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MEMORANDUM

To:	Allison Crowley, Seattle City Light
From:	Shannon Ashurst, Integral Consulting Inc.
Date:	December 5, 2022
Subject:	Proposed Additional Analyses to Provide Confirmation Soil Results for the Georgetown Flume Off-Leash Area and Trail
Project No.:	CF1408-0106

Integral Consulting Inc. (Integral) is assisting Seattle City Light (SCL) in preparing an Interim Action Work Plan (IAWP) for a proposed off-leash area and trail intended for the southern portion of the former Georgetown Steam Plant (GTSP) flume (Proposed Park Site). The Proposed Park Site is part of the North Boeing Field/Georgetown Steam Plant (NBF/GTSP) site that is subject to an ongoing remedial investigation and feasibility study (RI/FS) under Agreed Order No. DE 5685 (Ecology 2008) between the Washington State Department of Ecology (Ecology), The Boeing Company (Boeing), the City of Seattle, and King County.

The excavation extent for the Proposed Park Site presented in the draft IAWP was developed based on samples collected in 2021 and 2022 (Integral 2021, Integral 2022) and using Model Toxics Control Act (MTCA) Method A cleanup levels. The 2021 and 2022 samples were analyzed for Proposed Park Site chemicals of concern (polychlorinated biphenyls [PCBs] and carcinogenic polycyclic aromatic hydrocarbons [cPAH]).

Following review of the draft IAWP, Ecology requested the inclusion of arsenic in the evaluation, since arsenic is a chemical of concern for the NBF/GTSP site Area of Concern (AOC) 10, which includes the Proposed Park Site. Ecology also asked for additional consideration of four historical sample locations due to some uncertainty regarding whether some subsurface soil at or near the Proposed Park Site was removed during the historic remedial actions (Herrera 2007, 2010). Two of the locations[1] were located just north of the original Proposed Park Site boundary, so Ecology requested that the excavation be

[1] Locations MS02SS and W2T18.

extended north as shown on Figure 1. The other two locations[2] were adjacent to or along the edges of the former flume. These four locations had occasional cPAH or PCB MTCA Method B or arsenic natural background exceedances (Dube 2022, pers. comm.).

Upon further discussion with Ecology, MTCA Method B was selected as the basis for the PCB and cPAH interim action screening level (IASL) for the Proposed Park Site. That, along with the inclusion of arsenic, necessitates the collection of additional confirmation samples to confirm the depth of excavation at the locations shown on Figure 1.

During a meeting with Ecology on July 27, 2022, Ecology agreed that pre-excavation confirmation samples (i.e., samples collected to the interval below the proposed excavation base ahead of construction) would be used to define the extent of the required excavation. This memorandum presents SCL's proposal for additional soil sampling and analysis to address the data gaps that resulted from the changes listed above and finalize the Proposed Park Site excavation depth. Additional soil sample collection will follow the methods indicated in the Sampling and Analysis Plan (SAP; Integral 2021) and its addendum (Integral 2022). Arsenic will be analyzed using U.S. Environmental Protection Agency Method 6010D or 6020B. PCB and cPAH analyses will be consistent with the SAP. Data validation, data management, and data upload will be conducted in general accordance with SAP, SAP Addendum, and IAWP. Proposed additional analyses and sample locations are shown in Figure 1 and described in greater detail below.

As Ecology indicated in the July 27, 2022, meeting, additional data collection and analysis for the Proposed Park Site will not delay Ecology's IAWP review and approval. The public review draft IAWP was modified to reflect the pending sampling and evaluation of the final data set; the revised IAWP was made available for public review in November 2022.[3] Ecology will review and approve the final excavation depths, based on the new data, independent of the IAWP public review schedule.

ADDITIONAL ANALYSES

Additional soil sample analyses are proposed for soil collected from select new cores and from existing archived soil as described below and summarized in Table 1.

[2] Locations W2 and W1.

[3] Ecology submitted some additional comments on the revised IAWP on September 19, 2022. The further revised IAWP, was submitted to Ecology on September 30, 2022. Ecology put the public review draft IAWP out for public comment on November 7, 2022, and hosted a public meeting on the draft IAWP on November 9, 2022 (Schwarz 2022, pers. comm.; Fawley 2022, pers. comm.)

