LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

IMPORT MATERIALS EVALUATION
CITY OF LAKE ELSINORE PROPERTY
NEC MALAGA ROAD AND LUCERNE STREET
LAKE ELSINORE, CALIFORNIA

PROJECT NO. 33310.11
MARCH 24, 2017

Prepared For:

Lake Elsinore CCR, LLC
14211 Yorba Street, Suite 200
Tustin, California 92780

Attention: Ms. Joanne Ho

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

March 24, 2017

Lake Elsinore CCR, LLC
14211 Yorba Street, Suite 200
Tustin, California 92780

Project No. 33310.11

Attention: Ms. Joanne Ho

Subject: Import Materials Evaluation, City of Lake Elsinore Property, NEC Malaga Road and Lucerne Street, Lake Elsinore, California.

Attached herewith is an Import Materials Evaluation conducted by this firm for the City of Lake Elsinore Property located in Lake Elsinore, California.

This work was planned based upon a scope of services generally outlined in our Proposal, dated March 9, 2017, and in other written and verbal communications with your office.

In summary, it is our opinion that the proposed import materials are feasible from a geotechnical perspective, provided the recommendations presented in the attached report and our previous report are incorporated into design and construction. The following executive summary reviews some of the important elements of the project. However, this summary should not be solely relied upon.

The soils sampled from the proposed import site and tested in our geotechnical laboratory were found to have similar geotechnical properties to the on-site soils previous sampled and tested by this firm for the proposed multi-family residential project located along Mission Trail. Both site soils posses a very low expansion potential, good shear strength, and negligible soluble sulfate content. The notable difference, from a geotechnical standpoint, is that the import materials possess a low R-value quality relative to the soils at the proposed development site. This will require a larger base demand for pavement sections or select grading to provide the higher quality R-value soils be placed within pavement subgrade areas or import high quality R-value soils from another location for use in pavement subgrade areas.

LOR Geotechnical Group, Inc.

Table of Contents

INTRODUCTION

At the request of the client, LOR Geotechnical Group, Inc. performed an evaluation of the proposed import materials within the City of Lake Elsinore Property located at the northeast corner of Malaga Road and Lucerne Street in Lake Elsinore, California. This import site is approximately 4.13 acres of vacant land situated adjacent to the north and west of an existing borrow area and south of the terminus of the San Jacinto River into Lake Elsinore. Based on the planned usage of approximately 35,000 cubic yards of import materials, excavation at the import site is estimated up to approximately 5.5 feet in depth. The import materials are planned for use as engineered fill materials at the client's proposed multi-family residential development, Assessor's Parcel Number 365-030-001, located along Mission Trail in Lake Elsinore, California, located approximately 1.3 miles to the southeast. This firm conducted a Preliminary Geotechnical Investigation for that project (LOR, 2016). Based on mapping conducted by Morton and Weber of both the import site, proposed development site, and immediate surrounding area, both the import soils and proposed development site soils are comprised of lake sediments that have been periodically inundated by Lake Elsinore. Our evaluation of the import soils included geotechnical analysis of the proposed foundation and subgrade soils to verify their shear strength, expansion potential, soluble sulfate content, and R-value quality.

The locations of the import site and planned multi-family residential development site are shown on the attached Index Map, Enclosure 1, within Appendix A.

The details of our geotechnical evaluation, as well as our findings and recommendations, are presented in the following sections of this report.

EXISTING SITE CONDITIONS

The subject site consists of a roughly rectangular shaped parcel of land comprising of approximately 4.13 acres located adjacent to the north and west of an existing borrow area and south of the terminus of the San Jacinto River into Lake Elsinore. The topography of the site is mostly planar with a very gentle fall to the northwest. Several small, dirt trails traverse the site. Vegetation consisted of a moderate growth of weeds and shrubs. Minor wind blown trash and debris were scattered within the project area.

The property to the south was a previous borrow site for the construction of the boat launch facility located on the northwest portion of Lake Elsinore and contains a depression. A dirt road lies south of the previous borrow site with a golf course beyond. The site was bounded on the north by a dirt maintenance road followed by the inlet of the San Jacinto River into Lake Elsinore. The property to the west was vacant land, similar to the site while the property to the east contained a depression associated with it's use as a borrow site during the construction of the aforementioned boat launch facility.

REVIEW OF PREVIOUS GEOTECHNICAL REPORTS

This firm conduced a Preliminary Geotechnical Investigation for the proposed multi-family residential development of APN 365-030-001 (LOR, 2016). Geotechnical conclusions and recommendations were provided for the use of the on-site soils for the project. At that time, import materials were proposed, however, their source was not yet known. Therefore, it was recommended that, prior to the use of import soils for foundation and subgrade soils, import materials should be tested to verify their shear strength, expansion potential, soluble sulfate content, and R-value quality.

FIELD INVESTIGATION

Representatives from this firm visited the site on March 14, 2017 and obtained two bulk samples of the representative import materials using hand tools. Samples were obtained form the surface to a depth of approximately 3.5 to 4.5 feet. These samples were returned to our geotechnnical laboratory for further evaluation and testing.

LABORATORY TESTING

The soil samples obtained during the field investigation were subjected to laboratory testing to evaluate their physical and engineering properties. Laboratory testing included, laboratory compaction characteristics, direct shear, sieve analysis, sand equivalent, R-value, expansion index, and soluble sulfate content. A detailed description of the laboratory testing program and the test results are presented below:

Laboratory Compaction Characteristics

Selected soil samples were tested in the laboratory to determine compaction characteristics using the ASTM D 1557 compaction test method. The results are presented in the following table:

LABORATORY COMPACTION				
Sample Number	**Sample Depth (feet)**	**Soil Description (U.S.G.S.)**	**Maximum Dry Density (pcf)**	**Optimum Moisture Content (percent)**
RV-1	0-4.5	(SM) Silty Sand with Gravel	132.0	8.0

Direct Shear Test

Shear testing is performed with a direct shear machine in general accordance with ASTM D 3080 at a constant rate-of-strain (usually 0.04 inches/minute). The machine is designed to test a sample partially extruded from a sample ring in single shear. Samples are tested at varying normal loads in order to evaluate the shear strength parameters, angle of internal friction and cohesion. Samples are tested in a remolded condition (90 percent relative compaction per ASTM D 1557) and soaked, to represent the worse case conditions expected in the field.

The results of the shear tests are presented in the following table:

DIRECT SHEAR TEST				
Sample Number	**Sample Depth (feet)**	**Soil Description (U.S.G.S.)**	**Angle of Internal Friction (degrees)**	**Apparent Cohesion (psf)**
RV-1	0-4.5	(SM) Silty Sand	250	34

Sieve Analysis

A quantitative determination of the grain size distribution was performed for selected samples in accordance with the ASTM D 422 laboratory test procedure. The determination is performed by passing the soil through a series of sieves, and recording the weights of retained particles on each screen. The results of the sieve analyses are presented graphically on Enclosure 3.

Sand Equivalent

The sand equivalent of selected soils were evaluated using the California Sand Equivalent Test Method, Caltrans Number 217. The results of the sand equivalent tests are presented with the grain size distribution analyses on Enclosure 3.

R-Value Test

Soil samples were obtained at probable pavement subgrade level and sieve analysis and sand equivalent tests were conducted. A selected soil sample was tested to determine its R-value using the California R-Value Test Method, Caltrans Number 301. The results of the sieve analysis, sand equivalent, and R-value tests are presented on Enclosure 3.

Expansion Index Test

Remolded samples are tested to determine their expansion potential in accordance with the Expansion Index (EI) test. The test is performed in accordance with the Uniform Building Code Standard 18-2. The test results are presented in the following table:

EXPANSION INDEX TEST				
Sample Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Expansion Index (EI)**	**Expansion Potential**
RV-1	0-4.5	(SM) Silty Sand	2	Very Low

Soluble Sulfate Content Tests

The soluble sulfate content of selected subgrade soils were evaluated. The concentration of soluble sulfates in the soils was determined by measuring the optical density of a barium sulfate precipitate. The precipitate results from a reaction of barium chloride with water extractions from the soil samples. The measured optical density is correlated with readings on precipitates of known sulfate concentrations. The test results are presented on the following table:

SOLUBLE SULFATE CONTENT TESTS			
Sample No.	**Sample Depth (feet)**	**Soil Description (U.S.G.S.)**	**Sulfate Content (percent by weight)**
RV-1	0-4.5	(SM) Silty Sand	< 0.005
RV-2	0-3.5	(SM) Silty Sand	< 0.005

CONCLUSIONS

The materials encountered during this investigation were observed to be relatively granular and tested and found to have a very low expansion potential. Therefore, specialized construction procedures to specifically resist expansive soil activity are not anticipated at this time. In order to verify this, additional evaluation of the imported soils for their expansion potential should be conducted following completion of the grading operation.

