benzene	ND	5.0	10	02/20/2018 20:53
sec-Butyl benzene	ND	5.0	10	02/20/2018 20:53
tert-Butyl benzene	ND	5.0	10	02/20/2018 20:53
Carbon Disulfide	ND	5.0	10	02/20/2018 20:53
Carbon Tetrachloride	ND	5.0	10	02/20/2018 20:53
Chlorobenzene	ND	5.0	10	02/20/2018 20:53
Chloroethane	ND	5.0	10	02/20/2018 20:53
Chloroform	ND	5.0	10	02/20/2018 20:53
Chloromethane	ND	5.0	10	02/20/2018 20:53
2-Chlorotoluene	ND	5.0	10	02/20/2018 20:53
4-Chlorotoluene	ND	5.0	10	02/20/2018 20:53
Dibromochloromethane	ND	5.0	10	02/20/2018 20:53
1,2-Dibromo-3-chloropropane	ND	2.0	10	02/20/2018 20:53
1,2-Dibromoethane (EDB)	ND	5.0	10	02/20/2018 20:53
Dibromomethane	ND	5.0	10	02/20/2018 20:53
1,2-Dichlorobenzene	ND	5.0	10	02/20/2018 20:53
1,3-Dichlorobenzene	ND	5.0	10	02/20/2018 20:53
1,4-Dichlorobenzene	ND	5.0	10	02/20/2018 20:53
Dichlorodifluoromethane	ND	5.0	10	02/20/2018 20:53
1,1-Dichloroethane	ND	5.0	10	02/20/2018 20:53
1,2-Dichloroethane (1,2-DCA)	ND	5.0	10	02/20/2018 20:53
1,1-Dichloroethene	ND	5.0	10	02/20/2018 20:53
cis-1,2-Dichloroethene	ND	5.0	10	02/20/2018 20:53
trans-1,2-Dichloroethene	ND	5.0	10	02/20/2018 20:53
1,2-Dichloropropane	ND	5.0	10	02/20/2018 20:53
1,3-Dichloropropane	ND	5.0	10	02/20/2018 20:53
2,2-Dichloropropane	ND	5.0	10	02/20/2018 20:53

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW5030B
Date Prepared:	2/20/18-2/21/18	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002C**	**Water**	**02/15/2018 12:40**	**GC10 02201822.D**	**153449**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	5.0	10	02/20/2018 20:53
cis-1,3-Dichloropropene	ND	5.0	10	02/20/2018 20:53
trans-1,3-Dichloropropene	ND	5.0	10	02/20/2018 20:53
Diisopropyl ether (DIPE)	ND	5.0	10	02/20/2018 20:53
Ethylbenzene	ND	5.0	10	02/20/2018 20:53
Ethyl tert-butyl ether (ETBE)	ND	5.0	10	02/20/2018 20:53
Freon 113	ND	5.0	10	02/20/2018 20:53
Hexachlorobutadiene	ND	5.0	10	02/20/2018 20:53
Hexachloroethane	ND	5.0	10	02/20/2018 20:53
2-Hexanone	ND	5.0	10	02/20/2018 20:53
Isopropylbenzene	ND	5.0	10	02/20/2018 20:53
4-Isopropyl toluene	ND	5.0	10	02/20/2018 20:53
Methyl-t-butyl ether (MTBE)	ND	5.0	10	02/20/2018 20:53
Methylene chloride	ND	5.0	10	02/20/2018 20:53
4-Methyl-2-pentanone (MIBK)	ND	5.0	10	02/20/2018 20:53
Naphthalene	ND	5.0	10	02/20/2018 20:53
n-Propyl benzene	ND	5.0	10	02/20/2018 20:53
Styrene	ND	5.0	10	02/20/2018 20:53
1,1,1,2-Tetrachloroethane	ND	5.0	10	02/20/2018 20:53
1,1,2,2-Tetrachloroethane	ND	5.0	10	02/20/2018 20:53
Tetrachloroethene	ND	5.0	10	02/20/2018 20:53
Toluene	ND	5.0	10	02/20/2018 20:53
1,2,3-Trichlorobenzene	ND	5.0	10	02/20/2018 20:53
1,2,4-Trichlorobenzene	ND	5.0	10	02/20/2018 20:53
1,1,1-Trichloroethane	ND	5.0	10	02/20/2018 20:53
1,1,2-Trichloroethane	ND	5.0	10	02/20/2018 20:53
Trichloroethene	ND	5.0	10	02/20/2018 20:53
Trichlorofluoromethane	ND	5.0	10	02/20/2018 20:53
1,2,3-Trichloropropane	ND	5.0	10	02/20/2018 20:53
1,2,4-Trimethylbenzene	ND	5.0	10	02/20/2018 20:53
1,3,5-Trimethylbenzene	ND	5.0	10	02/20/2018 20:53
Vinyl Chloride	ND	5.0	10	02/20/2018 20:53
Xylenes, Total	ND	5.0	10	02/20/2018 20:53

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW5030B
Date Prepared:	2/20/18-2/21/18	**Analytical Method:**	SW8260B
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002C**	**Water**	**02/15/2018 12:40**	**GC10 02201822.D**	**153449**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	105	78-134		02/20/2018 20:53
Toluene-d8	111	82-120		02/20/2018 20:53
4-BFB	95	69-131		02/20/2018 20:53

Analyst(s): AK Analytical Comments: b1

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3640Am
Date Prepared:	2/21/18	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001D**	**Water**	**02/15/2018 13:50**	**GC21 02221806.D**	**153545**

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0096	1	02/22/2018 11:53
Acenaphthylene	ND	0.0096	1	02/22/2018 11:53
Acetochlor	ND	1.9	1	02/22/2018 11:53
Anthracene	ND	0.0096	1	02/22/2018 11:53
Benzidine	ND	9.6	1	02/22/2018 11:53
Benzo (a) anthracene	ND	0.096	1	02/22/2018 11:53
Benzo (a) pyrene	ND	0.0048	1	02/22/2018 11:53
Benzo (b) fluoranthene	ND	0.0048	1	02/22/2018 11:53
Benzo (g,h,i) perylene	ND	0.048	1	02/22/2018 11:53
Benzo (k) fluoranthene	ND	0.0048	1	02/22/2018 11:53
Benzyl Alcohol	ND	9.6	1	02/22/2018 11:53
1,1-Biphenyl	ND	0.048	1	02/22/2018 11:53
Bis (2-chloroethoxy) Methane	ND	1.9	1	02/22/2018 11:53
Bis (2-chloroethyl) Ether	ND	0.0048	1	02/22/2018 11:53
Bis (2-chloroisopropyl) Ether	ND	0.0096	1	02/22/2018 11:53
Bis (2-ethylhexyl) Adipate	ND	1.9	1	02/22/2018 11:53
Bis (2-ethylhexyl) Phthalate	**0.30**	0.048	1	02/22/2018 11:53
4-Bromophenyl Phenyl Ether	ND	9.6	1	02/22/2018 11:53
Butylbenzyl Phthalate	ND	1.9	1	02/22/2018 11:53
4-Chloroaniline	ND	0.24	1	02/22/2018 11:53
4-Chloro-3-methylphenol	ND	9.6	1	02/22/2018 11:53
2-Chloronaphthalene	ND	0.24	1	02/22/2018 11:53
2-Chlorophenol	ND	0.048	1	02/22/2018 11:53
4-Chlorophenyl Phenyl Ether	ND	1.9	1	02/22/2018 11:53
Chrysene	ND	0.0096	1	02/22/2018 11:53
Dibenzo (a,h) anthracene	ND	0.0096	1	02/22/2018 11:53
Dibenzofuran	ND	1.9	1	02/22/2018 11:53
Di-n-butyl Phthalate	ND	0.24	1	02/22/2018 11:53
1,2-Dichlorobenzene	ND	1.9	1	02/22/2018 11:53
1,3-Dichlorobenzene	ND	1.9	1	02/22/2018 11:53
1,4-Dichlorobenzene	ND	0.048	1	02/22/2018 11:53
3,3-Dichlorobenzidine	ND	0.0096	1	02/22/2018 11:53
2,4-Dichlorophenol	ND	0.029	1	02/22/2018 11:53
Diethyl Phthalate	**0.094**	0.029	1	02/22/2018 11:53
2,4-Dimethylphenol	ND	0.048	1	02/22/2018 11:53
Dimethyl Phthalate	ND	0.029	1	02/22/2018 11:53
4,6-Dinitro-2-methylphenol	ND	9.6	1	02/22/2018 11:53

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3640Am
Date Prepared:	2/21/18	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001D**	**Water**	**02/15/2018 13:50**	**GC21 02221806.D**	**153545**

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.48	1	02/22/2018 11:53
2,4-Dinitrotoluene	ND	0.48	1	02/22/2018 11:53
2,6-Dinitrotoluene	ND	0.19	1	02/22/2018 11:53
Di-n-octyl Phthalate	ND	0.24	1	02/22/2018 11:53
1,2-Diphenylhydrazine	ND	1.9	1	02/22/2018 11:53
Fluoranthene	ND	0.048	1	02/22/2018 11:53
Fluorene	ND	0.0096	1	02/22/2018 11:53
Hexachlorobenzene	ND	0.0048	1	02/22/2018 11:53
Hexachlorobutadiene	ND	0.0096	1	02/22/2018 11:53
Hexachlorocyclopentadiene	ND	1.1	1	02/22/2018 11:53
Hexachloroethane	ND	0.0096	1	02/22/2018 11:53
Indeno (1,2,3-cd) pyrene	ND	0.019	1	02/22/2018 11:53
Isophorone	ND	1.9	1	02/22/2018 11:53
2-Methylnaphthalene	ND	0.0096	1	02/22/2018 11:53
2-Methylphenol (o-Cresol)	ND	1.9	1	02/22/2018 11:53
3 & 4-Methylphenol (m,p-Cresol)	ND	1.9	1	02/22/2018 11:53
Naphthalene	ND	0.0096	1	02/22/2018 11:53
2-Nitroaniline	ND	9.6	1	02/22/2018 11:53
3-Nitroaniline	ND	9.6	1	02/22/2018 11:53
4-Nitroaniline	ND	9.6	1	02/22/2018 11:53
Nitrobenzene	ND	1.9	1	02/22/2018 11:53
2-Nitrophenol	ND	9.6	1	02/22/2018 11:53
4-Nitrophenol	ND	9.6	1	02/22/2018 11:53
N-Nitrosodiphenylamine	ND	1.9	1	02/22/2018 11:53
N-Nitrosodi-n-propylamine	ND	0.24	1	02/22/2018 11:53
Pentachlorophenol	ND	0.48	1	02/22/2018 11:53
Phenanthrene	ND	0.048	1	02/22/2018 11:53
Phenol	**0.15**	0.048	1	02/22/2018 11:53
Pyrene	ND	0.048	1	02/22/2018 11:53
Pyridine	ND	1.9	1	02/22/2018 11:53
1,2,4-Trichlorobenzene	ND	1.9	1	02/22/2018 11:53
2,4,5-Trichlorophenol	ND	0.096	1	02/22/2018 11:53
2,4,6-Trichlorophenol	ND	0.096	1	02/22/2018 11:53

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3640Am
Date Prepared:	2/21/18	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001D**	**Water**	**02/15/2018 13:50**	**GC21 02221806.D**	**153545**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
2-Fluorophenol	29	8-130		02/22/2018 11:53
Phenol-d5	26	5-130		02/22/2018 11:53
Nitrobenzene-d5	64	20-140		02/22/2018 11:53
2-Fluorobiphenyl	67	40-140		02/22/2018 11:53
2,4,6-Tribromophenol	90	16-180		02/22/2018 11:53
4-Terphenyl-d14	84	40-170		02/22/2018 11:53