Right-of-Way

As requested by Ecology, the northern boundary of the Proposed Park Site was extended into the right-of-way to include an area with historical soil samples that had elevated concentrations of Proposed Park Site chemicals of concern and arsenic. Soil will be collected from two new borings in this expanded area, one (GTF_S26) in the proposed 1-ft excavation area and one (GTF_S25) in the proposed 1.5-ft excavation area to evaluate the depth of excavation in the new "right-of-way" portion of the Proposed Park Site (Figure 1). The two new locations bracket historical location W2T18, which had IASL exceedances for arsenic, cPAH, and PCBs in the 0-1.5 ft bgs depth interval. Soil samples from both new locations will be collected in 0.5-ft intervals starting at the proposed excavation depth and extending to 4.5 ft bgs. Initially, the soil sample in the 0.5-ft interval immediately below the proposed excavation depth (1.5-2.0 ft bgs for GTF_S25; 1.0-1.5 ft bgs for GTF_S26) will be analyzed for arsenic, cPAH, and PCBs (Table 1); the remaining samples will be archived.

Proposed 1-ft Excavation Depth Area

PCB and cPAH concentrations are below Proposed Park Site IASLs in the 1-1.5 ft bgs interval of recent (2021) samples collected across the proposed 1-ft excavation area. A subset of six of the prior sample locations will be reoccupied to within a 2 to 5-ft radius of the original location to collect soil for arsenic analysis (Figure 1). The reoccupied locations will be denoted with a "_B" suffix (e.g., GTF_S9_B). Soil samples will be collected in 0.5-ft intervals starting at the proposed excavation depth and extending to 4.5 ft bgs. Initially, the soil sample from the 1-1.5 ft bgs interval at GTF_S9_B, GTF_S11_B, GTF_S13_B, GTF_S17_B, GTF_S18_B, and GTF_S20_B, will be analyzed for arsenic (Table 1); the remaining samples will be archived.

Proposed 1.5-ft Excavation Depth Area

cPAH concentrations are below Proposed Park Site IASLs in the 1.5-2 ft bgs interval of recent (2021) samples collected across the proposed 1.5-ft excavation area. PCBs are below Proposed Park Site IASLs in the 1-1.5 ft bgs interval at all locations except GTF_S2. Location GTF_S2 will be reoccupied to within a 2 to 5-ft radius of the original location. Soil samples will be collected in 0.5-ft intervals starting at the proposed excavation depth and extending to 4.5 ft bgs. Initially, the GTF_S2_B 1.5-2 ft bgs interval sample will be analyzed for PCBs and arsenic; the remaining samples will be archived.

A new soil boring, GTF_S27, will be located in the vicinity of historical sample W2S18 (sampled in 2006, as shown in Herrera [2007]). W2S18 was a sample collected from the flume sidewall. Since sample W2S18 had a cPAH concentration (1.1 mg/kg) above the

Proposed Park Site screening levels (0.19 mg/kg) at 2.5-3 ft bgs (Herrera 2007) and it is unclear whether this area of the flume sidewall was removed during previous remedial activities, additional soil samples will be collected at location GTF_S27. At GTF_S27, soil samples will be collected in 0.5-ft intervals starting at the proposed excavation depth (1.5 ft bgs) and extending to 4.5 ft bgs. Initially, the soil sample from the 1.5-2 ft bgs interval will be analyzed for arsenic and cPAH (Table 1); the remaining samples will be archived.

Locations GTF_S3 and GTF_S5 will also be reoccupied to within a 2 to 5-ft radius of the original locations to collect soil for arsenic analysis (Figure 1). At GTF_S3_B and GTF_S5_B, soil samples will be collected in 0.5-ft intervals starting at the proposed excavation depth and extending to 4.5 ft bgs. Initially, the soil sample from the 1.5-2 ft bgs interval will be analyzed for arsenic (Table 1); the remaining samples will be archived.

