DRAFT SOIL MANAGEMENT PLAN
City Creek Daylighting at Folsom Trail Project
Salt Lake City, Utah 84114

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PREPARED BY:

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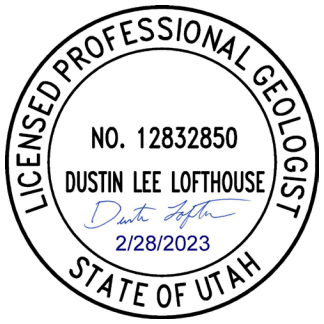

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1.0 INTRODUCTION

BIO-WEST, Inc. (BIO-WEST) has prepared this Soil Management Plan (SMP) for the City Creek Daylighting at Folsom Trail Project in Salt Lake City, Utah. The purpose of this SMP is to outline protocol to ensure the proper handling and disposal of contaminated soils present within the project area during construction activities.

2.0 SITE BACKGROUND

2.1 Site Description

The project area is located in the Euclid neighborhood of Salt Lake City at approximately 50 South between Interstate 15 (I-15) and 1000 West Street. The project area is currently developed as a paved multi-use pedestrian walkway and a sub-grade box culvert containing partial flows from City Creek. The purpose of this project is to create a daylighted stream channel for a portion of the flows from City Creek and install various amenities along the proposed stream channel.

2.2 Site History

Properties within and around the project area include multiple brownfield and Superfund sites that have resulted in the contamination of both soils and groundwater. Terracon Consultants, Inc. (Terracon) conducted a Phase II Environmental Site Assessment of the project area in October 2022 (Terracon 2022). The purpose of this Phase II Environmental Site Assessment was to determine the contaminated soil conditions prior to construction. A limited site investigation was previously conducted by Terracon in July 2011, which identified several areas of the project site that showed concentrations of Polycyclic Aromatic Hydrocarbons (PAHs) above the Environmental Protection Agency (EPA) regional screening levels (Terracon 2011). Based on the results of the initial 2011 investigation and the understanding that the construction activities will be limited to the upper 5 feet of soil, the Phase II investigation was limited to the first five feet below surface grade (bsg) to evaluate the current contamination conditions. A total of 39 distinct and 4 duplicate soil samples were collected from 19 soil borings within the project area. One shallow soil sample (0-1 foot) bsg and one deep soil sample (1-3 feet and/or 3- 5 feet) bsg were collected from each soil boring. The soil samples were analyzed for RCRA 8 metals, Total Recoverable Petroleum Hydrocarbons (TRPH), Volatile Organic Compounds (VOCs), Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO), Total Petroleum Hydrocarbons – Diesel Range Organics (TPH-DRO), and PAHs.

3.0 SOIL CONDITIONS

The Phase II Environmental Site Assessment (Terracon 2022) identified several areas within the project area that exceeded EPA regional screening levels. A summary of the Phase II soil sampling results is presented below.

- All of the soil samples exceeded the EPA Industrial Screening Level for arsenic in soils. However, only one sample was above the normal accepted background levels for arsenic in soil within the Salt Lake Valley (less than 50 mg/kg), which is naturally high in arsenic. The sample that exceeded the arsenic background level was from soil boring SB-16 at a

depth of 3 to 5 feet below surface grade (bsg). However, a duplicate sample from this location showed arsenic levels below the accepted background concentration. Additional sampling would be required to determine if the arsenic concentration of the soil in the area of SB-16 exceeds normal background levels.

- No petroleum hydrocarbon concentrations were observed above the Utah Department of Environmental Quality (DEQ) residential screening levels.

- The VOC Trichloroethene (TCE) was detected above the EPA industrial screening level between 3 to 5 feet bsg in soil boring SB-8.

- The laboratory detection limit for the VOC 1,2-Dibromo-3-Chloroprane was above the EPA residential screening level in 30 of the 43 soil samples collected. Therefore, it could not be determined if these samples actually exceeded the EPA residential screening level. Levels of 1,2-Dibromo-3-Chloroprane that could possibly exceed the EPA residential screening level were observed in all of the soil borings, except SB-11, at various depths. Additional sample analysis using a lower laboratory detection limit would be required to determine if these areas are actually above the EPA residential screening level.

- The laboratory detection limit for the VOC 1,2,3-Trichloropropoane was above the EPA residential screening level in the 3 to 5 foot bsg sample from SB-8. Therefore, it could not be determined if this sample actually exceeded the EPA residential screening level.