Analyst(s): REB

Analytical Comments: b1

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3640Am
Date Prepared:	2/21/18	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002D**	**Water**	**02/15/2018 12:40**	**GC17 02211819.D**	**153545**

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0095	1	02/21/2018 18:59
Acenaphthylene	ND	0.0095	1	02/21/2018 18:59
Acetochlor	ND	1.9	1	02/21/2018 18:59
Anthracene	ND	0.0095	1	02/21/2018 18:59
Benzidine	ND	9.5	1	02/21/2018 18:59
Benzo (a) anthracene	ND	0.095	1	02/21/2018 18:59
Benzo (a) pyrene	**0.015**	0.0048	1	02/21/2018 18:59
Benzo (b) fluoranthene	**0.045**	0.0048	1	02/21/2018 18:59
Benzo (g,h,i) perylene	ND	0.048	1	02/21/2018 18:59
Benzo (k) fluoranthene	**0.016**	0.0048	1	02/21/2018 18:59
Benzyl Alcohol	ND	9.5	1	02/21/2018 18:59
1,1-Biphenyl	**0.11**	0.048	1	02/21/2018 18:59
Bis (2-chloroethoxy) Methane	ND	1.9	1	02/21/2018 18:59
Bis (2-chloroethyl) Ether	ND	0.0048	1	02/21/2018 18:59
Bis (2-chloroisopropyl) Ether	ND	0.0095	1	02/21/2018 18:59
Bis (2-ethylhexyl) Adipate	ND	1.9	1	02/21/2018 18:59
Bis (2-ethylhexyl) Phthalate	**2.4**	0.048	1	02/21/2018 18:59
4-Bromophenyl Phenyl Ether	ND	9.5	1	02/21/2018 18:59
Butylbenzyl Phthalate	ND	1.9	1	02/21/2018 18:59
4-Chloroaniline	ND	0.24	1	02/21/2018 18:59
4-Chloro-3-methylphenol	ND	9.5	1	02/21/2018 18:59
2-Chloronaphthalene	ND	0.24	1	02/21/2018 18:59
2-Chlorophenol	ND	0.048	1	02/21/2018 18:59
4-Chlorophenyl Phenyl Ether	ND	1.9	1	02/21/2018 18:59
Chrysene	**0.023**	0.0095	1	02/21/2018 18:59
Dibenzo (a,h) anthracene	ND	0.0095	1	02/21/2018 18:59
Dibenzofuran	ND	1.9	1	02/21/2018 18:59
Di-n-butyl Phthalate	ND	0.24	1	02/21/2018 18:59
1,2-Dichlorobenzene	ND	1.9	1	02/21/2018 18:59
1,3-Dichlorobenzene	ND	1.9	1	02/21/2018 18:59
1,4-Dichlorobenzene	ND	0.048	1	02/21/2018 18:59
3,3-Dichlorobenzidine	ND	0.0095	1	02/21/2018 18:59
2,4-Dichlorophenol	ND	0.029	1	02/21/2018 18:59
Diethyl Phthalate	**0.20**	0.029	1	02/21/2018 18:59
2,4-Dimethylphenol	ND	0.048	1	02/21/2018 18:59
Dimethyl Phthalate	ND	0.029	1	02/21/2018 18:59
4,6-Dinitro-2-methylphenol	ND	9.5	1	02/21/2018 18:59

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3640Am
Date Prepared:	2/21/18	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002D**	**Water**	**02/15/2018 12:40**	**GC17 02211819.D**	**153545**

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.48	1	02/21/2018 18:59
2,4-Dinitrotoluene	ND	0.48	1	02/21/2018 18:59
2,6-Dinitrotoluene	ND	0.19	1	02/21/2018 18:59
Di-n-octyl Phthalate	ND	0.24	1	02/21/2018 18:59
1,2-Diphenylhydrazine	ND	1.9	1	02/21/2018 18:59
Fluoranthene	ND	0.048	1	02/21/2018 18:59
Fluorene	**0.010**	0.0095	1	02/21/2018 18:59
Hexachlorobenzene	ND	0.0048	1	02/21/2018 18:59
Hexachlorobutadiene	ND	0.0095	1	02/21/2018 18:59
Hexachlorocyclopentadiene	ND	1.1	1	02/21/2018 18:59
Hexachloroethane	ND	0.0095	1	02/21/2018 18:59
Indeno (1,2,3-cd) pyrene	ND	0.019	1	02/21/2018 18:59
Isophorone	ND	1.9	1	02/21/2018 18:59
2-Methylnaphthalene	**0.011**	0.0095	1	02/21/2018 18:59
2-Methylphenol (o-Cresol)	ND	1.9	1	02/21/2018 18:59
3 & 4-Methylphenol (m,p-Cresol)	ND	1.9	1	02/21/2018 18:59
Naphthalene	ND	0.0095	1	02/21/2018 18:59
2-Nitroaniline	ND	9.5	1	02/21/2018 18:59
3-Nitroaniline	ND	9.5	1	02/21/2018 18:59
4-Nitroaniline	ND	9.5	1	02/21/2018 18:59
Nitrobenzene	ND	1.9	1	02/21/2018 18:59
2-Nitrophenol	ND	9.5	1	02/21/2018 18:59
4-Nitrophenol	ND	9.5	1	02/21/2018 18:59
N-Nitrosodiphenylamine	ND	1.9	1	02/21/2018 18:59
N-Nitrosodi-n-propylamine	ND	0.24	1	02/21/2018 18:59
Pentachlorophenol	ND	0.48	1	02/21/2018 18:59
Phenanthrene	ND	0.048	1	02/21/2018 18:59
Phenol	**0.087**	0.048	1	02/21/2018 18:59
Pyrene	ND	0.048	1	02/21/2018 18:59
Pyridine	ND	1.9	1	02/21/2018 18:59
1,2,4-Trichlorobenzene	ND	1.9	1	02/21/2018 18:59
2,4,5-Trichlorophenol	ND	0.095	1	02/21/2018 18:59
2,4,6-Trichlorophenol	ND	0.095	1	02/21/2018 18:59

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3640Am
Date Prepared:	2/21/18	**Analytical Method:**	SW8270C
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002D**	**Water**	**02/15/2018 12:40**	**GC17 02211819.D**	**153545**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	36	8-130		02/21/2018 18:59
Phenol-d5	31	5-130		02/21/2018 18:59
Nitrobenzene-d5	120	20-140		02/21/2018 18:59
2-Fluorobiphenyl	104	40-140		02/21/2018 18:59
2,4,6-Tribromophenol	112	16-180		02/21/2018 18:59
4-Terphenyl-d14	124	40-170		02/21/2018 18:59

Analyst(s): REB

Analytical Comments: b1

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	E200.8
Date Prepared:	2/16/18	**Analytical Method:**	E200.8
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Dissolved CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001E**	**Water**	**02/15/2018 13:50**	**ICP-MS3 187SMPL.D**	**153336**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	02/17/2018 04:25
Arsenic	**0.85**	0.50	1	02/17/2018 04:25
Barium	**53**	5.0	1	02/17/2018 04:25
Beryllium	ND	0.50	1	02/17/2018 04:25
Cadmium	ND	0.25	1	02/17/2018 04:25
Chromium	**1.9**	0.50	1	02/17/2018 04:25
Cobalt	**0.70**	0.50	1	02/17/2018 04:25
Copper	ND	2.0	1	02/17/2018 04:25
Lead	ND	0.50	1	02/17/2018 04:25
Mercury	ND	0.050	1	02/17/2018 04:25
Molybdenum	**3.3**	0.50	1	02/17/2018 04:25
Nickel	**2.2**	0.50	1	02/17/2018 04:25
Selenium	**240**	0.50	1	02/17/2018 04:25
Silver	ND	0.19	1	02/17/2018 04:25
Thallium	ND	0.50	1	02/17/2018 04:25
Vanadium	**2.3**	0.50	1	02/17/2018 04:25
Zinc	ND	15	1	02/17/2018 04:25

Analyst(s): DB

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	E200.8
Date Prepared:	2/16/18	**Analytical Method:**	E200.8
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Dissolved CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002E**	**Water**	**02/15/2018 12:40**	**ICP-MS3 188SMPL.D**	**153336**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	02/17/2018 04:31
Arsenic	**1.3**	0.50	1	02/17/2018 04:31
Barium	**110**	5.0	1	02/17/2018 04:31
Beryllium	ND	0.50	1	02/17/2018 04:31
Cadmium	ND	0.25	1	02/17/2018 04:31
Chromium	ND	0.50	1	02/17/2018 04:31
Cobalt	**0.57**	0.50	1	02/17/2018 04:31
Copper	ND	2.0	1	02/17/2018 04:31
Lead	ND	0.50	1	02/17/2018 04:31
Mercury	ND	0.050	1	02/17/2018 04:31
Molybdenum	**3.5**	0.50	1	02/17/2018 04:31
Nickel	**1.8**	0.50	1	02/17/2018 04:31
Selenium	**340**	0.50	1	02/17/2018 04:31
Silver	ND	0.19	1	02/17/2018 04:31
Thallium	ND	0.50	1	02/17/2018 04:31
Vanadium	**2.8**	0.50	1	02/17/2018 04:31
Zinc	ND	15	1	02/17/2018 04:31

Analyst(s): DB

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW5030B
Date Prepared:	2/21/18	**Analytical Method:**	SW8021B/8015Bm
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

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

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001A**	**Water**	**02/15/2018 13:50**	**GC3 02201835.D**	**153417**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	**63**	50	1	02/21/2018 05:19
MTBE	---	5.0	1	02/21/2018 05:19
Benzene	---	0.50	1	02/21/2018 05:19
Toluene	---	0.50	1	02/21/2018 05:19
Ethylbenzene	---	0.50	1	02/21/2018 05:19
Xylenes	---	0.50	1	02/21/2018 05:19

Surrogates	REC (%)	Limits	
aaa-TFT	100	90-117	02/21/2018 05:19

Analyst(s): IA Analytical Comments: d6,b1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002A**	**Water**	**02/15/2018 12:40**	**GC3 02201836.D**	**153417**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	**330**	50	1	02/21/2018 05:49
MTBE	---	5.0	1	02/21/2018 05:49
Benzene	---	0.50	1	02/21/2018 05:49
Toluene	---	0.50	1	02/21/2018 05:49
Ethylbenzene	---	0.50	1	02/21/2018 05:49
Xylenes	---	0.50	1	02/21/2018 05:49

Surrogates	REC (%)	Limits	
aaa-TFT	96	90-117	02/21/2018 05:49

Analyst(s): IA Analytical Comments: d6,b1

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Analytical Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Received:	2/16/18 19:00	**Extraction Method:**	SW3510C/3630C
Date Prepared:	2/16/18	**Analytical Method:**	SW8015B
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Unit:**	µg/L

Total Extractable Petroleum Hydrocarbons w/ Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1 (SW port.)	**1802895-001A**	**Water**	**02/15/2018 13:50**	**GC11B 02221823.D**	**153397**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	02/22/2018 16:27
TPH-Motor Oil (C18-C36)	ND	250	1	02/22/2018 16:27

Surrogates	REC (%)	Limits	
C9	92	61-139	02/22/2018 16:27

Analyst(s): JIS Analytical Comments: b1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (NE port.)	**1802895-002A**	**Water**	**02/15/2018 12:40**	**GC11B 02221827.D**	**153397**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	02/22/2018 17:45
TPH-Motor Oil (C18-C36)	ND	250	1	02/22/2018 17:45

