Technical Memorandum

TO: Andrew Rardin, CM, Environmental Manager, Snohomish County Airport

FROM: Stephanie Renando and Jerry Ninteman, PE

DATE: July 28, 2022

RE: **Addendum No. 2 – Phase III Remedial Investigation/Feasibility Study Work Plan – Revision 1**
Former TECT Aerospace Leasehold Area
Cleanup Site ID: 12071; Facility/Site ID: 17392
Snohomish County Airport/Paine Field
Everett, Washington
Landau Project No. 0222057.040

This technical memorandum presents Addendum No. 2, Revision 1 to the Remedial Investigation/ Feasibility Study (RI/FS) Work Plan (Work Plan) currently being implemented at the former TECT Aerospace Leasehold site (Site; Landau 2018) at the Snohomish County Airport in Everett, Washington (Figure 1). This addendum describes field activities to be conducted as part of implementing Phase III of the RI. Field activities for Phase I and Phase II of the RI were conducted by Landau Associates, Inc. (Landau) on behalf of Paine Field/Snohomish County Airport (Airport) in 2018 and 2019, and were directed by the Work Plan and Addendum No. 1 to the Work Plan (Landau 2019a). Results of the Phase I and Phase II RI were presented in an Interim RI Data Report (Landau 2019b). Results of investigations conducted at the Site prior to the RI are summarized in the Work Plan.

Remedial Investigation Background

To date, all RI work conducted at the Site has been completed as an independent action by the Airport. The Washington State Department of Ecology (Ecology) has determined that an Agreed Order will be required in connection with remedial actions at the Site. As required by Ecology, the Airport enrolled the Site into the Voluntary Cleanup Program (VCP) as an interim step pending issuance of the Agreed Order by Ecology. This Work Plan may be modified at the direction of Ecology once Ecology review of the plan has been completed.

Once the Agreed Order has been finalized, Snohomish County and Ecology will assess the status of the RI and determine if further investigation is needed. If so, an additional phase of the RI will be initiated and an additional addendum to the Work Plan will be prepared for Ecology review and approval describing the planned investigation. If it is determined by Ecology at that time that the RI is complete, Snohomish County will submit an agency review draft RI Report and begin the FS process in accordance with the schedule of deliverables under the Agreed Order.

Funding for this phase of the RI was obtained from Ecology under a Toxics Cleanup Integrated Planning Grant agreement between Ecology and the Airport (Agreement No. TCPIPG-2123-SnCoAD-00043).

An earlier version of this Work Plan Addendum No. 2 (Landau 2021), dated November 9, 2021, was submitted to Ecology on November 23, 2021 along with an application to enter the Site into the VCP. The November 9, 2021 Work Plan Addendum No. 2 described activities for implementing Phase III of the RI at the Site. Ecology later provided an opinion letter (Ecology 2022) on the adequacy of the November 9, 2021 Work Plan Addendum No. 2 in addressing the remaining data gaps at the Site. This revision to the November 9, 2021 Work Plan Addendum No. 2 (i.e., Revision 1) incorporates comments received in Ecology's opinion letter and reduces the overall scope of the Phase III investigation to be consistent with available funding limitations. In other words, this revised Work Plan Addendum No. 2 represents a subset of the original Work Plan Addendum No. 2 with respect to investigation scope. A small portion (i.e., additional analytical testing) of the data gaps identified in Ecology's 2022 opinion letter will be implemented during the Phase III RI. Scope items not addressed in this revised Work Plan Addendum No. 2 will be addressed in a later phase of the RI.

The purpose of this and subsequent phases of the RI is to address remaining data gaps sufficient for completion of a Washington State Model Toxics Control Act (MTCA)-compliant RI, including characterizing the extent of contamination in soil and groundwater to define the limits of the Site (MTCA defines "Site" as anywhere contamination has come to be located). Below is a summary of remaining data gaps identified in the original Work Plan Addendum No. 2.

- Delineating chlorinated solvents in soil and groundwater, including deep aquifer groundwater, and evaluating seasonal fluctuations in groundwater elevations and contaminant concentrations
- Characterizing contaminant fate and transport mechanisms present at the Site
- Identifying the extent of piping and/or tanks that remain in place near the former East Fuel Farm area.