The results of the soluble sulfate content tests conducted on the import soils expected to be encountered at foundation levels indicates that the sulfate exposure of import soils is considered negligible by the CBC. Therefore, no specific recommendations are given for concrete elements to be in contact with import soils. In order to verify this, additional evaluation of the imported soils for their soluble sulfate content should be conducted following completion of the grading operation.

Shear testing of the import soils expected to be encountered at foundation levels resulted in very similar shear strength properties as the previously reported on-site soils used for preliminary design (LOR, 2016).

Based on the results of our geotechnical laboratory testing and the previous results of our geotechnical laboratory testing (LOR, 2016), the proposed import materials generally possess similar geotechnical properties utilized in the previous foundation design values and grading recommendations provided, with exception to R-value strength. Therefore, the use of the proposed import materials is considered feasible from a geotechnical standpoint provided the recommendations contained within and those previously provided are adhered to. Provisions will be required with respect to the lower R-value strength.

RECOMMENDATIONS

The proposed import materials may be used for foundation and subgrade soils for the proposed multi-family residential development previously reported by this firm (LOR, 2016). With exception to pavement design, the conclusions and recommendations contained within our previous report for site development remain applicable due to the similar geotechnical properties of the import soils and the on-site soils used for design.

Due to the lower R-value quality of the import soils, the following pavement section is recommended based on the Caltrans Highway Design Manual and Guide for Design and Construction of Concrete Parking Lots:

T.I.	TYPE OF TRAFFIC	DESIGN R-VALUE	PRELIMINARY SECTION
5	Light Vehicle and Incidental Truck Traffic	15	0.25' AC/0.65' AB or 0.50' JPCP/0.50' AB
AC - Asphalt Concrete AB - Class 2 Aggregate Base JPCP - Jointed Plain Concrete Pavement with MR ≥ 625 psi			

The above structural sections are predicated upon 90 percent relative compaction (ASTM 1557) of all utility trench backfills and 95 percent relative compaction (ASTM 1557) of the upper 12 inches of street subgrade soils and of any aggregate base utilized. In addition, the aggregate base should meet Caltrans specifications for Class 2 Aggregate Base.

In areas of the pavement which will receive high abrasion loads due to start-ups and stops, or where trucks will move on a tight turning radius, consideration should be given to installing concrete pads. Such pads should be a minimum of 0.5 foot thick concrete, with a 0.35 foot thick aggregate base. Concrete pads are also recommended in areas adjacent to trash storage areas where heavier loads will occur due to operation of trucks lifting trash dumpsters.

The recommended 0.50 feet thick portland cement concrete (PCC) pavement section should have a minimum modulus of rupture (MR) of 625 pounds per square inch (psi). Transverse joints should be sawcut in the pavement at approximately 12 to 15-foot intervals within 4 to 6 hours of concrete placement, or preferably sooner. Sawcut depth should be equal to approximately one quarter of slab thickness. Construction joints should be constructed such that adjacent sections butt directly against each other and are keyed into each other. Parallel pavement sections should also be keyed into each other.

It should be noted that all of the above pavement designs were based upon the results of preliminary sampling and testing, and should be verified by additional sampling and testing during construction when the actual subgrade soils are exposed.

Consideration may be given to select grade the existing on-site soils which were found to have a higher R-value quality and place such soils within pavement subgrade areas in order to reduce the sections above to those previously reported (LOR, 2016). Another alternative would be to find an alternate import source consisting of soils which contain an R-value quality of 50 or better.

CLOSURE

It has been a pleasure to assist you with this project. We look forward to being of further assistance to you as construction begins. Should conditions be encountered during construction that appear to be different than indicated by this report, please contact this office immediately so that we might evaluate their effect.

Should you have any questions regarding this report, please contact us.

Respectfully submitted,
LOR Geotechnical Group, Inc.

Andrew A. Tardie
Staff Geologist

John P. Leuer, GE 2030
President

AAT:JPL:ss

Distribution: Addressee (2) and PDF via email: jho@c-cdev.com

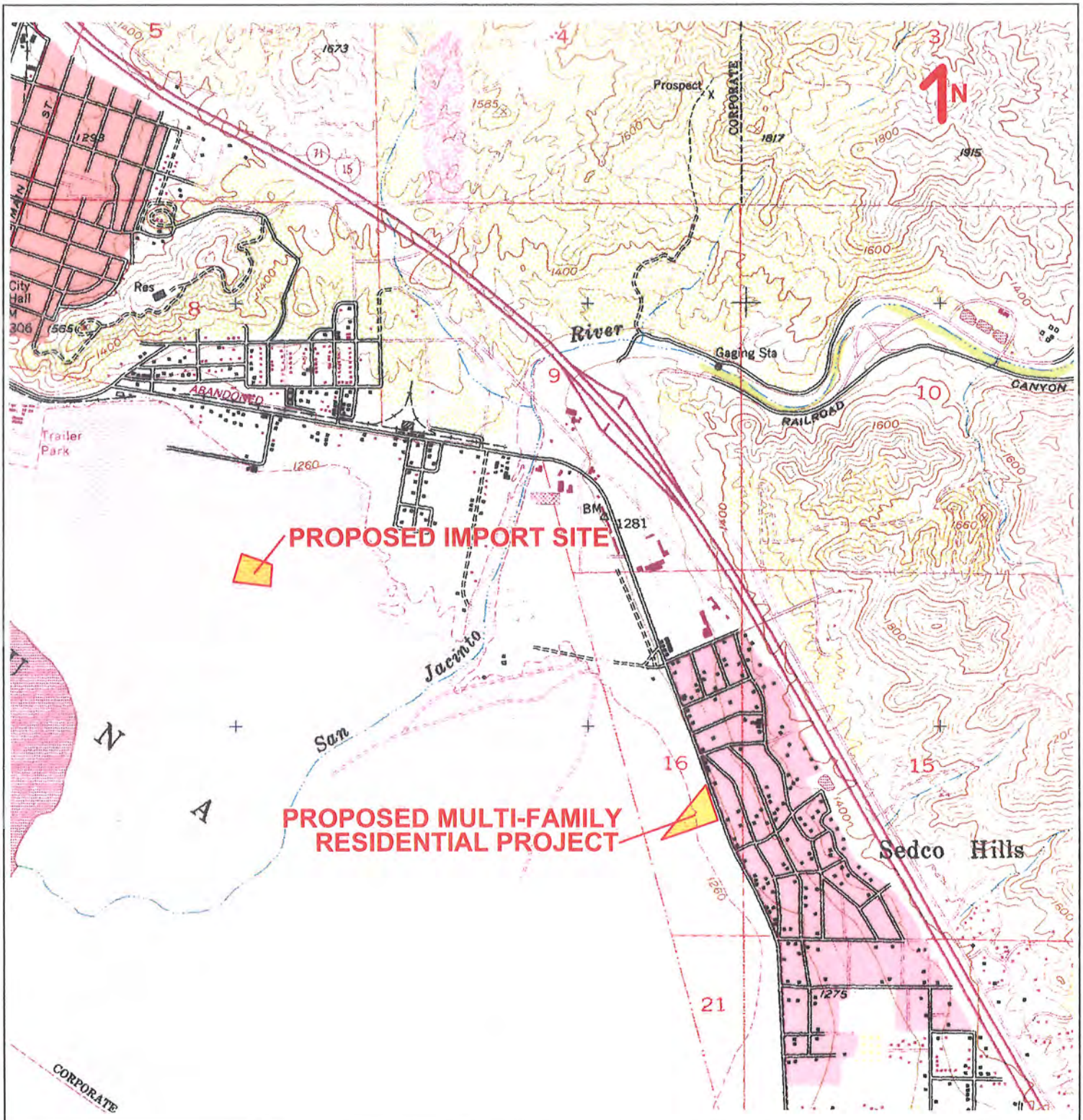
REFERENCES

American Concrete Institute, 2001, Guide for Design and Construction of Concrete Parking Lots, ACI 330R-01, dated October 10, 2001.

California Department of Transportation, 2006 and updates, Highway Design Manual, Sixth Edition.