Surrogates	REC (%)	Limits	
C9	94	61-139	02/22/2018 17:45

Analyst(s): JIS Analytical Comments: b1

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/16/18	**BatchID:**	153398
Date Analyzed:	2/20/18 - 2/23/18	**Extraction Method:**	SW3510C
Instrument:	GC20, GC40	**Analytical Method:**	SW8081A/8082
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153398

QC Summary Report for SW8081A/8082

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Aldrin	ND	0.0050	-	-	-
a-BHC	ND	0.010	-	-	-
b-BHC	ND	0.0050	-	-	-
d-BHC	ND	0.0050	-	-	-
g-BHC	ND	0.020	-	-	-
Chlordane (Technical)	ND	0.10	-	-	-
a-Chlordane	ND	0.050	-	-	-
g-Chlordane	ND	0.050	-	-	-
p,p-DDD	ND	0.010	-	-	-
p,p-DDE	ND	0.010	-	-	-
p,p-DDT	ND	0.010	-	-	-
Dieldrin	ND	0.010	-	-	-
Endosulfan I	ND	0.020	-	-	-
Endosulfan II	ND	0.020	-	-	-
Endosulfan sulfate	ND	0.050	-	-	-
Endrin	ND	0.010	-	-	-
Endrin aldehyde	ND	0.050	-	-	-
Endrin ketone	ND	0.050	-	-	-
Heptachlor	ND	0.010	-	-	-
Heptachlor epoxide	ND	0.010	-	-	-
Hexachlorobenzene	ND	0.50	-	-	-
Hexachlorocyclopentadiene	ND	1.0	-	-	-
Methoxychlor	ND	0.10	-	-	-
Toxaphene	ND	0.50	-	-	-
Aroclor1016	ND	0.50	-	-	-
Aroclor1221	ND	0.50	-	-	-
Aroclor1232	ND	0.50	-	-	-
Aroclor1242	ND	0.50	-	-	-
Aroclor1248	ND	0.50	-	-	-
Aroclor1254	ND	0.50	-	-	-
Aroclor1260	ND	0.50	-	-	-
PCBs, total	ND	0.50	-	-	-
Surrogate Recovery					
Decachlorobiphenyl	1.30		1.25	104	70-130

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NELAP 4033ORELAP

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/16/18	**BatchID:**	153398
Date Analyzed:	2/20/18 - 2/23/18	**Extraction Method:**	SW3510C
Instrument:	GC20, GC40	**Analytical Method:**	SW8081A/8082
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153398

QC Summary Report for SW8081A/8082

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	1.08	1.28	1.25	86	102	70-130	17.4	20
a-BHC	1.08	1.28	1.25	86	102	70-130	17.5	20
b-BHC	0.901	1.04	1.25	72	83	70-130	14.6	20
d-BHC	1.05	1.23	1.25	84	98	70-130	15.4	20
g-BHC	1.09	1.30	1.25	87	104	70-130	17.6	20
a-Chlordane	0.968	1.14	1.25	77	92	70-130	16.6	20
g-Chlordane	1.09	1.29	1.25	87	103	70-130	17.0	20
p,p-DDD	1.14	1.32	1.25	91	106	70-130	14.8	20
p,p-DDE	1.06	1.24	1.25	85	99	70-130	15.5	20
p,p-DDT	1.11	1.30	1.25	89	104	70-130	16.0	20
Dieldrin	1.10	1.30	1.25	88	104	70-130	16.4	20
Endosulfan I	1.07	1.26	1.25	85	101	70-130	16.8	20
Endosulfan II	1.03	1.20	1.25	83	96	70-130	14.9	20
Endosulfan sulfate	1.06	1.20	1.25	85	96	70-130	12.4	20
Endrin	1.15	1.36	1.25	92	109	70-130	16.7	20
Endrin aldehyde	0.669	0.814	1.25	54, F2	65, F2	70-130	19.6	20
Endrin ketone	0.967	1.10	1.25	77	88	70-130	12.8	20
Heptachlor	1.29	1.54	1.25	103	123	70-130	17.8	20
Heptachlor epoxide	1.03	1.20	1.25	82	96	70-130	15.6	20
Hexachlorobenzene	0.942	1.13	1.25	75	90	50-150	18.2	20
Methoxychlor	1.18	1.37	1.25	94	109	70-130	15.1	20
Aroclor1016	3.48	3.57	3.75	93	95	70-130	2.37	20
Aroclor1260	3.93	4.07	3.75	105	108	70-130	3.42	20
Surrogate Recovery								
Decachlorobiphenyl	1.32	1.22	1.25	106	98	70-130	8.05	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153449
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153449 1802862-005BMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Acetone	ND	10	-	-	-
tert-Amyl methyl ether (TAME)	ND	0.50	-	-	-
Benzene	ND	0.50	-	-	-
Bromobenzene	ND	0.50	-	-	-
Bromochloromethane	ND	0.50	-	-	-
Bromodichloromethane	ND	0.50	-	-	-
Bromoform	ND	0.50	-	-	-
Bromomethane	ND	0.50	-	-	-
2-Butanone (MEK)	ND	2.0	-	-	-
t-Butyl alcohol (TBA)	ND	2.0	-	-	-
n-Butyl benzene	ND	0.50	-	-	-
sec-Butyl benzene	ND	0.50	-	-	-
tert-Butyl benzene	ND	0.50	-	-	-
Carbon Disulfide	ND	0.50	-	-	-
Carbon Tetrachloride	ND	0.50	-	-	-
Chlorobenzene	ND	0.50	-	-	-
Chloroethane	ND	0.50	-	-	-
Chloroform	ND	0.50	-	-	-
Chloromethane	ND	0.50	-	-	-
2-Chlorotoluene	ND	0.50	-	-	-
4-Chlorotoluene	ND	0.50	-	-	-
Dibromochloromethane	ND	0.50	-	-	-
1,2-Dibromo-3-chloropropane	ND	0.20	-	-	-
1,2-Dibromoethane (EDB)	ND	0.50	-	-	-
Dibromomethane	ND	0.50	-	-	-
1,2-Dichlorobenzene	ND	0.50	-	-	-
1,3-Dichlorobenzene	ND	0.50	-	-	-
1,4-Dichlorobenzene	ND	0.50	-	-	-
Dichlorodifluoromethane	ND	0.50	-	-	-
1,1-Dichloroethane	ND	0.50	-	-	-
1,2-Dichloroethane (1,2-DCA)	ND	0.50	-	-	-
1,1-Dichloroethene	ND	0.50	-	-	-
cis-1,2-Dichloroethene	ND	0.50	-	-	-
trans-1,2-Dichloroethene	ND	0.50	-	-	-
1,2-Dichloropropane	ND	0.50	-	-	-
1,3-Dichloropropane	ND	0.50	-	-	-
2,2-Dichloropropane	ND	0.50	-	-	-
1,1-Dichloropropene	ND	0.50	-	-	-
cis-1,3-Dichloropropene	ND	0.50	-	-	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153449
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153449 1802862-005BMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
trans-1,3-Dichloropropene	ND	0.50	-	-	-
Diisopropyl ether (DIPE)	ND	0.50	-	-	-
Ethylbenzene	ND	0.50	-	-	-
Ethyl tert-butyl ether (ETBE)	ND	0.50	-	-	-
Freon 113	ND	0.50	-	-	-
Hexachlorobutadiene	ND	0.50	-	-	-
Hexachloroethane	ND	0.50	-	-	-
2-Hexanone	ND	0.50	-	-	-
Isopropylbenzene	ND	0.50	-	-	-
4-Isopropyl toluene	ND	0.50	-	-	-
Methyl-t-butyl ether (MTBE)	ND	0.50	-	-	-
Methylene chloride	ND	0.50	-	-	-
4-Methyl-2-pentanone (MIBK)	ND	0.50	-	-	-
Naphthalene	ND	0.50	-	-	-
n-Propyl benzene	ND	0.50	-	-	-
Styrene	ND	0.50	-	-	-
1,1,1,2-Tetrachloroethane	ND	0.50	-	-	-
1,1,2,2-Tetrachloroethane	ND	0.50	-	-	-
Tetrachloroethene	ND	0.50	-	-	-
Toluene	ND	0.50	-	-	-
1,2,3-Trichlorobenzene	ND	0.50	-	-	-
1,2,4-Trichlorobenzene	ND	0.50	-	-	-
1,1,1-Trichloroethane	ND	0.50	-	-	-
1,1,2-Trichloroethane	ND	0.50	-	-	-
Trichloroethene	ND	0.50	-	-	-
Trichlorofluoromethane	ND	0.50	-	-	-
1,2,3-Trichloropropane	ND	0.50	-	-	-
1,2,4-Trimethylbenzene	ND	0.50	-	-	-
1,3,5-Trimethylbenzene	ND	0.50	-	-	-
Vinyl Chloride	ND	0.50	-	-	-
Xylenes, Total	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	25.7		25	103	91-133
Toluene-d8	27.5		25	110	87-127
4-BFB	2.33		2.5	93	66-140

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153449
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153449 1802862-005BMS/MSD

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acetone	157	-	200	78	-	47-122	-	-
tert-Amyl methyl ether (TAME)	8.43	-	10	84	-	62-121	-	-
Benzene	9.83	-	10	98	-	74-121	-	-
Bromobenzene	8.91	-	10	89	-	63-127	-	-
Bromochloromethane	9.32	-	10	93	-	70-126	-	-
Bromodichloromethane	9.09	-	10	91	-	66-127	-	-
Bromoform	9.41	-	10	94	-	60-119	-	-
Bromomethane	13.9	-	10	139	-	32-155	-	-
2-Butanone (MEK)	30.1	-	40	75	-	51-117	-	-
t-Butyl alcohol (TBA)	29.2	-	40	73	-	41-122	-	-
n-Butyl benzene	9.67	-	10	97	-	73-137	-	-
sec-Butyl benzene	9.15	-	10	91	-	71-137	-	-
tert-Butyl benzene	10.1	-	10	101	-	61-136	-	-
Carbon Disulfide	10.9	-	10	109	-	61-139	-	-
Carbon Tetrachloride	9.62	-	10	96	-	69-137	-	-
Chlorobenzene	9.06	-	10	91	-	71-122	-	-
Chloroethane	9.71	-	10	97	-	54-132	-	-
Chloroform	9.16	-	10	92	-	73-122	-	-
Chloromethane	11.8	-	10	118	-	48-136	-	-
2-Chlorotoluene	9.42	-	10	94	-	65-134	-	-
4-Chlorotoluene	9.11	-	10	91	-	65-130	-	-
Dibromochloromethane	8.89	-	10	89	-	65-121	-	-
1,2-Dibromo-3-chloropropane	3.06	-	4	77	-	41-132	-	-
1,2-Dibromoethane (EDB)	8.10	-	10	81	-	67-125	-	-
Dibromomethane	8.40	-	10	84	-	68-121	-	-
1,2-Dichlorobenzene	9.04	-	10	90	-	69-128	-	-
1,3-Dichlorobenzene	9.80	-	10	98	-	71-131	-	-
1,4-Dichlorobenzene	9.30	-	10	93	-	70-128	-	-
Dichlorodifluoromethane	15.7	-	10	157	-	21-158	-	-
1,1-Dichloroethane	9.28	-	10	93	-	73-123	-	-
1,2-Dichloroethane (1,2-DCA)	8.34	-	10	83	-	61-127	-	-
1,1-Dichloroethene	9.51	-	10	95	-	68-130	-	-
cis-1,2-Dichloroethene	9.22	-	10	92	-	72-123	-	-
trans-1,2-Dichloroethene	9.48	-	10	95	-	64-138	-	-
1,2-Dichloropropane	9.14	-	10	91	-	71-121	-	-
1,3-Dichloropropane	8.00	-	10	80	-	69-120	-	-
2,2-Dichloropropane	9.20	-	10	92	-	64-142	-	-
1,1-Dichloropropene	8.67	-	10	87	-	70-130	-	-
cis-1,3-Dichloropropene	9.05	-	10	91	-	58-136	-	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153449
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153449 1802862-005BMS/MSD