The 2022 Ecology opinion letter included recommendations to further investigate the following:

- Ecology recommended that additional soil borings be added to the west and south of Building C-22 to determine the lateral and vertical extent of total chromium concentrations in soil. (Note: In March 2019, one soil sample collected at location RISB-13 indicated that concentrations of total chromium were above background levels at maximum depths of 13 feet [ft] below ground surface [bgs].) However, additional borings to investigate the total chromium extent in this area are not planned for Phase III and will be completed during a future phase of the RI.
- Ecology recommended analysis for total and dissolved arsenic in groundwater to bound the arsenic contamination in shallow groundwater around Building C-22. RI groundwater samples have been analyzed for only dissolved arsenic to date. Borings to evaluate the arsenic extent southwest of Building C-22 will be deferred until subsequent phases of the RI. However, Phase III will include additional analysis for total arsenic in groundwater for samples from locations where metals have previously been detected.

- Ecology requested that carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and naphthalenes be analyzed for in groundwater samples planned for analysis for diesel- and oil-range total petroleum hydrocarbons (TPH-D and TPH-O, respectively). Groundwater samples collected for TPH-D and TPH-O analyses will also be analyzed for cPAHs during the Phase III investigation.

Phase III Remedial Investigation Overview

Phase III RI locations were selected to address data gaps identified following completion of the Phase I and Phase II RIs as documented in the Interim RI Data Report (Landau 2019b).

Since the Interim RI Data Report was published in December 2019, two new groundwater monitoring wells (RIGW-1 and RIGW-2) were installed near the former Building C-27 footprint to help evaluate seasonal fluctuations in the shallow groundwater present at the Site. Groundwater elevation monitoring at these new wells is included as part of the Phase III RI.

The Phase III RI will include investigation activities within all five previously identified investigation areas at the Site. The original boundaries of the five areas are shown on Figure 2 and consist of the following:

- Building C-19
- Building C-20, -21, -22 Complex
- Building C-23 and C-23 Annex
- Former Building C-29 / Former East Fuel Farm
- Deep Aquifer.

Phase I RI, Phase II RI, and pre-RI sampling locations are shown on Figure 3.

The general scope and flow of the Phase III RI activities will be as follows:

- Advance up to 12 shallow borings across all five investigation areas and two deep aquifer borings, install one shallow monitoring well (RIGW-3) in the former C-27/fuel farm area; the deep aquifer borings will be completed as monitoring wells (RIDW-5 and RIDW-6). The 12 borings planned for the shallow aquifer are shown on Figure 4 and the planned locations of the new deep aquifer wells are shown on Figure 5.
- Develop the new shallow well and deep aquifer wells immediately after installation.
- Survey new monitoring wells RIGW-3, RIDW-5, and RIDW-6 for location and elevation. This survey may be conducted during the same mobilization as the groundwater elevation survey mentioned below.
- Conduct one groundwater elevation survey of all 9 existing/planned deep aquifer monitoring wells and 15 existing/planned shallow monitoring wells. In addition to the nine deep aquifer Site monitoring wells, groundwater elevations will be measured at six off-Site deep aquifer wells located on an adjacent parcel currently leased by The Boeing Company (Boeing).

Additional coordination with Boeing will be necessary to complete the surveys. Shallow and deep aquifer monitoring wells to be included in the survey are shown on Figure 6.

Existing data gaps that will not be addressed during the Phase III RI but that will be addressed in subsequent phases of the RI are summarized below.

- Additional shallow borings and potentially deep aquifer monitoring wells will be needed to fully delineate the extent of chlorinated solvents in soil and groundwater following completion of the activities described in this Work Plan and evaluation of the data. Shallow borings will be needed to bound elevated volatile organic compound (VOC) contamination identified in soil and groundwater east of Building C-19. Additional borings may also be needed to further delineate the identified plumes in the former Building C-29/East Fuel Farm area and in the deep aquifer if the plumes are not fully delineated following completion of the Phase III RI.
- Seasonal fluctuations of groundwater quality and groundwater elevation.
- The extent of piping and/or tanks that remain in place near the former East Fuel Farm.
- Ecology-identified data gaps:
  - Additional soil borings to the west and south of Building C-22 to determine the lateral and vertical extent of total chromium concentrations in soil.
  - Analysis for total and dissolved arsenic in groundwater to bound the arsenic contamination in shallow groundwater around Building C-22.
  - Potential evaluation of subslab and/or indoor air concentrations below Hangar 1 depending on Phase III RI investigation results in the immediate vicinity of Hangar 1.