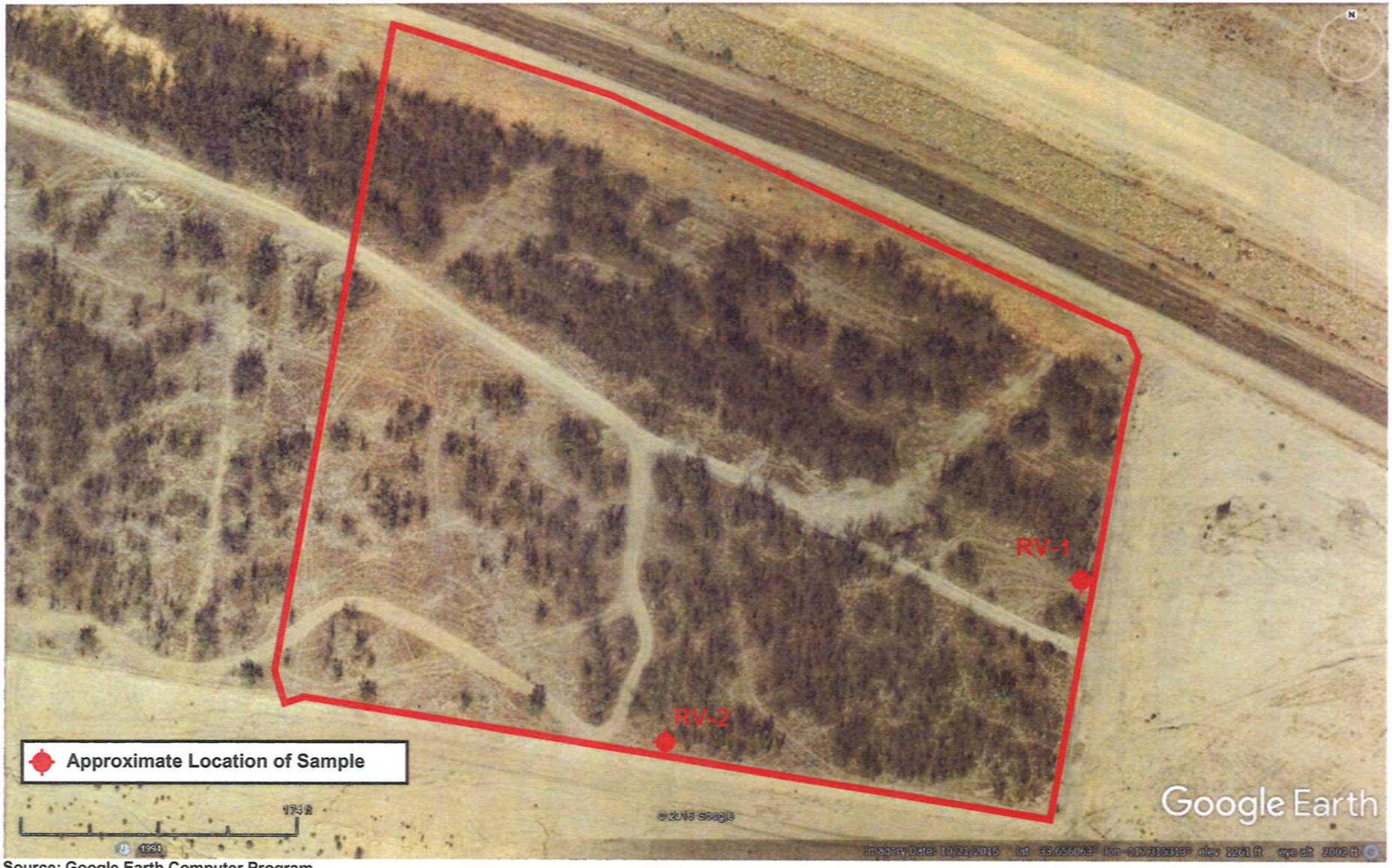
LOR Geotechnical Group, Inc., 2016, Preliminary Geotechnical and Infiltration Feasibility Investigation, Proposed Multi-Family Residential Development, APN 365-030-001, Lake Elsinore, California, Project No. 33310.1, dated December 20, 2016.

Morton, D.M. and H. Weber, Jr., 2013, Preliminary Geologic Map of the Elsinore 7.5' Quadrangle, Riverside County, California, United States Geological Survey Open-File Report OF-2003-281.



INDEX MAP

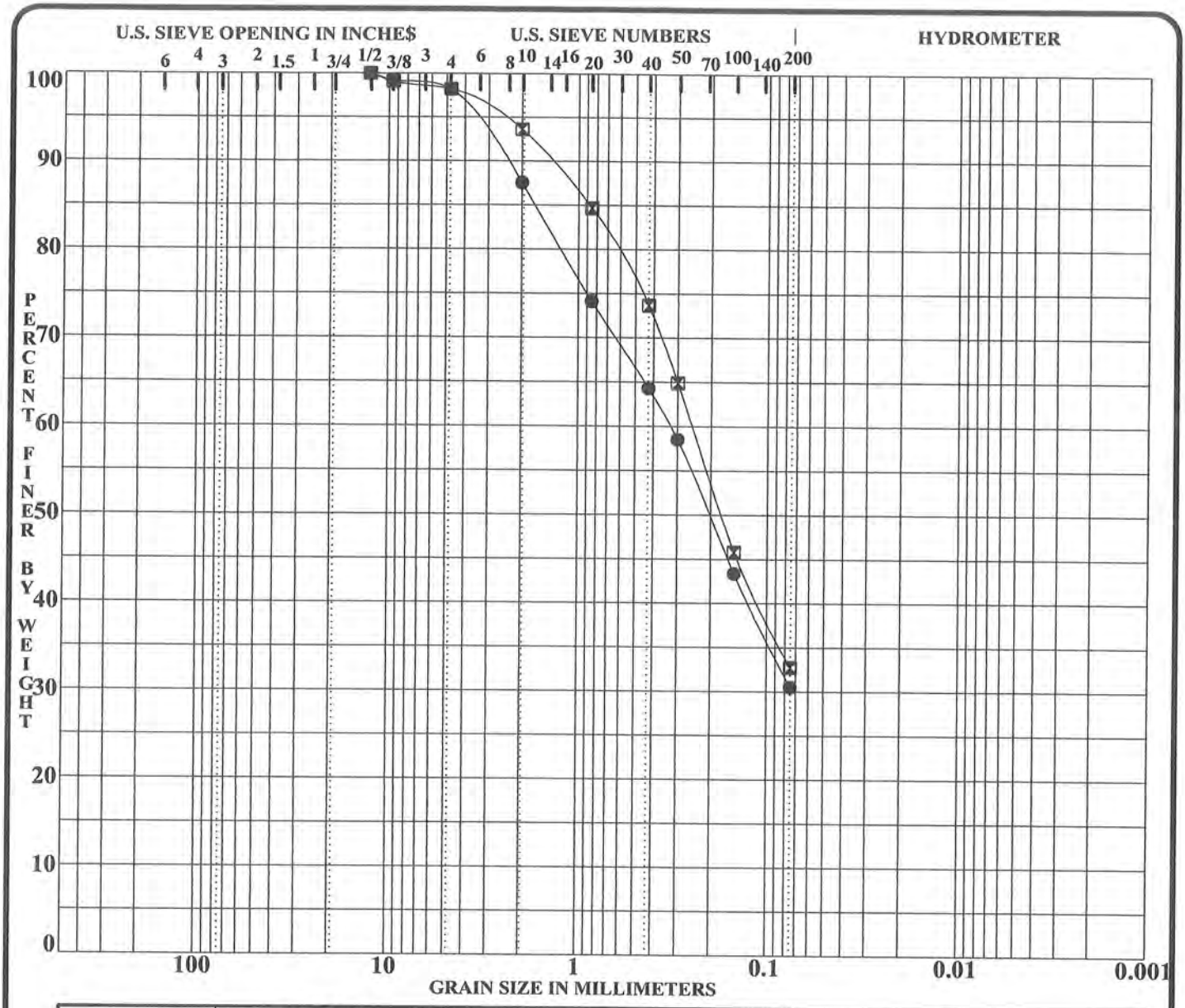
PROJECT: CITY OF LAKE ELSINORE PROPERTY, NEC MALAGA ROAD & LUCERNE STREET, LAKE ELSINORE, CA	PROJECT NO.: 33310.11
CLIENT: LAKE ELSINORE CCR, LLC	ENCLOSURE: 1
LOR Geotechnical Group, Inc.	DATE: MARCH 2017
	SCALE: 1"=2,000'



Source: Google Earth Computer Program

SAMPLE LOCATION MAP

PROJECT:	CITY OF LAKE ELSINORE PROPERTY, NEC MALAGA ROAD & LUCERNE STREET, LAKE ELSINORE, CA	PROJECT NO.:	33310.11
CLIENT:	LAKE ELSINORE CCR, LLC	ENCLOSURE:	2
LOR Geotechnical Group, Inc.		DATE:	MARCH 2017
		APPROX. SCALE:	1" = 90'



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Soil Classification	SE	RV	PL	PI	Cc	Cu
● RV-1	@ 0-4.5'	(SM) Silty Sand	13	--				
⊠ RV-2	@ 0-3.5'	(SM) Silty Sand	11	17				

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● RV-1	@ 0-4.5'	12.50	0.33			1.8	67.7	30.5	
⊠ RV-2	@ 0-3.5'	12.50	0.25			1.8	65.5	32.8	

PROJECT *City of Lake Elsinore Property*

PROJECT NO. *33310.11*

DATE *3/24/17*

GRADATION CURVES
LOR Geotechnical Group, Inc.