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
trans-1,3-Dichloropropene	9.20	-	10	92	-	66-119	-	-
Diisopropyl ether (DIPE)	9.51	-	10	95	-	66-123	-	-
Ethylbenzene	9.44	-	10	94	-	71-125	-	-
Ethyl tert-butyl ether (ETBE)	8.88	-	10	89	-	67-122	-	-
Freon 113	9.40	-	10	94	-	68-132	-	-
Hexachlorobutadiene	9.36	-	10	94	-	56-155	-	-
Hexachloroethane	9.60	-	10	96	-	61-129	-	-
2-Hexanone	7.28	-	10	73	-	51-115	-	-
Isopropylbenzene	9.64	-	10	96	-	66-134	-	-
4-Isopropyl toluene	9.36	-	10	94	-	70-136	-	-
Methyl-t-butyl ether (MTBE)	8.10	-	10	81	-	64-118	-	-
Methylene chloride	8.61	-	10	86	-	62-121	-	-
4-Methyl-2-pentanone (MIBK)	7.13	-	10	71	-	51-115	-	-
Naphthalene	8.54	-	10	85	-	55-137	-	-
n-Propyl benzene	9.09	-	10	91	-	63-140	-	-
Styrene	9.92	-	10	99	-	62-133	-	-
1,1,1,2-Tetrachloroethane	8.87	-	10	89	-	69-128	-	-
1,1,2,2-Tetrachloroethane	8.20	-	10	82	-	60-118	-	-
Tetrachloroethene	9.11	-	10	91	-	63-136	-	-
Toluene	9.24	-	10	92	-	67-124	-	-
1,2,3-Trichlorobenzene	8.75	-	10	87	-	57-145	-	-
1,2,4-Trichlorobenzene	8.78	-	10	88	-	60-144	-	-
1,1,1-Trichloroethane	9.29	-	10	93	-	70-133	-	-
1,1,2-Trichloroethane	8.32	-	10	83	-	65-125	-	-
Trichloroethene	9.05	-	10	90	-	67-133	-	-
Trichlorofluoromethane	9.76	-	10	98	-	59-145	-	-
1,2,3-Trichloropropane	8.15	-	10	81	-	65-115	-	-
1,2,4-Trimethylbenzene	9.08	-	10	91	-	67-136	-	-
1,3,5-Trimethylbenzene	9.37	-	10	94	-	68-135	-	-
Vinyl Chloride	11.2	-	10	112	-	53-146	-	-
Xylenes, Total	27.4	-	30	91	-	68-128	-	-
Surrogate Recovery								
Dibromofluoromethane	26.2	-	25	105	-	91-133	-	-
Toluene-d8	28.2	-	25	113	-	87-127	-	-
4-BFB	2.52	-	2.5	101	-	66-140	-	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153449
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153449 1802862-005BMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acetone	213	212	200	ND	107	106	56-141	0.766	20
tert-Amyl methyl ether (TAME)	9.41	10.2	10	ND	94	102	78-120	8.17	20
Benzene	10.4	10.7	10	ND	104	107	81-118	3.17	20
Bromobenzene	10.6	10.8	10	ND	106	108	71-119	1.20	20
Bromochloromethane	10.4	10.6	10	ND	104	106	80-124	2.06	20
Bromodichloromethane	10.1	10.4	10	ND	101	104	78-124	2.87	20
Bromoform	11.4	11.4	10	ND	114	114	65-127	0	20
Bromomethane	12.4	13.0	10	ND	124	130	22-175	4.82	20
2-Butanone (MEK)	39.9	39.2	40	ND	100	98	50-152	1.92	20
t-Butyl alcohol (TBA)	37.3	37.2	40	ND	93	93	49-141	0	20
n-Butyl benzene	10.8	11.0	10	ND	108	110	77-127	1.08	20
sec-Butyl benzene	10.8	11.0	10	ND	108	110	74-123	2.22	20
tert-Butyl benzene	11.4	10.8	10	ND	114	108	68-122	5.84	20
Carbon Disulfide	9.17	9.52	10	ND	92	95	74-123	3.79	20
Carbon Tetrachloride	9.87	10.2	10	ND	99	102	78-124	3.36	20
Chlorobenzene	10.5	10.8	10	ND	105	108	79-116	3.03	20
Chloroethane	9.19	9.83	10	ND	92	98	56-134	6.67	20
Chloroform	9.91	10.2	10	ND	99	103	82-119	3.36	20
Chloromethane	9.28	10.0	10	ND	93	100	39-147	7.76	20
2-Chlorotoluene	10.4	10.7	10	ND	104	107	69-124	2.98	20
4-Chlorotoluene	10.3	10.8	10	ND	103	108	71-121	4.43	20
Dibromochloromethane	10.4	10.7	10	ND	104	107	76-119	2.75	20
1,2-Dibromo-3-chloropropane	4.08	4.07	4	ND	102	102	48-138	0	20
1,2-Dibromoethane (EDB)	9.92	10.0	10	ND	99	100	81-122	1.20	20
Dibromomethane	10.0	10.3	10	ND	100	103	83-121	2.51	20
1,2-Dichlorobenzene	10.8	11.0	10	ND	108	110	77-122	1.69	20
1,3-Dichlorobenzene	11.1	11.4	10	ND	111	114	76-125	2.73	20
1,4-Dichlorobenzene	11.0	11.2	10	ND	110	112	78-120	1.85	20
Dichlorodifluoromethane	7.89	8.22	10	ND	79	82	38-135	4.19	20
1,1-Dichloroethane	9.82	10.1	10	ND	98	101	80-120	3.23	20
1,2-Dichloroethane (1,2-DCA)	9.50	9.69	10	ND	95	97	78-122	1.97	20
1,1-Dichloroethene	9.24	9.68	10	ND	92	97	77-120	4.72	20
cis-1,2-Dichloroethene	9.80	10.2	10	ND	98	101	79-123	3.48	20
trans-1,2-Dichloroethene	9.67	10.1	10	ND	97	101	77-125	4.15	20
1,2-Dichloropropane	10.2	10.5	10	ND	102	105	80-121	2.60	20
1,3-Dichloropropane	9.67	9.81	10	ND	97	98	80-120	1.45	20
2,2-Dichloropropane	9.64	9.80	10	ND	96	98	70-132	1.68	20
1,1-Dichloropropene	9.41	9.80	10	ND	94	98	78-122	4.07	20
cis-1,3-Dichloropropene	9.95	10.2	10	ND	100	102	73-121	2.15	20

(Cont.)

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153449
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153449 1802862-005BMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
trans-1,3-Dichloropropene	10.5	10.8	10	ND	105	108	77-116	2.16	20
Diisopropyl ether (DIPE)	10.9	11.1	10	ND	109	111	77-125	1.80	20
Ethylbenzene	10.8	11.2	10	ND	108	112	77-119	3.70	20
Ethyl tert-butyl ether (ETBE)	10.3	10.6	10	ND	103	105	81-122	2.57	20
Freon 113	9.15	9.50	10	ND	91	95	77-120	3.81	20
Hexachlorobutadiene	10.9	11.0	10	ND	109	110	57-141	0.302	20
Hexachloroethane	11.3	11.6	10	ND	113	116	26-168	2.14	20
2-Hexanone	10.5	10.5	10	ND	105	105	58-135	0	20
Isopropylbenzene	10.9	11.5	10	ND	109	115	74-120	4.92	20
4-Isopropyl toluene	11.0	11.2	10	ND	110	111	75-124	1.07	20
Methyl-t-butyl ether (MTBE)	9.34	9.63	10	ND	93	96	74-128	3.15	20
Methylene chloride	9.32	9.52	10	ND	93	95	55-130	2.16	20
4-Methyl-2-pentanone (MIBK)	10.1	10.1	10	ND	101	101	59-131	0	20
Naphthalene	10.7	10.2	10	ND	107	102	65-136	4.67	20
n-Propyl benzene	10.2	10.6	10	ND	102	107	67-128	4.52	20
Styrene	9.72	7.98	10	ND	97	80	64-133	19.7	20
1,1,1,2-Tetrachloroethane	10.5	10.9	10	ND	105	109	78-122	3.24	20
1,1,2,2-Tetrachloroethane	10.8	10.6	10	ND	108	106	72-123	1.98	20
Tetrachloroethene	9.96	10.0	10	ND	100	100	72-123	0	20
Toluene	10.1	10.3	10	ND	98	100	74-117	1.94	20
1,2,3-Trichlorobenzene	10.6	10.3	10	ND	107	103	61-141	2.98	20
1,2,4-Trichlorobenzene	10.5	10.2	10	ND	105	102	69-136	2.70	20
1,1,1-Trichloroethane	9.62	10.0	10	ND	96	100	78-122	4.32	20
1,1,2-Trichloroethane	9.95	10.2	10	ND	100	102	79-120	2.46	20
Trichloroethene	9.93	10.2	10	ND	99	102	76-122	3.14	20
Trichlorofluoromethane	9.06	9.46	10	ND	91	95	72-125	4.33	20
1,2,3-Trichloropropane	10.7	10.4	10	ND	107	104	72-123	2.67	20
1,2,4-Trimethylbenzene	11.0	11.2	10	ND	110	112	74-123	1.71	20
1,3,5-Trimethylbenzene	10.7	10.8	10	ND	107	108	73-123	0.767	20
Vinyl Chloride	9.27	9.62	10	ND	93	96	57-134	3.73	20
Xylenes, Total	31.3	32.8	30	ND	104	109	76-119	4.51	20
Surrogate Recovery									
Dibromofluoromethane	25.6	25.9	25		102	103	78-134	1.21	20
Toluene-d8	27.7	27.4	25		111	110	82-120	0.855	20
4-BFB	2.62	2.69	2.5		105	108	69-131	2.65	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153499
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153499

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Acetone	ND	10	-	-	-
tert-Amyl methyl ether (TAME)	ND	0.50	-	-	-
Benzene	ND	0.50	-	-	-
Bromobenzene	ND	0.50	-	-	-
Bromochloromethane	ND	0.50	-	-	-
Bromodichloromethane	ND	0.50	-	-	-
Bromoform	ND	0.50	-	-	-
Bromomethane	ND	0.50	-	-	-
2-Butanone (MEK)	ND	2.0	-	-	-
t-Butyl alcohol (TBA)	ND	2.0	-	-	-
n-Butyl benzene	ND	0.50	-	-	-
sec-Butyl benzene	ND	0.50	-	-	-
tert-Butyl benzene	ND	0.50	-	-	-
Carbon Disulfide	ND	0.50	-	-	-
Carbon Tetrachloride	ND	0.50	-	-	-
Chlorobenzene	ND	0.50	-	-	-
Chloroethane	ND	0.50	-	-	-
Chloroform	ND	0.50	-	-	-
Chloromethane	ND	0.50	-	-	-
2-Chlorotoluene	ND	0.50	-	-	-
4-Chlorotoluene	ND	0.50	-	-	-
Dibromochloromethane	ND	0.50	-	-	-
1,2-Dibromo-3-chloropropane	ND	0.20	-	-	-
1,2-Dibromoethane (EDB)	ND	0.50	-	-	-
Dibromomethane	ND	0.50	-	-	-
1,2-Dichlorobenzene	ND	0.50	-	-	-
1,3-Dichlorobenzene	ND	0.50	-	-	-
1,4-Dichlorobenzene	ND	0.50	-	-	-
Dichlorodifluoromethane	ND	0.50	-	-	-
1,1-Dichloroethane	ND	0.50	-	-	-
1,2-Dichloroethane (1,2-DCA)	ND	0.50	-	-	-
1,1-Dichloroethene	ND	0.50	-	-	-
cis-1,2-Dichloroethene	ND	0.50	-	-	-
trans-1,2-Dichloroethene	ND	0.50	-	-	-
1,2-Dichloropropane	ND	0.50	-	-	-
1,3-Dichloropropane	ND	0.50	-	-	-
2,2-Dichloropropane	ND	0.50	-	-	-
1,1-Dichloropropene	ND	0.50	-	-	-
cis-1,3-Dichloropropene	ND	0.50	-	-	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153499
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153499