- The PAH Benzo(A)pyrene was detected above EPA residential screening levels in soil borings SB-2, SB-3, SB-7, SB-8, and SB-12. All of the samples showed Benzo(A)pyrene levels above the EPA residential screening level in the 0 to 1 foot bsg samples, except the SB-8 sample which was located at a depth of 3 to 5 feet bsg.

- The 0 to 1 foot bsg sample from SB-2 also showed four additional PAH concentrations above EPA residential screening levels. This soil boring was advanced in a soil stockpile on the east side of 800 West.

Several of the soil samples showed contamination that was above the EPA residential screening levels. Also, the laboratory detection limit was not sufficiently low enough to determine if several of the soil samples were actually below the EPA residential screening level. The EPA residential screening levels are the most stringent when it comes to exposure to a chemical. The EPA residential screening levels are calculated using an exposure frequency of 350 days per year and an exposure time of 24 hours a day and includes exposure factors for both children and adults. The EPA industrial screening levels are the most lenient when it comes to exposure to a chemical. The EPA industrial screening levels are calculated using an exposure frequency of 250 days per year and an exposure time of 8 hours a day and only includes exposure factors for adults. Since this project is designed to be a recreational area, the exposure to chemicals would be expected to be lower than the residential exposure. BIO-WEST used the EPA regional screening level calculator (EPA 2022) to calculate recreational screening levels based on expected exposure. The recreational screening levels were calculated using a very conservative exposure frequency of 250 days per year and an exposure time of 4 hours per day and includes exposure factors for both children and adults. The calculated recreational screening levels are shown in Table 1.

Table 1. EPA Residential, Industrial, and Calculated Recreational Screening Levels

CHEMICAL	RESIDENTIAL SCREENING LEVEL (MG/KG)[A]	RECREATIONAL SCREENING LEVEL (MG/KG)	INDUSTRIAL SCREENING LEVEL (MG/KG)
Benz[a]anthracene	1.1	1.60	21.0
Benzo[a]pyrene	0.11	0.161	2.1
Benzo[b]fluoranthene	1.1	1.61	21.0
Dibenz[a,h]anthracene	0.11	0.161	2.1
1,2-Dibromo-3-chloropropane	0.0053	0.0388	0.064
Indeno[1,2,3-cd]pyrene	1.1	1.61	21.0
Trichloroethylene (TCE)	0.94	2.27	6.0

[a] mg/kg = milligrams per kilogram.

A summary of the soil sampling results compared to the calculated recreational screening levels is shown below.

- All of the soil samples were below the recreational screening level for the VOC 1,2-Dibromo-3-Chloroprane, except the 3 to 5 feet bsg sample from soil boring SB-8.

- Three of the soil samples showed concentrations of the PAH Benzo(A)pyrene above the recreational screening level. These were the 0 to 1 foot bsg samples collected from soil borings SB-2, SB-3, and SB-12.

- The four additional PAH concentrations shown in the 0 to 1 foot bsg sample from soil boring SB-2 were above the recreational screening level.

- The concentration of TCE observed in the 3 to 5 feet bsg sample from soil boring SB-8 was above the recreational screening level.

4.0 SOIL MANAGEMENT

This section of the SMP outlines the protocol to be implemented when handling soil within the documented areas of contamination, as well as the protocol for handling undocumented areas of contamination if encountered.

4.1 Documented Soil Contamination Areas

Based on the results of the Phase II Environmental Site Assessment (Terracon 2022), BIO-WEST has identified five areas where soil contamination above the calculated recreational screening level is present within the project area.

The documented soil contamination areas are based off soil samples collected from soil borings drilled during the Phase II environmental Site Assessment (Terracon 2022). The lateral extent of the contamination present in the borings is unknown. Ideally, the soil within the areas that show VOC and PAH contamination could be screened in the field using a photoionization detector (PID) to determine the lateral extent of the contamination. However, PID readings taken during the Phase II investigation were not indicative of the contamination present and the use of a PID is not a reliable indicator of contamination. In order to ensure that all of the documented contamination is removed, the contamination areas were established around the soil boring locations that showed

contamination and extended laterally to a sample location that did not show contamination or to the project area boundary. A map showing the documented soil contamination areas is included in Appendix A. Any soil that is excavated within these documented areas should be considered contaminated and segregated in separate stockpiles for further assessment and off-site disposal.