ENCLOSURE 3

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

ENVIRONMENTAL IMPORT MATERIALS EVALUATION
CITY OF LAKE ELSINORE PROPERTY
NEC MALAGA ROAD AND LUCERNE STREET
LAKE ELSINORE, CALIFORNIA

PROJECT NO. 33310.21
MARCH 22, 2017

Prepared For:

Lake Elsinore CCR, LLC
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Attention: Ms. Joanne Ho

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

March 22, 2017

Lake Elsinore CCR, LLC
14211 Yorba Street, Suite 200
Tustin, California 92780

Project No. 33310.21

Attention: Ms. Joanne Ho

Subject: Environmental Import Materials Evaluation, City of Lake Elsinore Property, NEC Malaga Road and Lucerne Street, Lake Elsinore, California

Attached herewith is the Environmental Import Materials Evaluation conducted by this firm for the City of Lake Elsinore Property (borrow site) located in Lake Elsinore, California.

This work was planned based upon a scope of services generally outlined in our Proposal, dated March 9, 2017, and in other written and verbal communications with your office.

We appreciate the opportunity to provide this environmental evaluation for the subject site. If you have any questions or comments regarding this report, please do not hesitate to contact this firm at your convenience.

LOR Geotechnical Group, Inc.

Table of Contents

1.0 INTRODUCTION

At the request of the client, LOR Geotechnical Group, Inc. (LOR) performed an environmental evaluation of import materials at the City of Lake Elsinore Property (subject site) located at the northeast corner of Malaga Road and Lucerne Street in Lake Elsinore, California. The subject site is approximately 4.13 acres of vacant land situated adjacent to the north and west of an existing borrow area and south of the terminus of the San Jacinto River into the lake (Lake Elsinore). Based on the planned usage of approximately 35,000 cubic yards (yd^3) of import materials, excavation at the subject site is estimated up to approximately 5.5 feet below ground surface (bgs). These import materials are planned for use as fill materials at the client's proposed multi-family residential development (apartments), Assessor's Parcel Number 365-030-001, located along Mission Trail in Lake Elsinore, California, approximately 1.3 miles east-southeast of the subject site. Based on historical aerial photographs of the subject site, the onsite soils are comprised of lake sediments that have been periodically inundated by the lake (Lake Elsinore). Our evaluation included analysis for contamination that may have the potential to make the import materials unsuitable for their intended use.

The locations of the subject site and offsite planned multi-family residential development are shown on a recent color aerial photograph, Enclosure A-1, provided within Appendix A.

The details of our environmental evaluation, as well as our findings and recommendations, are presented in the following sections of this report.

2.0 IMPORT MATERIALS EVALUATION

In order to perform the environmental evaluation of import materials at the subject site, the California Department of Toxic Substances Control (DTSC) Information Advisory: Clean Imported Fill Material (2001) was utilized as a guidance. An understanding of the history of the area from which import materials are borrowed is integral to the evaluation for potential environmental concerns. Based on aerial photographs reviewed online and using the Google Earth computer program, the subject site has been vacant land dating back to 1938, and was inundated by the lake (Lake Elsinore) in 1938 and 1980. A review of the United States Geological Survey

(USGS) geologic map for the quadrangle which includes the subject site indicates the site is underlain by very young lacustrine (lake) deposits. Based on the history of the subject site, it does not fall into a category designated in the DTSC guidance with specified sampling and analysis. However, taking a conservative approach, the import materials were sampled and analyzed for common contaminants: heavy metals and extractable hydrocarbons (diesel- to oil-range).

2.1 Soil Sampling and Procedures

Based on the DTSC guidance for clean imported fill material and size of the subject site, a minimum of eight samples is recommended. Three boring locations (B-1 through B-3) were advanced across the site, with sample depths at 1, 3, and 5 feet bgs. A total of nine soil samples was collected. The locations of the soil borings are shown on a recent color aerial photograph, Enclosure A-2, provided within Appendix A.

The soils encountered were predominantly slightly moist to moist silty sands with minor sands and varying amounts of gravel. No evidence of soil contamination was noted, such as staining or odors, during sampling.

Hand auger equipment was used to advance the soil borings and collect soil samples. The hand auger equipment was decontaminated between soil borings with a wash in non-phosphate detergent (Liquinox® and Citranox®) and two rinses in clean tap water. Soil samples were collected directly into clean, laboratory-supplied glass jars (4-ounce) with a Teflon™-lined screw cap. The samples were placed in an ice chest with ice for transport to the laboratory. The samples were transported under Chain-of-Custody (CoC) to A & R Laboratories, Inc. (ARL), a state-certified hazardous waste testing laboratory located in Ontario, California.

All field work was documented in the following manner. The sample labels were filled out with the sample number, location, depth, and the date and time of sampling. Upon delivery of the samples to ARL for analysis, the CoC form was signed by authorized laboratory personnel, and a copy was retained by LOR. Other documentation included field notes and a color aerial photograph with marked soil boring locations.

The quality assurance/quality control (QA/QC) program in effect during the performance of all field activities included the following items:

- Complete documentation of all field activities.
- Use of appropriate CoC forms.
- Use of clean sampling equipment.
- Sampling according to generally accepted protocols.

2.2 Laboratory Analytical Results

All nine soil samples collected were analyzed by ARL for California Title 22 total heavy metals using United States Environmental Protection Agency (USEPA) Methods 6010B and 7471A and extractable petroleum hydrocarbons (total petroleum hydrocarbons, fuel screen [TPH-FS]), diesel- to oil-range hydrocarbons, using USEPA Method 8015B.

The following table summarizes the soil sample laboratory analytical results:

SUMMARY TABLE OF SOIL SAMPLE ANALYTICAL RESULTS

Sample ID	Date	Depth (ft)	Total Metals (mg/kg)	TPH-FS (mg/kg)
B-1-1	03-14-17	1	As - 3.58, Ba - 124, Cr - 19.0, Co -6.96, Cu - 16.2, Pb - 1.55, Ni - 7.63, V - 77.5, Zn - 38.0	ND
B-1-3	03-14-17	3	Ba - 86.5, Cr - 13.9, Co - 5.32, Cu - 8.91, Pb - 1.26, Ni - 5.16, V - 48.5, Zn - 26.5	ND
B-1-5	03-14-17	5	As - 3.08, Ba - 96.4, Cr - 22.6, Co - 7.82, Cu - 14.7, Pb - 1.36, Ni - 8.09, V - 77.2, Zn - 42.3	ND
B-2-1	03-14-17	1	As - 1.73, Ba - 79.9, Cr - 13.7, Co - 4.39, Cu - 9.58, Pb - 1.96, Ni - 5.33, V - 41.8, Zn - 26.5	ND
B-2-3	03-14-17	3	As - 4.11, Ba - 148, Be - 0.503, Cr - 23.1, Co - 8.02, Cu - 17.8, Pb - 2.26, Mo - 1.15, Ni - 9.08, V - 79.2, Zn - 47.7	ND
B-2-5	03-14-17	5	As - 3.24, Ba - 96.7, Cr - 19.4, Co - 6.37, Cu - 14.9, Pb - 2.37, Ni - 7.51, V - 62.1, Zn - 37.0	ND
B-3-1	03-14-17	1	Ba - 65.5, Cr - 11.9, Co - 4.01, Cu - 7.61, Pb - 1.11, Ni - 5.11, V - 38.6, Zn - 22.1	ND
B-3-3	03-14-17	3	As - 3.06, Ba - 91.7, Cr - 19.0, Co - 7.08, Cu - 14.6, Pb - 1.93, Mo - 5.24, Ni - 8.54, V - 59.1, Zn - 39.5	ND
B-3-5	03-14-17	5	Ba - 30.9, Cr - 12.7, Co - 2.47, Cu - 5.30, Pb - 1.20, Ni - 3.25, V - 24.0, Zn - 15.0	ND