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
trans-1,3-Dichloropropene	ND	0.50	-	-	-
Diisopropyl ether (DIPE)	ND	0.50	-	-	-
Ethylbenzene	ND	0.50	-	-	-
Ethyl tert-butyl ether (ETBE)	ND	0.50	-	-	-
Freon 113	ND	0.50	-	-	-
Hexachlorobutadiene	ND	0.50	-	-	-
Hexachloroethane	ND	0.50	-	-	-
2-Hexanone	ND	0.50	-	-	-
Isopropylbenzene	ND	0.50	-	-	-
4-Isopropyl toluene	ND	0.50	-	-	-
Methyl-t-butyl ether (MTBE)	ND	0.50	-	-	-
Methylene chloride	ND	0.50	-	-	-
4-Methyl-2-pentanone (MIBK)	ND	0.50	-	-	-
Naphthalene	ND	0.50	-	-	-
n-Propyl benzene	ND	0.50	-	-	-
Styrene	ND	0.50	-	-	-
1,1,1,2-Tetrachloroethane	ND	0.50	-	-	-
1,1,2,2-Tetrachloroethane	ND	0.50	-	-	-
Tetrachloroethene	ND	0.50	-	-	-
Toluene	ND	0.50	-	-	-
1,2,3-Trichlorobenzene	ND	0.50	-	-	-
1,2,4-Trichlorobenzene	ND	0.50	-	-	-
1,1,1-Trichloroethane	ND	0.50	-	-	-
1,1,2-Trichloroethane	ND	0.50	-	-	-
Trichloroethene	ND	0.50	-	-	-
Trichlorofluoromethane	ND	0.50	-	-	-
1,2,3-Trichloropropane	ND	0.50	-	-	-
1,2,4-Trimethylbenzene	ND	0.50	-	-	-
1,3,5-Trimethylbenzene	ND	0.50	-	-	-
Vinyl Chloride	ND	0.50	-	-	-
Xylenes, Total	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	24.2		25	97	91-133
Toluene-d8	27.9		25	112	87-127
4-BFB	2.23		2.5	89	66-140

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153499
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153499

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acetone	168	180	200	84	90	47-122	6.76	20
tert-Amyl methyl ether (TAME)	8.35	8.60	10	83	86	62-121	2.93	20
Benzene	8.79	8.69	10	88	87	74-121	1.11	20
Bromobenzene	7.73	7.54	10	77	75	63-127	2.44	20
Bromochloromethane	8.33	8.45	10	83	85	70-126	1.43	20
Bromodichloromethane	8.51	8.39	10	85	84	66-127	1.49	20
Bromoform	8.37	8.42	10	84	84	60-119	0	20
Bromomethane	10.8	9.74	10	108	97	32-155	10.0	20
2-Butanone (MEK)	33.9	36.8	40	85	92	51-117	8.14	20
t-Butyl alcohol (TBA)	32.8	33.9	40	82	85	41-122	3.26	20
n-Butyl benzene	9.79	9.42	10	98	94	73-137	3.81	20
sec-Butyl benzene	8.84	8.74	10	88	87	71-137	1.18	20
tert-Butyl benzene	8.66	8.51	10	87	85	61-136	1.73	20
Carbon Disulfide	9.32	9.10	10	93	91	61-139	2.35	20
Carbon Tetrachloride	9.86	9.68	10	99	97	69-137	1.87	20
Chlorobenzene	8.84	8.59	10	88	86	71-122	2.82	20
Chloroethane	10.3	9.85	10	103	98	54-132	4.48	20
Chloroform	9.26	9.06	10	93	91	73-122	2.23	20
Chloromethane	9.81	9.23	10	98	92	48-136	6.08	20
2-Chlorotoluene	8.68	8.56	10	87	86	65-134	1.49	20
4-Chlorotoluene	8.73	8.39	10	87	84	65-130	3.96	20
Dibromochloromethane	8.59	8.62	10	86	86	65-121	0	20
1,2-Dibromo-3-chloropropane	2.85	3.04	4	71	76	41-132	6.27	20
1,2-Dibromoethane (EDB)	8.90	9.10	10	89	91	67-125	2.18	20
Dibromomethane	8.45	8.46	10	84	85	68-121	0.154	20
1,2-Dichlorobenzene	8.63	8.59	10	86	86	69-128	0	20
1,3-Dichlorobenzene	9.37	9.21	10	94	92	71-131	1.67	20
1,4-Dichlorobenzene	8.90	8.67	10	89	87	70-128	2.65	20
Dichlorodifluoromethane	11.8	11.3	10	118	113	21-158	4.20	20
1,1-Dichloroethane	9.16	8.93	10	92	89	73-123	2.60	20
1,2-Dichloroethane (1,2-DCA)	8.93	9.02	10	89	90	61-127	0.916	20
1,1-Dichloroethene	9.30	9.11	10	93	91	68-130	2.01	20
cis-1,2-Dichloroethene	8.77	8.58	10	88	86	72-123	2.18	20
trans-1,2-Dichloroethene	9.00	8.82	10	90	88	64-138	2.04	20
1,2-Dichloropropane	8.75	8.63	10	88	86	71-121	1.46	20
1,3-Dichloropropane	9.10	9.21	10	91	92	69-120	1.17	20
2,2-Dichloropropane	9.61	9.36	10	96	94	64-142	2.60	20
1,1-Dichloropropene	9.02	8.80	10	90	88	70-130	2.44	20
cis-1,3-Dichloropropene	9.33	9.31	10	93	93	58-136	0	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/20/18	**BatchID:**	153499
Date Analyzed:	2/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153499

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
trans-1,3-Dichloropropene	10.1	10.2	10	101	102	66-119	0.805	20
Diisopropyl ether (DIPE)	9.15	9.28	10	92	93	66-123	1.39	20
Ethylbenzene	9.12	8.91	10	91	89	71-125	2.39	20
Ethyl tert-butyl ether (ETBE)	9.17	9.33	10	92	93	67-122	1.68	20
Freon 113	9.76	9.57	10	98	96	68-132	1.90	20
Hexachlorobutadiene	8.20	8.40	10	82	84	56-155	2.42	20
Hexachloroethane	9.20	8.93	10	92	89	61-129	2.95	20
2-Hexanone	7.39	8.09	10	74	81	51-115	9.02	20
Isopropylbenzene	9.36	9.27	10	94	93	66-134	1.01	20
4-Isopropyl toluene	9.00	8.83	10	90	88	70-136	1.96	20
Methyl-t-butyl ether (MTBE)	8.89	9.22	10	89	92	64-118	3.67	20
Methylene chloride	8.51	8.36	10	85	84	62-121	1.86	20
4-Methyl-2-pentanone (MIBK)	8.22	8.76	10	82	88	51-115	6.37	20
Naphthalene	6.99	7.94	10	70	79	55-137	12.7	20
n-Propyl benzene	8.63	8.47	10	86	85	63-140	1.87	20
Styrene	8.65	8.57	10	86	86	62-133	0	20
1,1,1,2-Tetrachloroethane	9.21	9.10	10	92	91	69-128	1.16	20
1,1,2,2-Tetrachloroethane	7.27	7.45	10	73	75	60-118	2.44	20
Tetrachloroethene	8.85	8.69	10	88	87	63-136	1.82	20
Toluene	9.14	9.03	10	91	90	67-124	1.15	20
1,2,3-Trichlorobenzene	6.77	7.63	10	68	76	57-145	11.9	20
1,2,4-Trichlorobenzene	7.60	8.14	10	76	81	60-144	6.80	20
1,1,1-Trichloroethane	9.18	9.05	10	92	91	70-133	1.46	20
1,1,2-Trichloroethane	8.59	8.63	10	86	86	65-125	0	20
Trichloroethene	8.48	8.26	10	85	83	67-133	2.63	20
Trichlorofluoromethane	10.3	10.2	10	103	102	59-145	1.68	20
1,2,3-Trichloropropane	7.47	7.73	10	75	77	65-115	3.42	20
1,2,4-Trimethylbenzene	8.81	8.53	10	88	85	67-136	3.26	20
1,3,5-Trimethylbenzene	8.24	8.03	10	82	80	68-135	2.64	20
Vinyl Chloride	11.1	10.3	10	111	103	53-146	7.94	20
Xylenes, Total	27.8	27.4	30	93	91	68-128	1.43	20
Surrogate Recovery								
Dibromofluoromethane	24.8	24.8	25	99	99	91-133	0	20
Toluene-d8	28.1	28.4	25	112	113	87-127	1.01	20
4-BFB	2.26	2.27	2.5	91	91	66-140	0	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/21/18	**BatchID:**	153545
Date Analyzed:	2/21/18 - 2/22/18	**Extraction Method:**	SW3640Am
Instrument:	GC17, GC21	**Analytical Method:**	SW8270C
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153545

QC Summary Report for SW8270C

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Acenaphthene	ND	0.010	-	-	-
Acenaphthylene	ND	0.010	-	-	-
Acetochlor	ND	2.0	-	-	-
Anthracene	ND	0.010	-	-	-
Benzidine	ND	10	-	-	-
Benzo (a) anthracene	ND	0.10	-	-	-
Benzo (a) pyrene	ND	0.0050	-	-	-
Benzo (b) fluoranthene	ND	0.0050	-	-	-
Benzo (g,h,i) perylene	ND	0.050	-	-	-
Benzo (k) fluoranthene	ND	0.0050	-	-	-
Benzyl Alcohol	ND	10	-	-	-
1,1-Biphenyl	ND	0.050	-	-	-
Bis (2-chloroethoxy) Methane	ND	2.0	-	-	-
Bis (2-chloroethyl) Ether	ND	0.0050	-	-	-
Bis (2-chloroisopropyl) Ether	ND	0.010	-	-	-
Bis (2-ethylhexyl) Adipate	ND	2.0	-	-	-
Bis (2-ethylhexyl) Phthalate	ND	0.050	-	-	-
4-Bromophenyl Phenyl Ether	ND	10	-	-	-
Butylbenzyl Phthalate	ND	2.0	-	-	-
4-Chloroaniline	ND	0.25	-	-	-
4-Chloro-3-methylphenol	ND	10	-	-	-
2-Chloronaphthalene	ND	0.25	-	-	-
2-Chlorophenol	ND	0.050	-	-	-
4-Chlorophenyl Phenyl Ether	ND	2.0	-	-	-
Chrysene	ND	0.010	-	-	-
Dibenzo (a,h) anthracene	ND	0.010	-	-	-
Dibenzofuran	ND	2.0	-	-	-
Di-n-butyl Phthalate	ND	0.25	-	-	-
1,2-Dichlorobenzene	ND	2.0	-	-	-
1,3-Dichlorobenzene	ND	2.0	-	-	-
1,4-Dichlorobenzene	ND	0.050	-	-	-
3,3-Dichlorobenzidine	ND	0.010	-	-	-
2,4-Dichlorophenol	ND	0.030	-	-	-
Diethyl Phthalate	ND	0.030	-	-	-
2,4-Dimethylphenol	ND	0.050	-	-	-
Dimethyl Phthalate	ND	0.030	-	-	-
4,6-Dinitro-2-methylphenol	ND	10	-	-	-
2,4-Dinitrophenol	ND	0.50	-	-	-
2,4-Dinitrotoluene	ND	0.50	-	-	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/21/18	**BatchID:**	153545
Date Analyzed:	2/21/18 - 2/22/18	**Extraction Method:**	SW3640Am
Instrument:	GC17, GC21	**Analytical Method:**	SW8270C
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153545