Proposed 2-ft Excavation Depth Area

PCB and cPAH concentrations are below Proposed Park Site IASLs in the 2-2.5 ft bgs interval of recent (2021-2022) samples collected across the proposed 2-ft excavation area. Soil samples from three prior locations in this area (GTF_S22, GTF_S23, and GTF_S24) were archived and frozen at the laboratory. These archived samples will be analyzed for arsenic in the 2-2.5 ft bgs interval (Figure 1). Location GTF_S23 is near historical location W1S18, which was a soil sample collected from the flume sidewall. Since sample W1S18 had an arsenic concentration (11 mg/kg) that slightly exceeding natural background (7.3 mg/kg) at 2.5-3 ft bgs (Herrera 2007) and it is unclear whether this area of the flume sidewall was removed during previous remedial activities, the archived 2.5-3 ft bgs sample at location GTF_S23 will also be analyzed for arsenic (Table 1).

SUMMARY

In summary, soil samples will be collected from three new locations (GTF_S25, GTF_S26, and GTF_S27) and nine reoccupied locations (GTF_S2_B, GTF_S3_B, GTF_S5_B, GTF_S9_B, GTF_S11_B, GTF_S13_B, GTF_S17_B, GTF_S18_B, and GFT_S20_B) for analysis of PCBs, cPAH and/or arsenic as detailed in Table 1. Additionally archived soil samples from three previous locations (GTF_S22, GTF_S23, and GTF_S24) will be analyzed for arsenic. A total of 16 soil samples will be analyzed for arsenic, three samples will be analyzed for PCBs, and three samples will be analyzed for cPAH.

NEXT STEPS

Additional sampling and analysis will be conducted once Ecology and SCL have come to consensus on this proposed additional sampling plan. When final analytical results are available, a Supplemental Design Memorandum will be prepared that includes updated sample analytical results for arsenic, cPAH, and PCBs and any modifications, if needed, to the proposed sub-area excavation depths. This will include a final table of the "confirmation" sample results for soil that will remain in place following excavation.

Sample collection is expected to require two field days. Pending driller availability, sampling will occur in December 2022. Analytical data are anticipated to be available within 20 business days of submittal to the analytical laboratory. Validation is expected to be complete within 15 business days of receipt of the laboratory electronic data deliverable and final report. A draft Supplemental Design Memorandum will be provided for SCL review within 4 to 6 weeks of completion of data validation.

REFERENCES

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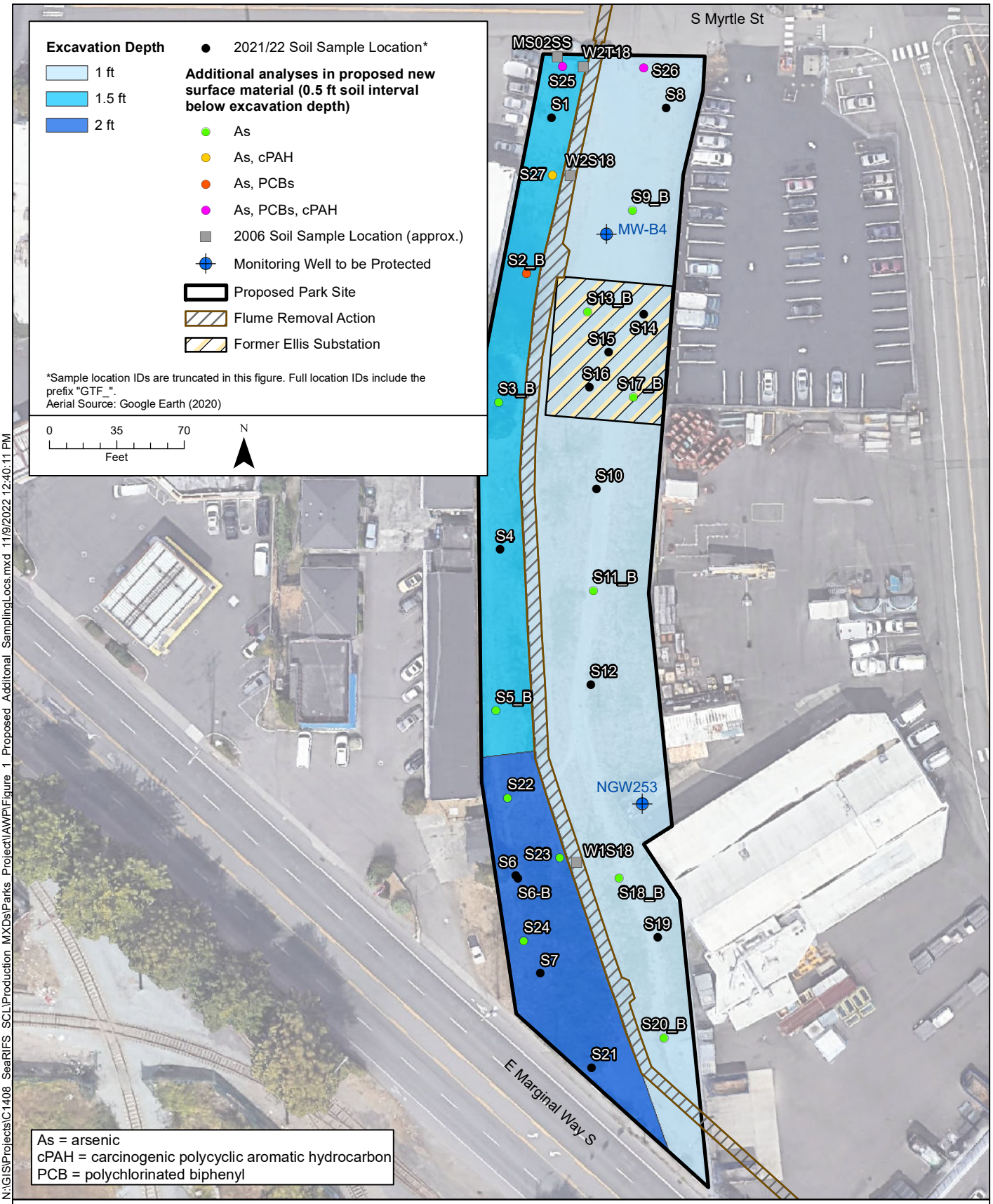