4.1.1 Contamination Area 1

Contamination Area 1 consists of the area around soil boring SB-16, which had one sample that showed a concentration of arsenic above the normal accepted background level for arsenic in soil within the Salt Lake Valley (less than 50 mg/kg). However, a duplicate sample from this location showed arsenic levels below the accepted background concentration. Both samples were collected at a depth of 3 to 5 feet bsg. However, no soil sample was collected between 1 to 3 feet bsg, so the vertical extent of the arsenic contamination is not established. Since there are conflicting sample results, further analysis is required to determine if the soil in this area is contaminated. Any soil excavated in this area between 1 to 5 feet bsg should be stockpiled in a segregated area.

4.1.2 Contamination Area 2

Contamination Area 2 consists of the area around soil boring SB-8, which showed concentrations of the VOCs 1,2-Dibromo-3-Chloroprane and TCE above the EPA industrial screening levels. The sample results from the soil boring showed the contamination was present at a depth of 3 to 5 feet bsg. However, no soil sample was collected between 1 to 3 feet bsg, so the vertical extent of the contamination is not established. Any soil excavated in this area between 1 to 5 feet bsg should be stockpiled in a segregated area.

4.1.3 Contamination Area 3

Contamination Area 3 consists of the area around soil boring SB-12, which showed concentrations of the PAH Benzo(A)pyrene above the calculated recreational screening level. The sample results from the soil boring showed the contamination was present at a depth of 0 to 1 foot bsg. However, no soil sample was collected between 1 to 3 feet bsg, so the vertical extent of the contamination is not established. Any soil excavated in this area between 0 to 3 feet bsg should be stockpiled in a segregated area.

4.1.4 Contamination Area 4

Contamination Area 4 consists of the area around soil boring SB-3, which showed concentrations of the PAH Benzo(A)pyrene above the calculated recreational screening level. The sample results from the soil boring showed the contamination was present at a depth of 0 to 1 foot bsg. A soil sample collected at 1 to 3 feet bsg showed Benzo(A)pyrene concentrations that were below the calculated recreational screening level. Any soil excavated in this area between 0 to 1 feet bsg should be stockpiled in a segregated area.

4.1.5 Contamination Area 5

Contamination Area 5 consists of the area around soil boring SB-2, which showed concentrations of the PAH Benzo(A)pyrene above the calculated recreational screening level. The sample results from the soil boring showed the contamination was present at a depth of 0 to 1 foot bsg. However, no soil sample was collected between 1 to 3 feet bsg, so the vertical extent of the contamination is

not established. Also, since no soil samples were collected to the east and south of the soil boring the lateral extent of the contamination in these directions could not be established. BIO-WEST placed to eastern and southern boundaries of Contamination Area 5 at approximately 100-feet from the soil boring location. Any soil excavated in this area between 0 to 3 feet bsg should be stockpiled in a segregated area.

4.2 Undocumented Soil Contamination Areas

Soil contamination outside of the documented soil contamination areas is not expected to be encountered during construction activities. However, there is a possibility of encountering undocumented contamination during construction activities. Any soil encountered that exhibits staining and/or odors should be evaluated for contamination. The following steps should be implemented if suspected undocumented soil contamination is encountered.

1. Construction activities in the area should immediately be halted and the project manager should be notified.

2. The suspected contaminated soil should be screened for VOCs in the field using a PID. However, as noted above PID readings are not reliable in determining soil contamination at this site.

3. Soil samples should be collected from the suspected contaminated soil and analyzed for RCRA 8 metals, TRPH, VOCs, TPH-GRO, TPH-DRO, and PAHs.

4. The soil sample analytical results will determine if the suspected contaminated soil will need to be disposed of at a permitted landfill.

4.3 Other Soils

Soils that are outside the documented soil contamination areas and do not show any signs of contamination (e.g., staining and/or odor) are considered to be suitable for reuse on-site or off-site disposal.

4.4 Soil Stockpile Management

Any soils excavated from the documented soil contamination areas or any undocumented soil contamination encountered during construction activities needs to be stockpiled in a segregated area. An on-site stockpile area for the excavated soil should be established in a secure area of the project site and located as far as possible from any structures located adjacent to the project site.