QC Summary Report for SW8270C

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
2,6-Dinitrotoluene	ND	0.20	-	-	-
Di-n-octyl Phthalate	ND	0.25	-	-	-
1,2-Diphenylhydrazine	ND	2.0	-	-	-
Fluoranthene	ND	0.050	-	-	-
Fluorene	ND	0.010	-	-	-
Hexachlorobenzene	ND	0.0050	-	-	-
Hexachlorobutadiene	ND	0.010	-	-	-
Hexachlorocyclopentadiene	ND	1.2	-	-	-
Hexachloroethane	ND	0.010	-	-	-
Indeno (1,2,3-cd) pyrene	ND	0.020	-	-	-
Isophorone	ND	2.0	-	-	-
2-Methylnaphthalene	ND	0.010	-	-	-
2-Methylphenol (o-Cresol)	ND	2.0	-	-	-
3 & 4-Methylphenol (m,p-Cresol)	ND	2.0	-	-	-
Naphthalene	ND	0.010	-	-	-
2-Nitroaniline	ND	10	-	-	-
3-Nitroaniline	ND	10	-	-	-
4-Nitroaniline	ND	10	-	-	-
Nitrobenzene	ND	2.0	-	-	-
2-Nitrophenol	ND	10	-	-	-
4-Nitrophenol	ND	10	-	-	-
N-Nitrosodiphenylamine	ND	2.0	-	-	-
N-Nitrosodi-n-propylamine	ND	0.25	-	-	-
Pentachlorophenol	ND	0.50	-	-	-
Phenanthrene	ND	0.050	-	-	-
Phenol	ND	0.050	-	-	-
Pyrene	ND	0.050	-	-	-
Pyridine	ND	2.0	-	-	-
1,2,4-Trichlorobenzene	ND	2.0	-	-	-
2,4,5-Trichlorophenol	ND	0.10	-	-	-
2,4,6-Trichlorophenol	ND	0.10	-	-	-

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/21/18	**BatchID:**	153545
Date Analyzed:	2/21/18 - 2/22/18	**Extraction Method:**	SW3640Am
Instrument:	GC17, GC21	**Analytical Method:**	SW8270C
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153545

QC Summary Report for SW8270C

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Surrogate Recovery					
2-Fluorophenol	15.0		20	75	8-130
Phenol-d5	15.9		20	79	5-130
Nitrobenzene-d5	17.1		20	85	20-140
2-Fluorobiphenyl	14.9		20	74	40-140
2,4,6-Tribromophenol	18.3		20	92	16-180
4-Terphenyl-d14	20.1		20	101	40-170

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/21/18	**BatchID:**	153545
Date Analyzed:	2/21/18 - 2/22/18	**Extraction Method:**	SW3640Am
Instrument:	GC17, GC21	**Analytical Method:**	SW8270C
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153545

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acenaphthene	8.33	7.62	10	83	76	27-117	8.95	25
Acenaphthylene	8.75	7.18	10	88	72	18-128	19.7	25
Acetochlor	10.1	8.56	10	101	86	30-130	16.5	25
Anthracene	8.80	8.32	10	88	83	31-126	5.66	25
Benzidine	41.4	34.9	50	83	70	14-115	17.1	25
Benzo (a) anthracene	9.47	8.94	10	95	89	27-129	5.72	25
Benzo (a) pyrene	9.24	9.17	10	92	92	10-161	0	25
Benzo (b) fluoranthene	8.86	8.64	10	89	86	24-140	2.49	25
Benzo (g,h,i) perylene	10.8	9.55	10	108	96	2-155	12.5	25
Benzo (k) fluoranthene	9.73	8.73	10	97	87	2-168	10.9	25
Benzyl Alcohol	41.8	40.1	50	84	80	22-114	4.15	25
1,1-Biphenyl	7.92	7.28	10	79	73	30-130	8.49	25
Bis (2-chloroethoxy) Methane	8.24	7.32	10	82	73	28-109	11.9	25
Bis (2-chloroethyl) Ether	7.93	6.60	10	79	66	24-105	18.3	25
Bis (2-chloroisopropyl) Ether	8.02	7.97	10	80	80	21-106	0	25
Bis (2-ethylhexyl) Adipate	8.98	7.10	10	90	71	13-143	23.3	25
Bis (2-ethylhexyl) Phthalate	10.2	8.22	10	101	82	7-156	21.0	25
4-Bromophenyl Phenyl Ether	8.52	7.99	10	85	80	31-121	6.51	25
Butylbenzyl Phthalate	10.8	8.89	10	108	89	20-146	19.8	25
4-Chloroaniline	8.63	8.02	10	86	80	15-122	7.28	25
4-Chloro-3-methylphenol	9.01	7.87	10	90	79	29-125	13.5	25
2-Chloronaphthalene	8.31	7.71	10	83	77	27-113	7.56	25
2-Chlorophenol	7.82	7.65	10	78	77	24-108	2.12	25
4-Chlorophenyl Phenyl Ether	8.97	8.21	10	90	82	24-127	8.82	25
Chrysene	10.1	8.78	10	101	88	31-131	13.8	25
Dibenzo (a,h) anthracene	9.46	9.55	10	95	95	12-157	0	25
Dibenzofuran	8.82	7.79	10	88	78	21-124	12.4	25
Di-n-butyl Phthalate	9.23	7.98	10	92	80	18-147	14.6	25
1,2-Dichlorobenzene	7.70	7.42	10	77	74	22-101	3.78	25
1,3-Dichlorobenzene	7.69	6.96	10	77	70	20-99	9.98	25
1,4-Dichlorobenzene	7.41	6.78	10	74	68	21-99	8.85	25
3,3-Dichlorobenzidine	10.8	10.3	10	108	103	29-139	4.34	25
2,4-Dichlorophenol	8.82	7.97	10	88	80	28-115	10.1	25
Diethyl Phthalate	10.0	8.29	10	100	83	19-139	19.1	25
2,4-Dimethylphenol	8.36	7.55	10	84	75	23-108	10.2	25
Dimethyl Phthalate	9.38	7.46	10	94	75	22-132	22.8	25
4,6-Dinitro-2-methylphenol	56.2	41.6	50	113	83	27-129	29.9,F2	25
2,4-Dinitrophenol	54.1	36.2	50	108	72	12-141	39.7,F2	25
2,4-Dinitrotoluene	11.2	9.38	10	112	94	22-141	18.0	25

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/21/18	**BatchID:**	153545
Date Analyzed:	2/21/18 - 2/22/18	**Extraction Method:**	SW3640Am
Instrument:	GC17, GC21	**Analytical Method:**	SW8270C
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153545

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
2,6-Dinitrotoluene	10.4	7.88	10	104	79	24-136	27.5,F2	25
Di-n-octyl Phthalate	8.55	7.34	10	86	73	18-153	15.2	25
1,2-Diphenylhydrazine	9.02	8.08	10	90	81	31-121	10.9	25
Fluoranthene	9.50	8.37	10	95	84	30-138	12.6	25
Fluorene	9.29	8.53	10	93	85	24-127	8.59	25
Hexachlorobenzene	8.17	7.17	10	82	72	32-117	13.1	25
Hexachlorobutadiene	7.93	6.34	10	79	63	22-107	22.3	25
Hexachlorocyclopentadiene	39.3	21.9	50	79	44	14-102	57.1,F2	25
Hexachloroethane	7.86	6.52	10	79	65	22-101	18.7	25
Indeno (1,2,3-cd) pyrene	9.44	9.03	10	94	90	10-160	4.44	25
Isophorone	8.58	7.17	10	86	72	27-117	17.9	25
2-Methylnaphthalene	8.27	8.03	10	83	80	46-120	2.92	25
2-Methylphenol (o-Cresol)	8.52	8.43	10	85	84	30-109	1.06	25
3 & 4-Methylphenol (m,p-Cresol)	8.39	8.33	10	84	83	28-112	0.785	25
Naphthalene	7.39	6.81	10	74	68	16-120	8.17	25
2-Nitroaniline	51.5	39.8	50	103	79	18-137	25.8,F2	25
3-Nitroaniline	48.2	45.2	50	96	90	15-144	6.50	25
4-Nitroaniline	52.1	48.7	50	104	97	11-152	6.87	25
Nitrobenzene	9.18	8.57	10	92	86	22-115	6.83	25
2-Nitrophenol	39.1	38.4	50	78	77	29-114	1.91	25
4-Nitrophenol	52.5	47.7	50	105	95	13-150	9.61	25
N-Nitrosodiphenylamine	8.97	7.77	10	90	78	33-121	14.4	25
N-Nitrosodi-n-propylamine	8.73	8.75	10	87	87	26-112	0	25
Pentachlorophenol	27.1	21.3	20	135	107	37-140	23.8	25
Phenanthrene	7.97	7.98	10	80	80	32-122	0	25
Phenol	8.10	8.04	10	81	80	22-111	0.771	25
Pyrene	10.0	8.59	10	101	86	33-130	15.7	25
Pyridine	6.89	6.68	20	34	33	30-130	3.03	25
1,2,4-Trichlorobenzene	7.83	6.91	10	78	69	24-107	12.5	25
2,4,5-Trichlorophenol	9.12	8.00	10	91	80	26-124	13.1	25
2,4,6-Trichlorophenol	8.69	7.11	10	87	71	28-121	20.0	25

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/21/18	**BatchID:**	153545
Date Analyzed:	2/21/18 - 2/22/18	**Extraction Method:**	SW3640Am
Instrument:	GC17, GC21	**Analytical Method:**	SW8270C
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153545

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Surrogate Recovery								
2-Fluorophenol	15.5	15.0	20	77	75	23-101	3.10	25
Phenol-d5	17.1	16.7	20	85	84	27-116	2.06	25
Nitrobenzene-d5	18.8	16.2	20	94	81	29-116	15.3	25
2-Fluorobiphenyl	16.4	14.3	20	82	72	29-112	13.9	25
2,4,6-Tribromophenol	22.9	21.1	20	114	106	34-125	8.02	25
4-Terphenyl-d14	22.1	17.4	20	110	87	23-136	23.7	25

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/15/18	**BatchID:**	153336
Date Analyzed:	2/17/18	**Extraction Method:**	E200.8
Instrument:	ICP-MS3	**Analytical Method:**	E200.8
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS-153336 1802826-001EMS/MSD

QC Summary Report for Dissolved Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	48.8	0.50	50	-	98	85-115
Arsenic	ND	47.8	0.50	50	-	96	85-115
Barium	ND	499	5.0	500	-	100	85-115
Beryllium	ND	49.2	0.50	50	-	98	85-115
Cadmium	ND	47.3	0.25	50	-	95	85-115
Chromium	ND	47.4	0.50	50	-	95	85-115
Cobalt	ND	46.6	0.50	50	-	93	85-115
Copper	ND	45.6	2.0	50	-	91	85-115
Lead	ND	47.9	0.50	50	-	96	85-115
Mercury	ND	1.20	0.050	1.25	-	96	85-115
Molybdenum	ND	48.3	0.50	50	-	97	85-115
Nickel	ND	49.0	0.50	50	-	98	85-115
Selenium	ND	49.0	0.50	50	-	98	85-115
Silver	ND	48.4	0.19	50	-	97	85-115
Thallium	ND	47.8	0.50	50	-	96	85-115
Vanadium	ND	48.1	0.50	50	-	96	85-115
Zinc	ND	480	15	500	-	96	85-115