ID = identification
ft = feet
mg/kg - milligrams per kilogram (parts per million)
TPH-FS = total petroleum hydrocarbons, fuel screen (diesel- to oil-range hydrocarbons)
As = arsenic; Ba = barium; Be = beryllium; Cr = chromium; Co = cobalt; Cu = copper; Pb = lead; Mo = molybdenum; Ni = nickel; V = vanadium; Zn = zinc
ND = not detected

In the nine soil samples analyzed, the concentrations of the total heavy metals arsenic, barium, beryllium, chromium, cobalt, copper, lead, molybdenum, nickel, vanadium, and zinc were reported up to 4.11 milligrams per kilogram (mg/kg), 148 mg/kg, 0.503 mg/kg, 23.1 mg/kg, 8.02 mg/kg, 17.8 mg/kg, 2.37 mg/kg, 5.24 mg/kg, 9.08 mg/kg, 79.2 mg/kg, and 47.7 mg/kg, respectively.

There were no reportable concentrations of TPH-FS at the laboratory reporting limits of 10 mg/kg for diesel-range hydrocarbons and 20 mg/kg for oil-range hydrocarbons in all nine soil samples analyzed.

The ARL laboratory analytical report for the soil samples is provided in Appendix B.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The import materials at the subject site are lake sediments with no development history and periodic inundation by the lake (Lake Elsinore). The soil samples collected from these materials had no reportable concentrations of extractable hydrocarbons (diesel- to oil-range). The reported concentrations of total heavy metals are consistent with expected background levels. Relatively minor fluctuations of the metals concentrations were reported, which are likely due to variations in the parent materials of the lake sediments. The reported total heavy metals concentrations are less than the California Regional Water Quality Control Board, San Francisco Bay Region Environmental Screening Levels (ESLs) for residential soils, except for arsenic. Arsenic, and other metals such as chromium, beryllium, cadmium, etc., at background levels can exceed regulatory agency soil screening levels, including the ESLs. Regulatory agencies generally do not require cleanup of soil to below background levels. The nine soil samples collected at the subject site had total arsenic concentrations reported from non-detect at 1.00 mg/kg to 4.11 mg/kg. The background levels of arsenic in California have been measured within the range from 0.6 to 11.0 mg/kg (Bradford et al., 1996). The reported onsite total arsenic concentrations fall within the expected background range.

From an environmental standpoint, the proposed onsite import materials for the client's proposed offsite multi-family residential development are suitable for their intended use as fill material. No further sampling and analysis of the import materials at the subject site is recommended.

4.0 LIMITATIONS

This report was prepared solely for the use and benefit of LOR's client, Lake Elsinore CCR, LLC and their designates. They may release this information to third parties, who may use and rely upon this information at their discretion. However, any use of or

reliance upon this information by a party other than Lake Elsinore CCR, LLC and their designates, shall be solely at the risk of such third party and without legal recourse against LOR Geotechnical Group, Inc.; its subsidiaries and affiliates; or their respective employees, officers, or directors; regardless of whether the action in which recovery of damages is sought is based upon contract, statute, or otherwise. This information shall not be used or relied upon by a party which does not agree to be bound by the above statement.

The content and conclusions provided by LOR in this assessment are based on information collected during our investigation, which may include, but is not limited to, visual site inspections, interviews with the site owner, regulatory agencies and other pertinent individuals, a review of available public documents, subsurface exploration and laboratory testing of soil samples, and our professional judgement based on said information at the time of preparation of this document. Any subsurface samples results and observations presented herein are considered to be representative of the area of investigation; however, soil conditions may vary between sample locations and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which may vary from these findings, the newly-revealed conditions must be evaluated and may invalidate the conclusions of this report.

This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. LOR Geotechnical Group, Inc. (LOR) is not responsible for the accuracy of information provided by other individuals or entities which is used in this report. This report presents our professional judgement based upon data and findings identified in this report, and the interpretation of such data based upon our experience and background, and no warranty, either expressed or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

5.0 TIME LIMITATIONS

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they be due to natural processes or the work of man on this or adjacent properties. In addition,

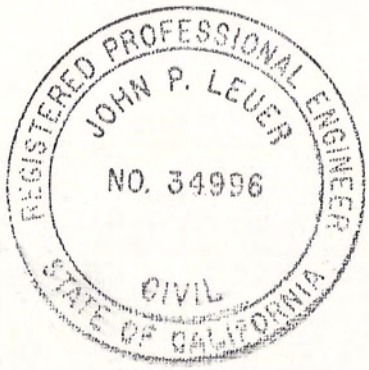
changes in the Standards-of-Practice and/or Governmental Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a significant amount of time without a review by LOR Geotechnical Group, Inc., verifying the suitability of the conclusions and recommendations.

6.0 CLOSURE

We trust this report provides the desired information at this time. If you have any questions or comments regarding this evaluation, please do not hesitate to contact this firm at your convenience.

Respectfully submitted,
LOR Geotechnical Group, Inc.

Mathew L. Hunt
Environmental Scientist



John P. Leuer, CE 34996
President

MLH:JPL:ss

Distribution: Addressee (2) and PDF via email: jho@c-cdev.com

7.0 REFERENCES

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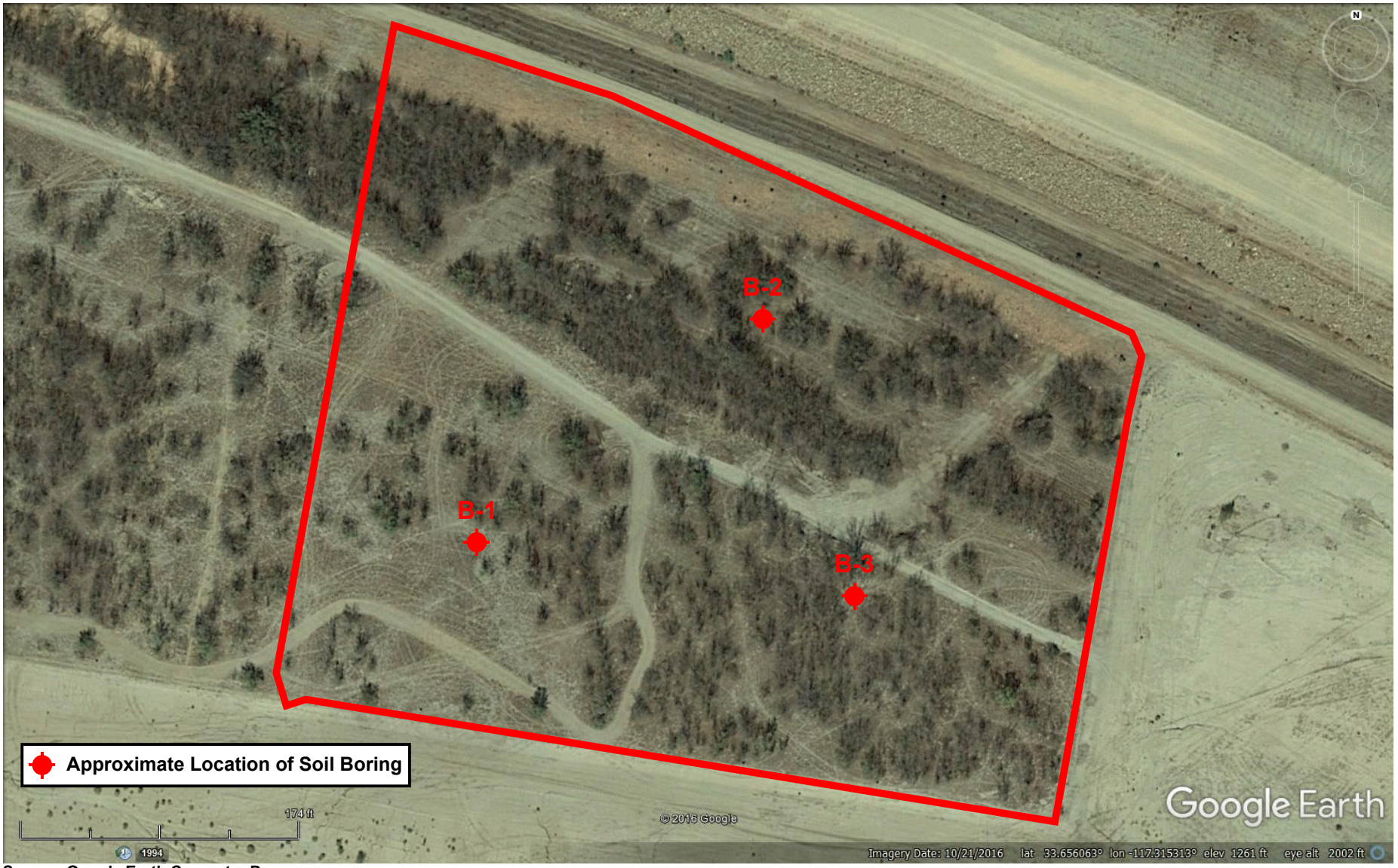
APPENDIX A