Soil stockpiles must be placed on polyethylene sheeting with a minimum thickness of 6-millimeters. The soil stockpiles must also be completely covered and securely anchored with similar polyethylene sheeting. Any seams within the polyethylene sheeting must overlap a minimum of 24-inches and be secured with duct tape.

Silt fencing shall be placed around all stockpiled soil to prevent soil or stormwater runoff to the surrounding areas. Once covered and secured, the soil stockpiles should remain undisturbed and should not be reshaped or relocated as much as possible until the soil is removed from the project site. Inspections of the stockpiles should be performed daily to ensure the stockpiles are secure.

Any soils excavated from contamination areas 2 through 5 can be combined into one soil stockpile. Any soil excavated from contamination area 1 needs to be stockpiled separate from the other stockpiled soils since a separate analysis is required for characterization.

4.5 Soil Sampling

Prior to disposal, all of the soil stockpiles will need to be sampled to determine disposal requirements. Composite soil samples, consisting of 3 separate locations within a particular area of the soil stockpile will be collected. The number of samples collected will be determined by the soil stockpile volume. The stockpile soil sampling frequency is shown in Table 2:

Table 2. Stockpile Soil Sampling Frequency

Stockpile Volume (Cubic Yards)	Number of Composite Soil Samples to Collect
0-10	1
11-50	2
51-100	3
101-500	4
501-1,000	5

Soil samples will be collected using the following procedure. Disposable nitrile gloves will be worn and changed between samples.

1. Remove the top layer of soil to the desired sampling depth using a decontaminated hand tool.

2. Collect a sample of the soil using a decontaminated stainless steel scoop or disposable gloves and place in a decontaminated stainless steel bowl or disposable plastic bag.

3. Repeat procedures 1 and 2 until soil samples have been collected from 3 separate locations.

4. Mix the composite sample in the stainless steel bowl or disposable plastic bag until the sample has been thoroughly homogenized.

5. Transfer the composite sample to a labeled, laboratory prepared sample jar. Fill the jar completely to minimize headspace.

6. Collect a sufficient volume of the soil sample for the particular analysis.

7. Place the labeled sample jar in a cooler with ice for temporary storage and transportation to the laboratory.

8. Complete the laboratory chain of custody and submit the soil sample to the laboratory for analysis.

9. Decontaminate the sampling equipment between the collection of composite samples. Decontamination will include (1) rinse with tap water and scrub with a scrub brush until large particles are removed, (2) wash with a phosphate free detergent solution, (3) rinse with tap water, and (4) rinse with distilled water.

Soil samples collected from the contamination area 1 stockpile should be analyzed for arsenic using EPA method 6010B. Soil samples collected from the contamination areas 2 through 5 stockpiles should be analyzed for VOCs using EPA method 8260B and PAHs using EPA method 8270C-SIM.

4.6 Quality Assurance and Quality Control

Quality assurance (QA) and quality control (QC) procedures associated with any soil characterization activities will be implemented to produce data that are accurate, credible, and representative of conditions at the site. The QA/QC procedures for this project will include:

1. Careful record keeping and documentation.

2. Use of appropriate equipment and decontamination procedures.

3. Documentation of Chain-of-Custody.

4. The samples will be analyzed at a National Environmental Laboratory Accreditation Program (NELAP) approved laboratory that will follow QA/QC procedures consistent with EPA standards.

Quality control for the sampling program will include using standardized sample collection and handling methods, documenting pertinent field information, and keeping chain-of-custody records as prescribed.

4.7 Soil Disposal

Once the soil stockpiles have been characterized, the stockpiles may be removed for off-site disposal at a permitted landfill. Prior to off-site disposal the soil sample results and any required permitting will be provided to the landfill to determine if the soil can be accepted. Based on the soil sample results from the project area, it is expected that all of the soil removed from the project site can be handled as a nonhazardous waste and disposed of at any landfill permitted to accept contaminated soil. Nonhazardous waste contaminated soils can be disposed of at any Class I, II, III, or V landfill.

If the sample results from the soil stockpiles have any contamination concentrations above the EPA industrial screening levels, the soil should then be treated as a hazardous waste and disposed of at a permitted Resource Conservation Recovery Act (RCRA) Subtitle C hazardous waste landfill.

If the sample results from contamination area 1 show that arsenic concentrations are below 50 mg/kg, the stockpiled soil may be reused. If the sample results show that arsenic concentrations are above 50 mg/kg, the stockpiled soil should be hauled off and disposed of a permitted landfill.