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/15/18	**BatchID:**	153336
Date Analyzed:	2/17/18	**Extraction Method:**	E200.8
Instrument:	ICP-MS3	**Analytical Method:**	E200.8
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS-153336 1802826-001EMS/MSD

QC Summary Report for Dissolved Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	49.2	50.5	50	ND	98	101	70-130	2.61	20
Arsenic	50.8	51.5	50	1.6	99	100	70-130	1.21	20
Barium	842	867	500	360	97	102	70-130	2.97	20
Beryllium	48.1	48.9	50	ND	96	98	70-130	1.61	20
Cadmium	47.3	48.1	50	ND	95	96	70-130	1.66	20
Chromium	46.8	47.2	50	ND	94	94	70-130	0	20
Cobalt	44.4	45.6	50	ND	88	91	70-130	2.51	20
Copper	50.3	51.2	50	6.5	88	89	70-130	1.73	20
Lead	48.4	49.6	50	ND	97	99	70-130	2.31	20
Mercury	1.26	1.25	1.25	ND	101	100	70-130	0.399	20
Molybdenum	50.0	51.4	50	1.0	98	101	70-130	2.76	20
Nickel	48.8	49.4	50	1.9	94	95	70-130	1.24	20
Selenium	48.5	49.9	50	ND	97	100	70-130	2.84	20
Silver	46.8	48.5	50	ND	94	97	70-130	3.50	20
Thallium	48.1	49.8	50	ND	96	100	70-130	3.41	20
Vanadium	47.8	48.5	50	ND	96	97	70-130	1.41	20
Zinc	495	505	500	28	93	95	70-130	2.04	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/17/18	**BatchID:**	153417
Date Analyzed:	2/17/18	**Extraction Method:**	SW5030B
Instrument:	GC3	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153417 1802888-001JMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	50	-	-	-
MTBE	ND	5.0	-	-	-
Benzene	ND	0.50	-	-	-
Toluene	ND	0.50	-	-	-
Ethylbenzene	ND	0.50	-	-	-
Xylenes	ND	0.50	-	-	-
Surrogate Recovery					
aaa-TFT	10.3		10	103	89-116

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	63.8	66.2	60	106	110	78-116	3.69	20
MTBE	10.1	10.4	10	101	104	72-122	3.70	20
Benzene	10.7	10.8	10	107	108	81-123	1.36	20
Toluene	10.9	11.3	10	109	113	83-129	3.55	20
Ethylbenzene	10.9	11.1	10	109	111	88-126	1.60	20
Xylenes	32.8	33.4	30	109	111	87-131	1.54	20
Surrogate Recovery								
aaa-TFT	9.73	9.72	10	97	97	89-116	0	20

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	62.4	67.6	60	ND	104	113	63-133	8.12	20
MTBE	11.5	11.8	10	ND	115	118	69-122	2.88	20
Benzene	10.3	10.7	10	ND	103	107	84-125	3.70	20
Toluene	10.8	11.2	10	ND	108	112	87-131	3.65	20
Ethylbenzene	10.5	11.0	10	ND	105	110	92-126	4.46	20
Xylenes	31.8	33.0	30	ND	106	110	88-132	3.66	20
Surrogate Recovery									
aaa-TFT	9.70	9.82	10		97	98	90-117	1.31	20

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Quality Control Report

Client:	BAGG Engineers	**WorkOrder:**	1802895
Date Prepared:	2/16/18	**BatchID:**	153397
Date Analyzed:	2/17/18	**Extraction Method:**	SW3510C/3630C
Instrument:	GC9a	**Analytical Method:**	SW8015B
Matrix:	Water	**Unit:**	µg/L
Project:	DEROY-01-00; Environmental Characterization of Groundwater	**Sample ID:**	MB/LCS/LCSD-153397

QC Report for SW8015B w/ Silica Gel Clean-Up

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	50	-	-	-
TPH-Motor Oil (C18-C36)	ND	250	-	-	-
Surrogate Recovery					
C9	646		625	103	68-127

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	1090	1060	1000	109	106	86-142	2.26	30
Surrogate Recovery								
C9	666	668	625	107	107	68-127	0	30

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1802895 **ClientCode: BAGT**

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

☒ Detection Summary ☒ Dry-Weight

Report to:

Evan Wolf
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
(650) 630-3923 FAX: 650-852-9138

Email: ewolf@baggengineers.com; ebbi@baggen
cc/3rd Party: ajay@baggengineers.com;
PO:
Project: DEROY-01-00; Environmental Characterization of Groundwater

Bill to:

Accounts Payable
BAGG Engineers
138 Charcot Ave
San Jose, CA 95131
accounting@baggengineers.com

Requested TAT: 5 days;

Date Received: 02/16/2018
Date Logged: 02/16/2018

Lab ID	Client ID	Matrix	Collection Date	Hold	1	2	3	4	5	6	7	8	9	10	11	12
					Requested Tests (See legend below)											
1802895-001	MW-1 (SW port.)	Water	2/15/2018 13:50	☐	B	C	D	E	A	A						
1802895-002	MW-2 (NE port.)	Water	2/15/2018 12:40	☐	B	C	D	E	A	A						

Test Legend:

1	8081PCB_W	2	8260B_W	3	8270_SCSM_W	4	CAM17MS_FF_DISS
5	G-MBTEX_W	6	TPH(DMO)WSG_W	7		8	
9		10		11		12	

Prepared by: Agustina Venegas

The following SampIDs: 001A, 002A contain testgroup Multi RangeWSG_W.

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.

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

WORK ORDER SUMMARY

Client Name: BAGG ENGINEERS
Client Contact: Evan Wolf
Contact's Email: ewolf@baggengineers.com; ebbi@baggengineers.com

Project: DEROY-01-00; Environmental Characterization of Groundwater
Comments:

Work Order: 1802895
QC Level: LEVEL 2
Date Logged: 2/16/2018

☐ 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
1802895-001A	MW-1 (SW port.)	Water	Multi-Range TPH(g,d,mo) w/ S.G. Clean-Up	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	2/15/2018 13:50	5 days	1%+	☐	
1802895-001B	MW-1 (SW port.)	Water	SW8081A/8082 (OC Pesticides+PCBs)	2	aVOA, Unpres	☐	2/15/2018 13:50	5 days	1%+	☐	
1802895-001C	MW-1 (SW port.)	Water	SW8260B (VOCs)	2	VOA w/ HCl	☐	2/15/2018 13:50	5 days	1%+	☐	
1802895-001D	MW-1 (SW port.)	Water	SW8270C (SVOCs)	1	1LA Narrow Mouth, Unpres	☐	2/15/2018 13:50	5 days	1%+	☐	
1802895-001E	MW-1 (SW port.)	Water	E200.8 (CAM 17) (Dissolved-Field Filtered)	1	250mL HDPE w/ HNO3	☐	2/15/2018 13:50	5 days	None	☐	
1802895-002A	MW-2 (NE port.)	Water	Multi-Range TPH(g,d,mo) w/ S.G. Clean-Up	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	2/15/2018 12:40	5 days	1%+	☐	
1802895-002B	MW-2 (NE port.)	Water	SW8081A/8082 (OC Pesticides+PCBs)	2	aVOA, Unpres	☐	2/15/2018 12:40	5 days	1%+	☐	
1802895-002C	MW-2 (NE port.)	Water	SW8260B (VOCs)	2	VOA w/ HCl	☐	2/15/2018 12:40	5 days	1%+	☐	
1802895-002D	MW-2 (NE port.)	Water	SW8270C (SVOCs)	1	1LA Narrow Mouth, Unpres	☐	2/15/2018 12:40	5 days	1%+	☐	
1802895-002E	MW-2 (NE port.)	Water	E200.8 (CAM 17) (Dissolved-Field Filtered)	1	250mL HDPE w/ HNO3	☐	2/15/2018 12:40	5 days	None	☐	

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.

1802895

CHAIN OF CUSTODY RECORD

BAGG ENGINEERS

www.baggengineers.com
phone: 650.852.9133 fax: 650.852.9138 info@baggengineers.com
138 Charcot Avenue, San Jose, California 95131

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To: Evan Wolf
Bill To: BAGG Engineers
Company: BAGG Engineers
138 Charcot Ave
E-Mail: ewolf@baggengineers.com
San Jose, CA 95131
E-Mail: ajay@baggengineers.com
Tele: (650) 852-9133
Fax: (650) 852-9138
Project #: DEROY-01-00
Project Name: Environmental Characterization of Groundwater
Project Location: 292 Stockton Ave, San Jose, CA
Sampler Signature: Evan Wolf

	SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015) & Motor Oil - extractables w/ SGC	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides) + PCBs w/ florisil clean up if necessary	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs) w/ GPC if necessary	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	WET STLC (Extract & Hold. Run 10x)	CARB 435 Asbestos	Hexachrom	Comments
+1	DEROY-01-00	MW-1 (SW port.)	2/15/18	1:50 PM	10	Glass	X					X				X	X					X				X	X		X						Filter Samples for Metals analysis: Yes / No (circled: No)
+1	DEROY-01-00	MW-2 (NE port.)	2/15/18	12:40 PM	10	Glass	X					X				X	X					X				X	X		X						
																Multi-Range																			

Done in field - water looks very clear after filtering

Relinquished By:	Date:	Time:	Received By:
Evan Wolf	2/16/18	1420	L Moore
L Moore	2/16/18	1900	[illegible]

ICE/t° 3.1
GOOD CONDITION
HEAD SPACE ABSENT
DECHLORINATED IN LAB
APPROPRIATE CONTAINERS
PRESERVED IN LAB

COMMENTS:
*NO sediment

PRESERVATION	VOAS	O&G	METALS	OTHER
			pH<2	

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**BAGG Engineers**	Date and Time Received	**2/16/2018 19:00**
Project:	**DEROY-01-00; Environmental Characterization of Groundwater**	Date Logged:	**2/16/2018**
		Received by:	Agustina Venegas
WorkOrder №:	**1802895** Matrix: Water	Logged by:	Agustina Venegas
Carrier:	Laurie Moore (MAI Courier)		

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 ☐
Sample/Temp Blank temperature	Temp: 3.1°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 ☐
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

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:

APPENDIX B

DWR-188 Well Completion Reports

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. xxxxxxx

Page 1 of 1

Owner's Well Number MW-1

Date Work Began 02/14/2018 Date Work Ended 2/14/2018

Local Permit Agency Santa Clara Valley Water District

Permit Number C20180202001 Permit Date 2/2/18

DWR Use Only – Do Not Fill In

State Well Number/Site Number

Latitude N Longitude W

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Hollow Stem Auger Drilling Fluid Fresh Water

Depth from Surface Feet	to Feet	Description (Describe material, grain size, color, etc.)
0	5	Lean Clay with Sand: dark gray, very stiff, slightly moist, well-graded sand, trace gravel (fill)
5	8	Silty Sand with Gravel: yellow-brown, dense, slightly moist, fine to medium sand, few coarse sand, few subrounded fine gravel (native)
8	10	Silty Sand: yellow-brown to brown, medium dense, moist, fine sand
10	13	Lean Clay: brown with trace gray, stiff, moist
13	18	Sandy Silty Clay: brown with trace gray, very stiff, moist to very mosit, fine sand
18	20	Silty Sand: light brown and gray, medium dense, very moist, fine sand
20	21	Lean Clay: mottled brown and blue-gray, stiff, moist
21	25	Lean Clay with Sand: blue-gray, stiff to very stiff, moist, fine sand
25	28	Sandy Lean Clay: gray with light brown mottling, stiff, moist, fine sand
28	32	Lean Clay: mottled blue-gray and yellow-brown, stiff to very stiff, moist
32	35	Clayey Sand: blue-gray, medium dense, very moist, fine sand

Total Depth of Boring 35.5 Feet

Total Depth of Completed Well 35 Feet

Well Owner

Name Diridon Hospitality LLC

Mailing Address 1125 Executive Circle, Suite 220

City Irving State Texas Zip 75038

Well Location

Address 292 Stockton Avenue

City San Jose County Santa Clara

Latitude 37 Deg. 20 Min. 2 Sec. N Longitude 121 Deg. 54 Min. 19 Sec. W

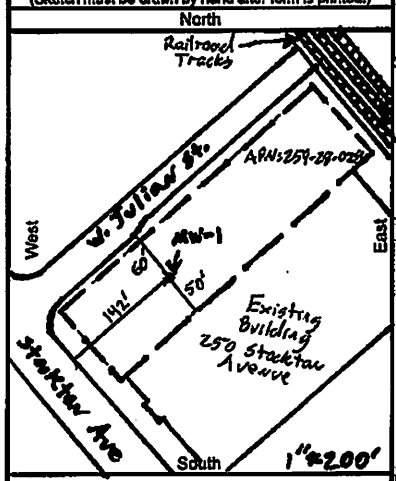
Datum WGS84 Decimal Lat. 37.3339 Decimal Long. -121.9053

APN Book 259 Page 28 Parcel 028

Township Range Section

Location Sketch

(Sketch must be drawn by hand after form is printed.)



Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Activity

- ◉ New Well
- ○ Modification/Repair
  - ○ Deepen
  - ○ Other
- ○ Destroy

Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

- ○ Water Supply
  - ☐ Domestic ☐ Public
  - ☐ Irrigation ☐ Industrial
- ○ Cathodic Protection
- ○ Dewatering
- ○ Heat Exchange
- ○ Injection
- ◉ Monitoring
- ○ Remediation
- ○ Sparging
- ○ Test Well
- ○ Vapor Extraction
- ○ Other

Water Level and Yield of Completed Well

Depth to first water 14 (Feet below surface)

Depth to Static Water Level 14 (Feet) Date Measured 02/15/2018

Estimated Yield * (GPM) Test Type

Test Length (Hours) Total Drawdown (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size If Any (Inches)
0	10	8	Blank	PVC Sch. 40	.154	2.375		
10	35	8	Screen	PVC Sch. 40	.154	2.375	Milled Slots	0.010

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	6	Cement	Type II-V Portaland
6	8	Bentonite	1/4" TR 30 Pellets
8	35	Filter Pack	#2/12 Monterey Sand

Attachments

- ☐ Geologic Log
- ☐ Well Construction Diagram
- ☐ Geophysical Log(s)
- ☐ Soil/Water Chemical Analyses
- ☐ Other

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name EXPLORATION GEO SERVICES INC

Person, Firm or Corporation

1535 INDUSTRIAL AVE Address SAN JOSE City CA State 95112 Zip

Signed C-57 Licensed Water Well Contractor Date Signed 2/14/18 C-57 License Number 404288

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. xxxxxxx

Page 1 of 1

Owner's Well Number MW-2

Date Work Began 02/14/2018 Date Work Ended 2/14/2018

Local Permit Agency Santa Clara Valley Water District

Permit Number C20180202002 Permit Date 2/2/18

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N W

Latitude Longitude

APN/TRS/Other

Geologic Log

Orientation ⦿ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Hollow Stem Auger Drilling Fluid Fresh Water

Depth from Surface Feet	to Feet	Description (Describe material, grain size, color, etc)
0	4	Sandy Lean Clay with Gravel: dark gray and brown hard, slightlymoist, well-graded sand, few gravel (fi
4	5	Fat Clay: dark gray, very stiff, slightly moist, trace fine sand (native)
5	8	Clayey Sand: mottled gray and yellow-brown, med. dense, moist, fine sand, trace carbonate nodules
8	10	Lean Clay: mottled yellow- to orange-brown and gray, stiff, moist, trace fine sand
10	13	Sandy Silt: gray with trace light brown mottling, stiff very moist, fine sand
13	15	Lean CLay: olive-gray, med. stiff, very moist
15	16	Sandy Lean Clay: blue-gray with brown mottling, medium stiff, very moist, fine sand
16	21	Clayey Sand: mottled light brown and blue-gray, med. dense to dense, very moist to wet, fine sand
21	26	Lean Clay: blue-gray, very stiff, moist
26	28	Lean Clay with Sand: blue-gray with trace ylw-brwn mottling, stiff, moist, fine sand
28	35	Lean Clay: blue-gray witrh orange-brown mottling, stiff to very stiff, moist

Total Depth of Boring 35.5 Feet

Total Depth of Completed Well 35 Feet

Well Owner

Name Diridon Hospitality LLC

Mailing Address 1125 Executive Circle, Suite 220

City Irving State Texas Zip 75038

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City San Jose County Santa Clara

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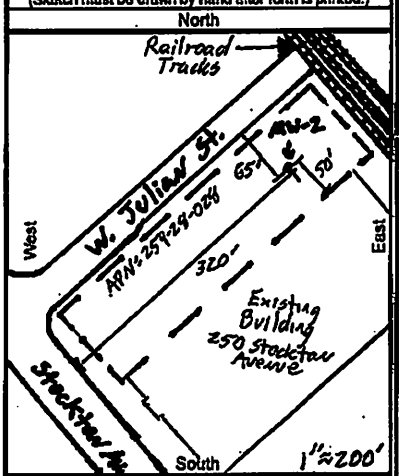
Datum WGS84 Decimal Lat. 37.3342 Decimal Long. -121.8048

APN Book 259 Page 28 Parcel 028

Township Range Section

Location Sketch

(Sketch must be drawn by hand after form is printed.)



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Activity

- ⦿ New Well
- ○ Modification/Repair
  - ○ Deepen
  - ○ Other
- ○ Destroy

Describe procedures and materials under "GEOLOGIC LOG"

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  - ☐ Domestic ☐ Public
  - ☐ Irrigation ☐ Industrial
- ○ Cathodic Protection
- ○ Dewatering
- ○ Heat Exchange
- ○ Injection
- ⦿ Monitoring
- ○ Remediation
- ○ Sparging
- ○ Test Well
- ○ Vapor Extraction
- ○ Other

Water Level and Yield of Completed Well

Depth to first water 14 (Feet below surface)

Depth to Static Water Level 13 (Feet) Date Measured 02/15/2018

Estimated Yield * (GPM) Test Type

Test Length (Hours) Total Drawdown (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size If Any (Inches)
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Annular Material

Depth from Surface Feet	to Feet	Fill	Description
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6	8	Bentonite	1/4" TR 30 Pellets
8	35	Filter Pack	#2/12 Monterey Sa

Attachments

- ☐ Geologic Log
- ☐ Well Construction Diagram
- ☐ Geophysical Log(s)
- ☐ Soil/Water Chemical Analyses
- ☐ Other

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name EXPLORATORY DRILLING SERVICES INC
Person, Firm or Corporation

1535 INDUSTRIAL AVE Address, San Jose City, CA State, 95112 Zip

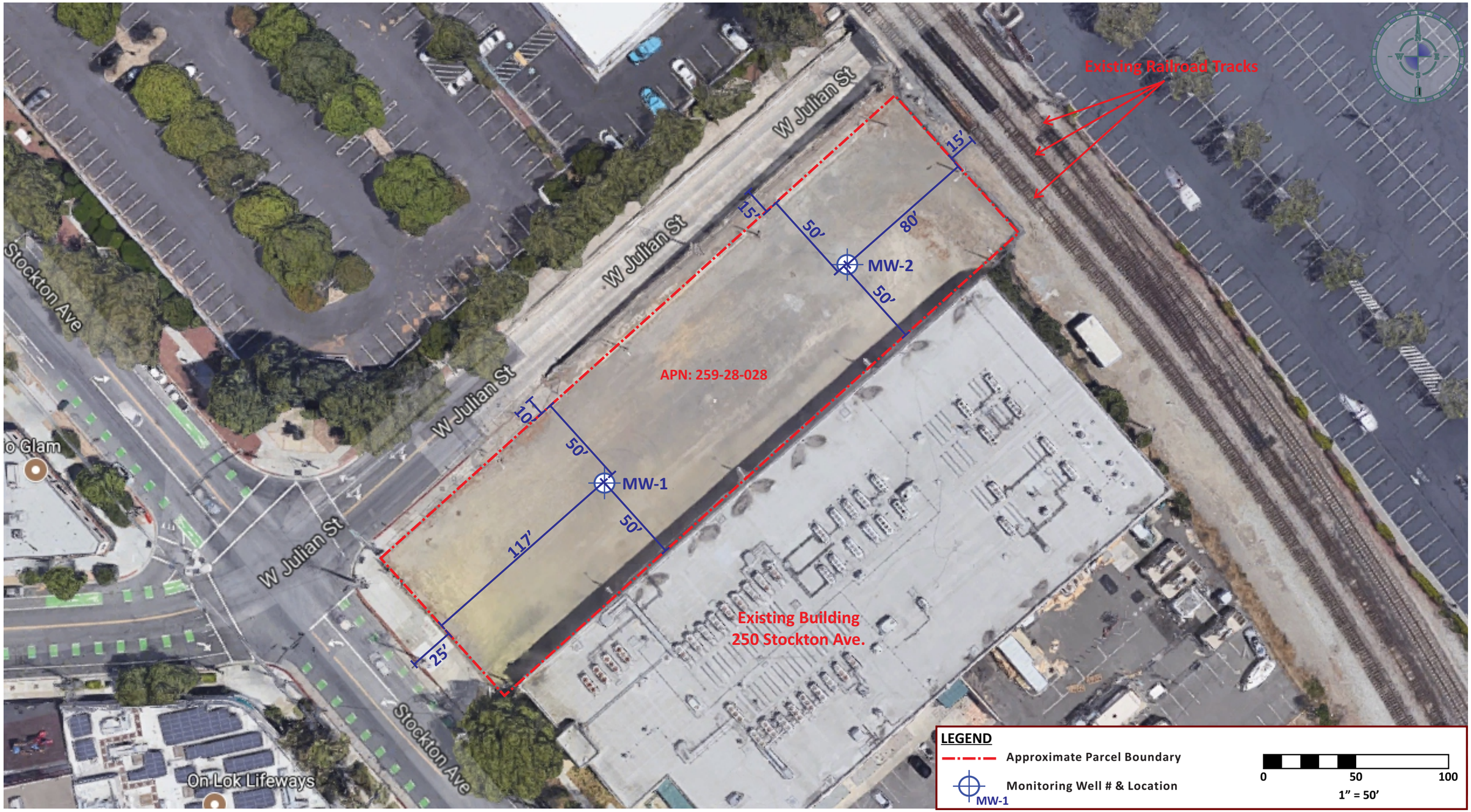
Signed C-57 Licensed Water Well Contractor

2/24/18 Date Signed

748288 C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM



Base: Google Maps - Accessed on November 29, 2017

GEOTECHNICAL ENGINEERING INVESTIGATION
MONITORING WELL CONSTRUCTION & DEVELOPMENT
292 STOCKTON AVENUE
APN: 259-28-028
SAN JOSE, CALIFORNIA

BAGG ENGINEERS

MONITORING WELL PLAN

JOB NUMBER:	SCALE:	DATE:	PLATE
DEROY-01-00	1" ≈ 50'	February 2018	2

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation*.

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

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