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Figure 1.
Proposed Additional Sampling Locations

Table 1. Proposed Park Site Additional Confirmation Soil Sampling and Analysis

Proposed Excavation Depth (ft)	Sample Location [a]	Depth Interval (ft bgs) of Confirmation Sample, by Analyte		
		cPAH	PCBs	Arsenic
1.0	GTF_S8	—	—	—
	GTF_S9_B	—	—	1.0 - 1.5
	GTF_S10	—	—	—
	GTF_S11_B	—	—	1.0 - 1.5
	GTF_S12	—	—	—
	GTF_S13_B	—	—	1.0 - 1.5
	GTF_S14	—	—	—
	GTF_S15	—	—	—
	GTF_S16	—	—	—
	GTF_S17_B	—	—	1.0 - 1.5
	GTF_S18_B	—	—	1.0 - 1.5
	GTF_S19	—	—	—
	GTF_S20_B	—	—	1.0 - 1.5
	GTF_S26 * [b]	1.0 - 1.5	1.0 - 1.5	1.0 - 1.5
1.5	GTF_S1	—	—	—
	GTF_S2_B [c]	—	1.5 - 2.0	1.5 - 2.0
	GTF_S3_B	—	—	1.5 - 2.0
	GTF_S4	—	—	—
	GTF_S5_B	—	—	1.5 - 2.0
	GTF_S25 * [b]	1.5 - 2.0	1.5 - 2.0	1.5 - 2.0
	GTF_S27 * [d]	1.5 - 2.0	—	1.5 - 2.0
2.0	GTF_S6	—	—	—
	GTF_S6_B	—	—	—
	GTF_S7	—	—	—
	GTF_S21	—	—	—
	GTF_S22	—	—	2.0 - 2.5 [g]
	GTF_S23 [e,f]	—	—	2.0 - 2.5 [g] 2.5 - 3.0 [g]
	GTF_S24	—	—	2.0 - 2.5 [g]

Notes
* New sample location
[a] Suffix "_B" added to existing locations that will be reoccupied to within 2 to 5 ft.
[b] Sampled for all three chemicals of concern based on historical sample W2T18.
[c] PCB confirmation sample needed with change to MTCA Method B as the IASL.
[d] Location situated near historical sample location W2, at which sample W2S18 was collected.
[e] Location situated near historical sample location W1, at which sample W1S18 was collected.
[f] 2.5-3.0 ft interval added based on historical sample W1S18.
[g] Sample will be analyzed from March 2022 archive sample.

— = no sample or analysis proposed
bgs = below ground surface
cPAH = carcinogenic polycyclic aromatic hydrocarbon
IASL = interim action screening level
MTCA = Model Toxics Control Act
PCB = polychlorinated biphenyl