Once a disposal facility has been established, the soil stockpiles will be loaded directly into trucks for transport to the landfill. Care must be taken during the loading of the contaminated soil to minimize spillage of the soil onto the ground surface. All trucks leaving the project site will be free of loose soil on the exterior of the trucks. All loads will be covered to prevent the soil from blowing out during transport to the disposal facility. Detailed records must be kept to determine the amount of material hauled to the disposal facility.

5.0 REPORTING

Following the completion of construction activities, a report will be prepared to document the contaminated soil removal. The report will include a description of field activities, site maps, laboratory analytical results, and contaminated soil disposal manifests.

As required by the Utah DEQ and The Salt Lake County Health Department, a copy of the report will be submitted to the Utah DEQ and the Salt Lake County Health Department to document the removal and disposal of any contaminated soil from the project area.

6.0 CONTRACTOR REQUIREMENTS

6.1 Pre-Removal Field Preparation

Field preparation activities will include procurement of field equipment, laboratory coordination, obtaining construction permits, and a coordination meeting attended by field personnel, contractors and management staff. Prior to commencing field work, Blue Stakes of Utah Utility Notification Center (Blue Stakes) will be contracted to access the presence and location of buried utilities.

6.2 Site Health and Safety

Under the Code of Federal Regulations (CFR) 29 CFR 1910.120, a Site-specific health and safety plan (HASP) is required for all work performed at a project site where there is a known or possible presence of regulated substances or hazardous materials. The construction contractor will prepare the HASP for their workers. Personnel working on the project will read and sign the HASP prior to performing field work. Safety tailgate meetings will also be performed daily to review safety practices.

6.3 Engineering Controls and Permits

Engineering controls will be established prior to the initiation of construction activities to reduce the potential for exposure to contaminated soil. These will include: Spillage of impacted soil during any loading process will be placed back in the excavation area and removed during subsequent truck loads as necessary. Loose soil will be removed from exterior surfaces of the trucks as necessary after loading to avoid tracking the material out onto public roads. All loads will be covered to prevent the generation of fugitive dust during hauling operations. The following sections detail the required construction permits that will be obtained prior to initiating construction activities.

6.3.1 Storm Water Management

The Utah Division of Water Quality (DWQ) and Salt Lake City require a storm water pollution prevention plan (SWPPP) be prepared and implemented for construction sites greater than one acre in size where soil will be disturbed. Storm water controls may include silt fences, straw bales, and wattles, as necessary, to prevent sediment run-off from the site. Prior to the start of construction, the contractor will submit a SWPPP application to the Utah DWQ and Salt Lake City for approval. Storm water controls will be installed as appropriate and in compliance with the SWPPP and maintained to mitigate the mobilization of sediment due to a storm event. Controls will remain in place throughout the construction activities.

6.3.2 Fugitive Dust Control

The Utah Division of Air Quality (DAQ) requires that construction activities in Salt Lake County that are 1/4-acre or greater in size to submit a Fugitive Dust Control Plan (FDCP). Engineering controls, such as water application during excavation and loading, will be used to prevent the generation of fugitive dust. The fugitive dust control plan will include efforts to prevent tracking mud and dirt onto the existing paved haul roads. If sediment is tracked onto the paved roadways, a street sweeper will be used to clean the roadways.

6.3.3 SMP Compliance and Communication

The contractor shall comply with the requirements set forth in this SMP and will coordinate and communicate with the project environmental compliance monitoring staff. The contractor will allow effective observation and monitoring of excavated soil, including aiding in the collection of soil samples. The project environmental staff will make reasonable efforts to work within the Contractor's schedule and not unnecessarily slow construction.

7.0 REFERENCES

[Terracon] Terracon Consultants, Inc. 2011. Limited Site Investigation Report, Proposed City Creek Box Culvert Folsom Avenue Corridor, Salt Lake City, Utah, July 6, 2011.

[Terracon] Terracon Consultants, Inc., 2022. Phase II Environmental Site Assessment Report, Folsom Corridor, Salt Lake City, Utah, October 14, 2022.

APPENDIX A: CONTAMINATION AREAS MAP

N

0 100 200 300 ft

Soil Contamination Areas Map

City Creek Daylighting
at Folsom Trail Project
Salt Lake City, Utah 84114

BIO-WEST

Project#: 3133
Date:2/15/2023
Drawn By: DL