Recent Color Aerial Photograph and Recent Color Aerial Photograph with Soil Boring Locations

Source: Google Earth Computer Program

RECENT COLOR AERIAL PHOTOGRAPH

PROJECT:	CITY OF LAKE ELSINORE PROPERTY, NEC MALAGA ROAD & LUCERNE STREET, LAKE ELSINORE, CA	PROJECT NO.:	33310.21
CLIENT:	LAKE ELSINORE CCR, LLC	ENCLOSURE:	A-1
LOR Geotechnical Group, Inc.		DATE:	MARCH 2017
		APPROX. SCALE:	1" = 1,300'



Source: Google Earth Computer Program

RECENT COLOR AERIAL PHOTOGRAPH WITH SOIL BORING LOCATIONS

PROJECT:	CITY OF LAKE ELSINORE PROPERTY, NEC MALAGA ROAD & LUCERNE STREET, LAKE ELSINORE, CA	PROJECT NO.:	33310.21
CLIENT:	LAKE ELSINORE CCR, LLC	ENCLOSURE:	A-2
LOR Geotechnical Group, Inc.		DATE:	MARCH 2017
		APPROX. SCALE:	1" = 90'

APPENDIX B

Laboratory Analytical Report for Soil Samples

A & R Laboratories
Formerly Microbac Southern California
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951-779-0310 FAX 951-779-0344
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FDA#	2030513
LA City#	10261
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CASE NARRATIVE

Authorized Signature Name / Title (print)	Ken Zheng, President
Signature / Date	Ken Zheng, President 03/21/2017 19:05:48
Laboratory Job No. (Certificate of Analysis No.)	1703-00124
Project Name / No.	LAKE ELSINORE BORROW SITE 33310.21
Dates Sampled (from/to)	03/14/17 To 03/14/17
Dates Received (from/to)	03/14/17 To 03/14/17
Dates Reported (from/to)	03/21/17 To 3/21/2017
Chains of Custody Received	Yes

Comments:

Subcontracting

Organic Analyses

No analyses sub-contracted

Inorganic Analyses

No analyses sub-contracted

Sample Condition(s)

All samples intact

Positive Results (Organic Compounds)

Sample	Analyte	Result	Qual	Units	RL	Sample	Analyte	Result	Qual	Units	RL

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CERTIFICATE OF ANALYSIS

1703-00124

LOR GEOTECHNICAL GROUP, INC.
MATHEW HUNT
6121 QUAIL VALLEY COURT
RIVERSIDE, CA 92507

Date Reported	03/21/17
Date Received	03/14/17
Invoice No.	78784
Cust #	1422
Permit Number	
Customer P.O.	33310.21

Project: LAKE ELSINORE BORROW SITE

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 001 **B-1-1**					Date & Time Sampled:		03/14/17 @ 10:50	
Sample Matrix: **Soil**								
[Extractable Hydrocarbons]								
Extraction	Complete			EPA 3550B	1.0		03/15/17	AR
Diesel	<10		mg/Kg	EPA 8015B	1.0	10	03/15/17	AR
Motor Oil	<20		mg/Kg	EPA 8015B	1.0	20	03/15/17	AR
[Surrogate]								
o-Terphenyl (OTP)	72		%REC	EPA 8015B		50-150	03/15/17	AR
[Metals Title 22 no Hg]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		03/15/17	TLB
Antimony	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Arsenic	**3.58**		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Barium	**124**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Beryllium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cadmium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Chromium	**19.0**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cobalt	**6.96**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Copper	**16.2**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Lead	**1.55**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Molybdenum	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Nickel	**7.63**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Selenium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Silver	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Thallium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Vanadium	**77.5**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Zinc	**38.0**		mg/Kg	EPA 6010B	1.0	5.00	03/15/17	TLB
[Mercury]								
Mercury Digestion	Complete			EPA 7471A	1.0		03/16/17	KZ
Mercury	<0.20		mg/Kg	EPA 7471A	1.0	0.20	03/16/17	KZ
Sample: 002 **B-1-3**					Date & Time Sampled:		03/14/17 @ 10:57	
Sample Matrix: **Soil**								
[Extractable Hydrocarbons]								
Extraction	Complete			EPA 3550B	1.0		03/15/17	AR
Diesel	<10		mg/Kg	EPA 8015B	1.0	10	03/15/17	AR

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CERTIFICATE OF ANALYSIS

1703-00124

LOR GEOTECHNICAL GROUP, INC.
MATHEW HUNT
6121 QUAIL VALLEY COURT
RIVERSIDE, CA 92507

Date Reported	03/21/17
Date Received	03/14/17
Invoice No.	78784
Cust #	1422
Permit Number	
Customer P.O.	33310.21

Project: LAKE ELSINORE BORROW SITE

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 002 **B-1-3**					Date & Time Sampled:		03/14/17 @ 10:57	
Sample Matrix: **Soil**								
.....continued								
Motor Oil	<20		mg/Kg	EPA 8015B	1.0	20	03/15/17	AR
[Surrogate]								
o-Terphenyl (OTP)	85		%REC	EPA 8015B		50-150	03/15/17	AR
[Metals Title 22 no Hg]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		03/15/17	TLB
Antimony	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Arsenic	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Barium	**86.5**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Beryllium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cadmium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Chromium	**13.9**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cobalt	**5.32**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Copper	**8.91**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Lead	**1.26**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Molybdenum	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Nickel	**5.16**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Selenium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Silver	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Thallium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Vanadium	**48.5**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Zinc	**26.5**		mg/Kg	EPA 6010B	1.0	5.00	03/15/17	TLB
[Mercury]								
Mercury Digestion	Complete			EPA 7471A	1.0		03/16/17	KZ
Mercury	<0.20		mg/Kg	EPA 7471A	1.0	0.20	03/16/17	KZ
Sample: 003 **B-1-5**					Date & Time Sampled:		03/14/17 @ 11:09	
Sample Matrix: **Soil**								
[Extractable Hydrocarbons]								
Extraction	Complete			EPA 3550B	1.0		03/15/17	AR
Diesel	<10		mg/Kg	EPA 8015B	1.0	10	03/15/17	AR
Motor Oil	<20		mg/Kg	EPA 8015B	1.0	20	03/15/17	AR
[Surrogate]								

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Project: LAKE ELSINORE BORROW SITE

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 003 **B-1-5**					Date & Time Sampled:		03/14/17 @ 11:09	
Sample Matrix: **Soil**								
.....continued								
o-Terphenyl (OTP)	89		%REC	EPA 8015B		50-150	03/15/17	AR
[Metals Title 22 no Hg]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		03/15/17	TLB
Antimony	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Arsenic	**3.08**		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Barium	**96.4**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Beryllium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cadmium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Chromium	**22.6**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cobalt	**7.82**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Copper	**14.7**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Lead	**1.36**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Molybdenum	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Nickel	**8.09**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Selenium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Silver	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Thallium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Vanadium	**77.2**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Zinc	**42.3**		mg/Kg	EPA 6010B	1.0	5.00	03/15/17	TLB
[Mercury]								
Mercury Digestion	Complete			EPA 7471A	1.0		03/16/17	KZ
Mercury	<0.20		mg/Kg	EPA 7471A	1.0	0.20	03/16/17	KZ
Sample: 004 **B-2-1**					Date & Time Sampled:		03/14/17 @ 11:35	
Sample Matrix: **Soil**								
[Extractable Hydrocarbons]								
Extraction	Complete			EPA 3550B	1.0		03/15/17	AR
Diesel	<10		mg/Kg	EPA 8015B	1.0	10	03/15/17	AR
Motor Oil	<20		mg/Kg	EPA 8015B	1.0	20	03/15/17	AR
[Surrogate]								
o-Terphenyl (OTP)	77		%REC	EPA 8015B		50-150	03/15/17	AR
[Metals Title 22 no Hg]								