Drilling and Sampling Borings by Investigation Area

Planned Phase III RI shallow boring locations are shown on Figure 4 along with previous groundwater sampling locations and trichloroethene (TCE) iso-concentration contours derived from Site historical TCE data. Planned Phase III RI deep aquifer well locations are shown on Figure 5. As shown, the Phase III RI shallow boring locations and the deep aquifer well locations were selected to further bound the extent of VOCs in areas where the limits of the VOC plume have not been fully delineated.

The final sampling locations will be adjusted, as needed, in the field based on the results of both a private and public utility locate, and obstructions encountered during field activities. Depending on the proximity of utilities to the sampling location, use of a low-impact utility clearance process may be warranted. This may include the use of a hand auger and/or vacuum truck air-knife to a depth of 5 ft bgs to avoid damaging any subsurface utilities or other structures.

An Inadvertent Discovery Plan (IDP) has been prepared by the Airport and Ecology in the event that cultural resources are encountered during drilling activities. A copy of the IDP will remain on Site during the Phase III RI activities and is included as Attachment 1. Due to elevated TCE concentrations observed west of former Building C-29, a Site-specific Health and Safety Plan was prepared for the

Phase II activities and will be implemented during the Phase III activities conducted under this addendum.

Building C-19

One shallow boring (RISB-70) is planned west of the Building C-19 area that will focus on lateral delineation and bounding of VOC contamination in soil and groundwater. Because this data gap is focused on VOC plume delineation, the maximum boring depth will be determined during drilling and will be based on the depth and thickness of the perched groundwater layer, and results of field screening for contaminants.

One shallow boring (RISB-69) is planned for inside Building C-19 to characterize the groundwater VOC concentration gradients between the three groundwater plumes surrounding the building. Access coordination may be required by the Airport in advance of indoor drilling activities and Landau will coordinate directly with Building C-19 tenants once any required agreements are in place.

Building C-20, -21, -22 Complex

Two shallow borings (RISB-71 and RISB-72) are planned to help bound elevated concentrations of VOC contamination identified in soil and groundwater east of Buildings C-20 and C-21.

Building C-23 and C-23 Annex

One shallow boring (RISB-73) will be advanced near the former oil shed, east of Building C-23 to further evaluate the potential for VOCs to be present in the perched groundwater in that area. Previous groundwater sampling near the former oil shed was conducted from shallow vapor implants. At these locations, vapor samples could not be collected due to saturated conditions and groundwater samples were collected instead. These groundwater samples were collected at depths that did not extend beyond 3 ft bgs.

Former Building C-29 / Former East Fuel Farm

Seven shallow borings are planned for this investigation area. One boring (RISB-74) will be advanced northeast of the fuel farm, and one (RISB-75) will be advanced northwest of the known VOC plume to bound the elevated concentrations of VOC contamination identified in groundwater. Four borings (RISB-76 through RISB-79) are planned to bound the extent of VOC contamination west and south of former Building C-27.

One boring (RISB-80) will be advanced north of former Building C-27 and near previous boring RISB-45. This area has the highest known VOC concentrations Site-wide in both soil and groundwater. Vertical delineation of VOC-contaminated soil will be conducted at RISB-80 to help develop the FS options in this area. Groundwater will be collected from the temporary soil boring RISB-80 and a permanent groundwater monitoring well (RIGW-3) will be installed within 10 ft of RISB-80.

Deep Aquifer

Two monitoring wells (RIDW-5 and RIDW-6) will be installed up to approximately 300 ft downgradient of the former Building C-29/former East Fuel Farm known VOC plume extent to assess and monitor vertical migration of VOCs into the deep aquifer. The new deep wells will be developed immediately following installation.