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Project: LAKE ELSINORE BORROW SITE

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 004 **B-2-1**					Date & Time Sampled:		03/14/17 @ 11:35	
Sample Matrix: **Soil**								
.....continued								
Metals Acid Digestion	Complete			EPA 3050B	1.0		03/15/17	TLB
Antimony	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Arsenic	**1.73**		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Barium	**79.9**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Beryllium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cadmium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Chromium	**13.7**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cobalt	**4.39**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Copper	**9.58**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Lead	**1.96**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Molybdenum	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Nickel	**5.33**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Selenium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Silver	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Thallium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Vanadium	**41.8**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Zinc	**26.5**		mg/Kg	EPA 6010B	1.0	5.00	03/15/17	TLB
[Mercury]								
Mercury Digestion	Complete			EPA 7471A	1.0		03/16/17	KZ
Mercury	<0.20		mg/Kg	EPA 7471A	1.0	0.20	03/16/17	KZ
Sample: 005 **B-2-3**					Date & Time Sampled:		03/14/17 @ 11:45	
Sample Matrix: **Soil**								
[Extractable Hydrocarbons]								
Extraction	Complete			EPA 3550B	1.0		03/15/17	AR
Diesel	<10		mg/Kg	EPA 8015B	1.0	10	03/15/17	AR
Motor Oil	<20		mg/Kg	EPA 8015B	1.0	20	03/15/17	AR
[Surrogate]								
o-Terphenyl (OTP)	76		%REC	EPA 8015B		50-150	03/15/17	AR
[Metals Title 22 no Hg]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		03/15/17	TLB
Antimony	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB

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Customer P.O.	33310.21

Project: LAKE ELSINORE BORROW SITE

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 005 **B-2-3**					Date & Time Sampled:		03/14/17 @ 11:45	
Sample Matrix: **Soil**								
.....continued								
Arsenic	**4.11**		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Barium	**148**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Beryllium	**0.503**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cadmium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Chromium	**23.1**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cobalt	**8.02**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Copper	**17.8**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Lead	**2.26**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Molybdenum	**1.15**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Nickel	**9.08**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Selenium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Silver	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Thallium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Vanadium	**79.2**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Zinc	**47.7**		mg/Kg	EPA 6010B	1.0	5.00	03/15/17	TLB
[Mercury]								
Mercury Digestion	Complete			EPA 7471A	1.0		03/16/17	KZ
Mercury	<0.20		mg/Kg	EPA 7471A	1.0	0.20	03/16/17	KZ
Sample: 006 **B-2-5**					Date & Time Sampled:		03/14/17 @ 11:51	
Sample Matrix: **Soil**								
[Extractable Hydrocarbons]								
Extraction	Complete			EPA 3550B	1.0		03/15/17	AR
Diesel	<10		mg/Kg	EPA 8015B	1.0	10	03/15/17	AR
Motor Oil	<20		mg/Kg	EPA 8015B	1.0	20	03/15/17	AR
[Surrogate]								
o-Terphenyl (OTP)	76		%REC	EPA 8015B		50-150	03/15/17	AR
[Metals Title 22 no Hg]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		03/15/17	TLB
Antimony	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Arsenic	**3.24**		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Barium	**96.7**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB

A R L

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Cust #	1422
Permit Number	
Customer P.O.	33310.21

Project: LAKE ELSINORE BORROW SITE

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 006 **B-2-5**					Date & Time Sampled:		03/14/17 @ 11:51	
Sample Matrix: **Soil**								
.....continued								
Beryllium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cadmium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Chromium	**19.4**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cobalt	**6.37**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Copper	**14.9**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Lead	**2.37**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Molybdenum	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Nickel	**7.51**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Selenium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Silver	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Thallium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Vanadium	**62.1**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Zinc	**37.0**		mg/Kg	EPA 6010B	1.0	5.00	03/15/17	TLB
[Mercury]								
Mercury Digestion	Complete			EPA 7471A	1.0		03/16/17	KZ
Mercury	<0.20		mg/Kg	EPA 7471A	1.0	0.20	03/16/17	KZ
Sample: 007 **B-3-1**					Date & Time Sampled:		03/14/17 @ 12:09	
Sample Matrix: **Soil**								
[Extractable Hydrocarbons]								
Extraction	Complete			EPA 3550B	1.0		03/15/17	AR
Diesel	<10		mg/Kg	EPA 8015B	1.0	10	03/15/17	AR
Motor Oil	<20		mg/Kg	EPA 8015B	1.0	20	03/15/17	AR
[Surrogate]								
o-Terphenyl (OTP)	82		%REC	EPA 8015B		50-150	03/15/17	AR
[Metals Title 22 no Hg]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		03/15/17	TLB
Antimony	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Arsenic	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Barium	**65.5**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Beryllium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cadmium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB

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LA City#	10261
ELAP#'s	2789
	2790
	2122

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CERTIFICATE OF ANALYSIS

1703-00124

LOR GEOTECHNICAL GROUP, INC.
MATHEW HUNT
6121 QUAIL VALLEY COURT
RIVERSIDE, CA 92507

Date Reported	03/21/17
Date Received	03/14/17
Invoice No.	78784
Cust #	1422
Permit Number	
Customer P.O.	33310.21

Project: LAKE ELSINORE BORROW SITE

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 007 **B-3-1**					Date & Time Sampled:		03/14/17 @ 12:09	
Sample Matrix: **Soil**								
.....continued								
Chromium	**11.9**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cobalt	**4.01**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Copper	**7.61**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Lead	**1.11**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Molybdenum	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Nickel	**5.11**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Selenium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Silver	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Thallium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Vanadium	**38.6**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Zinc	**22.1**		mg/Kg	EPA 6010B	1.0	5.00	03/15/17	TLB
[Mercury]								
Mercury Digestion	Complete			EPA 7471A	1.0		03/16/17	KZ
Mercury	<0.20		mg/Kg	EPA 7471A	1.0	0.20	03/16/17	KZ
Sample: 008 **B-3-3**					Date & Time Sampled:		03/14/17 @ 12:16	
Sample Matrix: **Soil**								
[Extractable Hydrocarbons]								
Extraction	Complete			EPA 3550B	1.0		03/15/17	AR
Diesel	<10		mg/Kg	EPA 8015B	1.0	10	03/15/17	AR
Motor Oil	<20		mg/Kg	EPA 8015B	1.0	20	03/15/17	AR
[Surrogate]								
o-Terphenyl (OTP)	85		%REC	EPA 8015B		50-150	03/15/17	AR
[Metals Title 22 no Hg]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		03/15/17	TLB
Antimony	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Arsenic	**3.06**		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Barium	**91.7**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Beryllium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cadmium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Chromium	**19.0**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cobalt	**7.08**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB

A R L

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CERTIFICATE OF ANALYSIS

1703-00124

LOR GEOTECHNICAL GROUP, INC.
MATHEW HUNT
6121 QUAIL VALLEY COURT
RIVERSIDE, CA 92507

Date Reported	03/21/17
Date Received	03/14/17
Invoice No.	78784
Cust #	1422
Permit Number	
Customer P.O.	33310.21

Project: LAKE ELSINORE BORROW SITE

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 008 **B-3-3**					Date & Time Sampled:		03/14/17 @ 12:16	
Sample Matrix: **Soil**								
.....continued								
Copper	**14.6**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Lead	**1.93**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Molybdenum	**5.24**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Nickel	**8.54**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Selenium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Silver	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Thallium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Vanadium	**59.1**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Zinc	**39.5**		mg/Kg	EPA 6010B	1.0	5.00	03/15/17	TLB
[Mercury]								
Mercury Digestion	Complete			EPA 7471A	1.0		03/16/17	KZ
Mercury	<0.20		mg/Kg	EPA 7471A	1.0	0.20	03/16/17	KZ
Sample: 009 **B-3-5**					Date & Time Sampled:		03/14/17 @ 12:25	
Sample Matrix: **Soil**								
[Extractable Hydrocarbons]								
Extraction	Complete			EPA 3550B	1.0		03/15/17	AR
Diesel	<10		mg/Kg	EPA 8015B	1.0	10	03/15/17	AR
Motor Oil	<20		mg/Kg	EPA 8015B	1.0	20	03/15/17	AR
[Surrogate]								
o-Terphenyl (OTP)	86		%REC	EPA 8015B		50-150	03/15/17	AR
[Metals Title 22 no Hg]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		03/15/17	TLB
Antimony	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Arsenic	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Barium	**30.9**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Beryllium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cadmium	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Chromium	**12.7**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Cobalt	**2.47**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Copper	**5.30**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Lead	**1.20**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB

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CERTIFICATE OF ANALYSIS

1703-00124

LOR GEOTECHNICAL GROUP, INC.
MATHEW HUNT
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Date Reported	03/21/17
Date Received	03/14/17
Invoice No.	78784
Cust #	1422
Permit Number	
Customer P.O.	33310.21

Project: LAKE ELSINORE BORROW SITE

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 009 **B-3-5**					Date & Time Sampled:		03/14/17 @ 12:25	
Sample Matrix: **Soil**								
.....continued								
Molybdenum	<0.500		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Nickel	**3.25**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Selenium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Silver	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Thallium	<1.00		mg/Kg	EPA 6010B	1.0	1.00	03/15/17	TLB
Vanadium	**24.0**		mg/Kg	EPA 6010B	1.0	0.500	03/15/17	TLB
Zinc	**15.0**		mg/Kg	EPA 6010B	1.0	5.00	03/15/17	TLB
[Mercury]								
Mercury Digestion	Complete			EPA 7471A	1.0		03/16/17	KZ
Mercury	<0.20		mg/Kg	EPA 7471A	1.0	0.20	03/16/17	KZ

Respectfully Submitted: Ken Zheng

Ken Zheng - Lab Director

QUALIFIERS

B = Detected in the associated Method Blank at a concentration above the routine RL.
B1 = BOD dilution water is over specifications . The reported result may be biased high.
D = Surrogate recoveries are not calculated due to sample dilution.
E = Estimated value; Value exceeds calibration level of instrument.
H = Analyte was prepared and/or analyzed outside of the analytical method holding time
I = Matrix Interference.
J = Analyte concentration detected between RL and MDL.
Q = One or more quality control criteria did not meet specifications. See Comments for further explanation.
S = Customer provided specification limit exceeded.

ABBREVIATIONS

DF = Dilution Factor
RL = Reporting Limit, Adjusted by DF
MDL = Method Detection Limit, Adjusted by DF
Qual = Qualifier
Tech = Technician

As regulatory limits change frequently, A & R Laboratories advises the recipient of this report to confirm such limits with the appropriate federal, state, or local authorities before acting in reliance on the regulatory limits provided.

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

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QUALITY CONTROL DATA REPORT

LOR GEOTECHNICAL GROUP, INC.
RIVERSIDE, CA 92507

1703-00124

Date Reported	**03/21/2017**
Date Received	**03/14/2017**
Date Sampled	**03/14/2017**
Invoice No.	**78784**
Customer #	**1422**
Customer P.O.	**33310.21**

Project: LAKE ELSINORE BORROW SITE

Method # EPA 6010B
QC Reference # 62817 **Date Analyzed:** 3/15/2017 **Technician:** TLB
Samples 001 002 003 004 005 006 007 008 009

Results

	LCS %REC	LCS %DUP	LCS %RPD
Antimony	100	101	0.5
Arsenic	95	96	0.4
Barium	99	99	0.0
Beryllium	99	98	1.2
Cadmium	100	100	0.4
Chromium	99	99	0.4
Cobalt	100	98	1.3
Copper	101	101	0.1
Lead	98	100	2.5
Molybdenum	104	101	2.9
Nickel	101	99	1.4
Selenium	106	107	0.5
Silver	98	99	0.7
Thallium	106	108	1.1
Vanadium	98	98	0.6
Zinc	101	100	0.7

Control Ranges

LCS %REC	LCS %RPD
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20
75 - 125	0 - 20

Method # EPA 7471A
QC Reference # 62861 **Date Analyzed:** 3/16/2017 **Technician:** KZ
Samples 001 002 003 004 005 006 007 008 009

Results

	LCS %REC	LCS %DUP	LCS %RPD	SPIKE %REC	SPIKE %DUP	SPIKE %RPD
Mercury	101	98	3	85	89	5

Control Ranges

LCS %REC	LCS %RPD	SPIKE %RPD
75 - 125	0 - 25	0 - 25

Method # EPA 8015B
QC Reference # 62841 **Date Analyzed:** 3/15/2017 **Technician:** AR
Samples 001 002 003 004 005 006 007 008 009

Results

	LCS %REC	LCS %DUP	LCS %RPD	SPIKE %REC	SPIKE %DUP	SPIKE %RPD
Motor Oil	91	96	5	91	85	5
Diesel	90	98	8	95	89	5

Control Ranges

LCS %REC	LCS %RPD	SPIKE %RPD
70 - 130	0 - 25	0 - 25
70 - 130	0 - 25	0 - 25

No method blank results were above reporting limit

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QUALITY CONTROL DATA REPORT

1703-00124

LOR GEOTECHNICAL GROUP, INC.

Date Reported	**03/21/2017**
Date Received	**03/14/2017**
Date Sampled	**03/14/2017**

Project: LAKE ELSINORE BORROW SITE

Respectfully Submitted: Ken Zheng

Ken Zheng - President

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

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CHAIN OF CUSTODY

A & R Work Order #: 1703-00124

Page 1 of 1

Client Name: LOR Geotechnical Group, Inc.
E-mail: mhunt@lorgeo.com
Address: 6121 Quail Valley Court, Riverside, CA 92507
Report Attention: Mathew Hunt | Phone #: 951-653-1100 | Fax: #: 951-653-1741
Sampled By: Mathew L. Hunt
Project No./ Name: 33310.21
Project Site: Lake Elsinore Borrow Site

53°C ☒ Chilled ☒ Intact ☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☒ Normal

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	TPH-FS EPA 8015	Remarks
1	B-1-1	3/14/17	1050	Soil	Ice	1 Glass Jar								X		X	
2	B-1-3		1057											X		X	
3	B-1-5		1109											X		X	
4	B-2-1		1135											X		X	
5	B-2-3		1145											X		X	
6	B-2-5		1151											X		X	
7	B-3-1		1209											X		X	
8	B-3-3		1216											X		X	
9	B-3-5		1225											X		X	

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Mathew L Hunt	LOR	3/14/17	1417				
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
				[signature]	A&R	3/14/17	1417

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SD=Solid Waste, SL=Sludge, SS=Soil/Sediment, AR=Air, PP=Pure Product

Preservative Code: IC=Ice, HC=HCl, HN=HNO_3, SH=NaOH, ST=$Na_2S_2O_3$, HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag, G=Glass Container, ST= Steel Tube, B= Brass Tube, P=Plastic Bottle, V=VOA Vial, E= EnCore

Sample Acceptance Checklist

CLIENT: LOR. Geotechnical WORK ORDER NUMBER: 1703-00124

Temperature:(Criteria:0.0°C-6.0°C)

Sample Temp.(w/CF) °C(w/CF) 5.3°C

☐ Sample(s) outside temprature criteria: PM contacted by :

☐ Sample(s) outside temprature criteria, but received on ice/chilled on same day of sampling.

☐ Sample(s) received at ambient temprature; placed on ice for transport by courier.

☐ Ambient Temprature ☐ Air ☐ Filter

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present and Not Intact ☑ Not Present

Sample(s) ☐ Present and Intact ☐ Present and Not Intact ☑ Not Present

Sample Condition:	Yes	No	N/A
Was a COC received	✓		
Were sample IDs present?	✓		
Were sampling dates & times present?	✓		
Was a relingquished signature present?	✓		
Were the tests required clearly indicated?	✓		
Were all samples sealed in plastic bags?		✓	
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were correct containers used for the tests required?	✓		
Was a sufficient amount of samples sent for tests indicated?	✓		
Was there headspace in VOA vials?			✓
Were the containers labeled with correct preservatives?			✓

Explanations/Comments:

Notification:

For discrepancies, how was the Project Manager notified? Verbal

Verbal: PM Initials: _____ Data/Time: _____

Email: Send to: _____ Data/Time: _____

Project Manager's response:

Completed By: Cynthia Bojo Date: 3-14-17

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Email: office@arlaboratories.com