Drilling and Sampling Methodology

Due to the presence of dense to very dense glacial till at the Site, the Phase I and Phase II subsurface investigations used rotosonic drilling methods to advance soil borings and collect samples. Both soil and groundwater were sampled from the soil borings. The Phase III investigation will also use rotosonic drilling methods to collect soil and groundwater samples. The methods to be used during the Phase III RI for drilling and sampling of soil borings and the installation of deep aquifer monitoring wells will be consistent with those described in the Sampling and Analysis Plan (SAP) and the Quality Assurance Project Plan (QAPP) included in the Work Plan (Landau 2018) and are hereby adopted by reference. All borings will be drilled to a minimum of 30 ft bgs.

Additional procedures to be followed during drilling and sampling of shallow soil borings (RISB-69 through RISB-80) are provided below. These procedures were developed during implementation of the Phase I and Phase II RI and after preparation of the Work Plan SAP; these procedures therefore supplement those provided in the SAP.

- After any necessary utility locating/clearance excavations, starting at the ground surface, collect a 10-ft soil core by advancing the rotosonic core barrel to 10 ft bgs. Examine the soil core, log the soil in accordance with the SAP, and conduct field screening of the core in accordance with the SAP. Collect a soil sample over an approximate 1-ft length of the core at the point along the core that exhibits the highest contamination level based on field screening. If contamination is not observed, collect the sample over the bottom 1 ft of the core.
- Examine the soil core for the presence of perched groundwater by noting any interval containing wet or saturated conditions.
- Advance the rotosonic outer casing to 10 ft bgs, and remove cuttings from the casing down to 10 ft bgs.
- Collect a second 10-ft soil core by advancing the rotosonic core barrel to 20 ft bgs. Conduct the same steps as described above for logging, field screening, and soil sampling in accordance with the SAP.
- If perched groundwater is observed in the 0- to 20-ft bgs interval, install a 5-ft-long temporary well (as described below) and collect a groundwater sample from the interval yielding the highest level of contamination.
    - If field screening indicates hydrocarbon contamination, the temporary well screen should be placed across the groundwater table.

  - If field screening indicates that hydrocarbon contamination is not present, collect one groundwater grab sample from 1 ft to 6 ft below the top of the groundwater table.
  - Groundwater samples will be collected by first advancing the outer casing to the bottom of the targeted sampling interval and removing soil cuttings from inside the casing. A 5-ft-long screened section of polyvinyl chloride (PVC) pipe (i.e., temporary well) will then be lowered to the bottom of the borehole and a 12/20 Colorado or 2/12 Cemex Lapis Luster sand pack will be placed around the screen section and up to approximately 1 ft above the screened interval. The outer casing will then be raised to expose the entire length of sand pack to the formation. Groundwater samples will then be collected from the temporary well using methods described in the SAP.
  - No additional groundwater samples will be collected from the boring and proceed to the casing stepdown procedure (below).

- If perched groundwater is not observed in the 0- to 20-ft bgs interval, then proceed with the 20- to 30-ft core barrel (without conducting stepdown procedures) and follow the same procedures for sampling water if it is present in the 20- to 30-ft interval.
- A casing stepdown is required to prevent downward vertical migration of the perched aquifer. To construct a stepdown:
  - Advance a larger-diameter rotosonic outer casing to a depth 0.5 to 1.0 ft below the saturated interval and into low-permeability till. Remove the PVC well casing, cuttings, and sand pack from inside the outer casing. Add approximately 2 ft of bentonite chips and allow at least 30 minutes for the chips to hydrate to form a seal that will prevent carrydown of perched groundwater to lower depths.
  - Lower a smaller-diameter inner casing to the bottom of the bentonite plug and remove bentonite from inside the smaller-diameter casing.
- After completing the stepdown, advance the next 10-ft soil core barrel through the center of the smaller-diameter inner casing to 30 ft (or 40 ft if groundwater was present in the 20- to 30-ft interval) and repeat above steps for field screening, logging, and soil sampling.
  - If field screening does not indicate the presence of contamination, abandon the boring in accordance with the SAP.
  - If contamination is observed, advance a fourth 10-ft soil core and repeat above steps for field screening, logging, and soil sampling.
  - Repeat these steps to 40 ft, 50 ft, and so on, until contamination is no longer observed.

Analytical Methods

Laboratory analyses of soil and groundwater samples collected during the Phase III RI will be similar to analyses conducted during the Phase II investigation and are intended to address ongoing monitoring for groundwater contaminant trends or where needed to effectively bound soil and groundwater contamination. Additional analyses (total organic carbon and grain-size distribution in soil) have been added to evaluate fate and transport mechanisms present at the planned deep aquifer wells (RIDW-5

and RIDW-6). Select groundwater samples will also be analyzed for total arsenic or cPAHs and naphthalenes where metals or TPH-D and TPH-O will be analyzed, respectively. A summary of planned sampling and analyses for soil and groundwater collected during drilling activities is provided in Table 1.

Groundwater Monitoring and Sampling

A groundwater elevation survey will be conducted after the new groundwater monitoring wells have been installed, developed, and surveyed. Elevation monitoring will be conducted at 24 Site wells (15 shallow and 9 deep) and 6 off-Site wells (deep aquifer) generally located southwest of the Site, and on property currently leased by Boeing. On-Site and off-Site groundwater monitoring well locations are shown on Figure 6.

Monitoring and sampling data will be collected and analyzed in accordance with the 2018 Work Plan SAP and additionally, laboratory analytical procedures/methods and data quality objectives will be consistent with those presented in the QAPP (Landau 2018). Groundwater elevation data will be evaluated and presented in a technical memorandum that will include Site data tables and figures, and a summary of findings and data gaps remaining.

Schedule

Coordination for Phase III RI field activities will begin after receipt of Ecology approval of this Addendum. It is expected that the sampling activities will start in 2022 and extend into 2023.

Use of This Technical Memorandum

This technical memorandum has been prepared for the exclusive use of Snohomish County Airport/Paine Field and Ecology for specific application to the former TECT Aerospace Leasehold Site Phase III Remedial Investigation/Feasibility Study project. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau, shall be at the user's sole risk. Landau warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. Landau makes no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

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References

Ecology. 2022. Letter: Opinion Pursuant to WAC 173-340-515(5) on Remedial Action for the Following Hazardous Waste Site: Site Name: TECT Aerospace Everett; Site Address: 2933 109th Street SW, Everett, WA 98204; Facility/Site No.: 17392; Cleanup Site ID No.: 12071; VCP Project No.: NW3328. From David Unruh, Northwest Region Office Toxics Cleanup Program, Washington State Department of Ecology, to Andrew Rardin, Airport Environmental & Wildlife Manager, Paine Field/Snohomish County Airport. June 14.

Landau. 2018. Remedial Investigation/Feasibility Study Work Plan, Paine Field TECT Aerospace Leasehold, Everett, Washington. Landau Associates, Inc. September 19.

Landau. 2019a. Technical Memorandum: Addendum No. 1 - Phase II Remedial Investigation/Feasibility Study Work Plan, TECT Aerospace Leasehold Site, Snohomish County Airport/Paine Field, Everett, Washington. Landau Associates, Inc. August 20.

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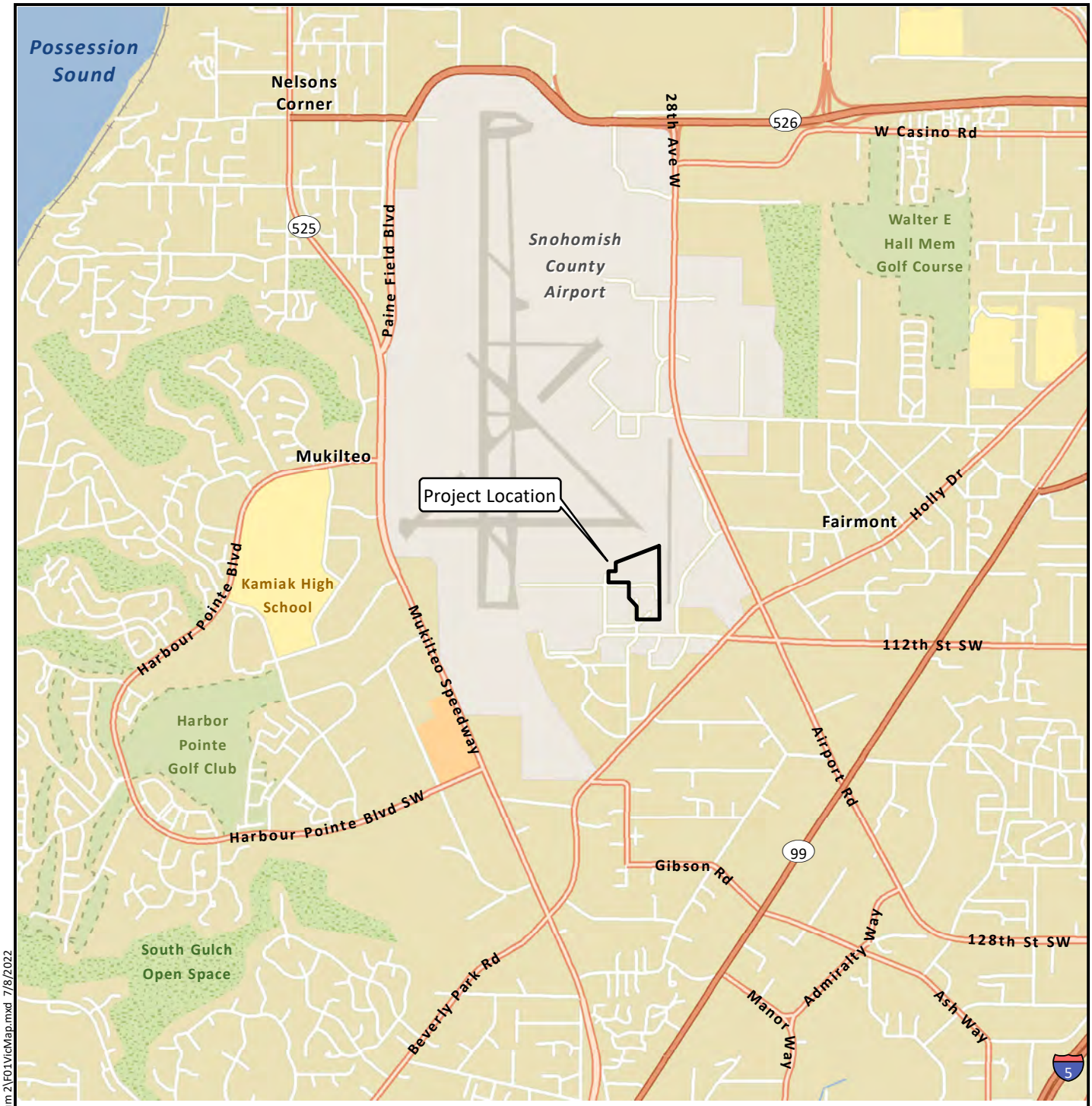
Landau. 2021. Technical Memorandum: Addendum No. 2 - Phase III Remedial Investigation/Feasibility Study Work Plan, Former TECT Aerospace Leasehold Area, Cleanup Site ID: 12071; Facility/Site ID: 17392, Snohomish County Airport/Paine Field, Everett, Washington. Landau Associates, Inc. November 9.

Attachments

Figure 1: Vicinity Map
Figure 2: Investigation Areas
Figure 3: Pre-Remedial Investigation and Phase I/II Remedial Investigation Site-Wide Investigation Locations
Figure 4: Trichloroethene Concentration Contours in Shallow Groundwater and Planned Sampling Locations
Figure 5: Trichloroethene Concentrations in Deep Aquifer and Planned Well Locations
Figure 6: Groundwater Monitoring Well Locations
Table 1: Summary of Remedial Investigation Sampling and Analyses
Attachment 1: Inadvertent Discovery Plan



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TECT Aerospace Leasehold Everett, Washington	**Vicinity Map**	Figure 1

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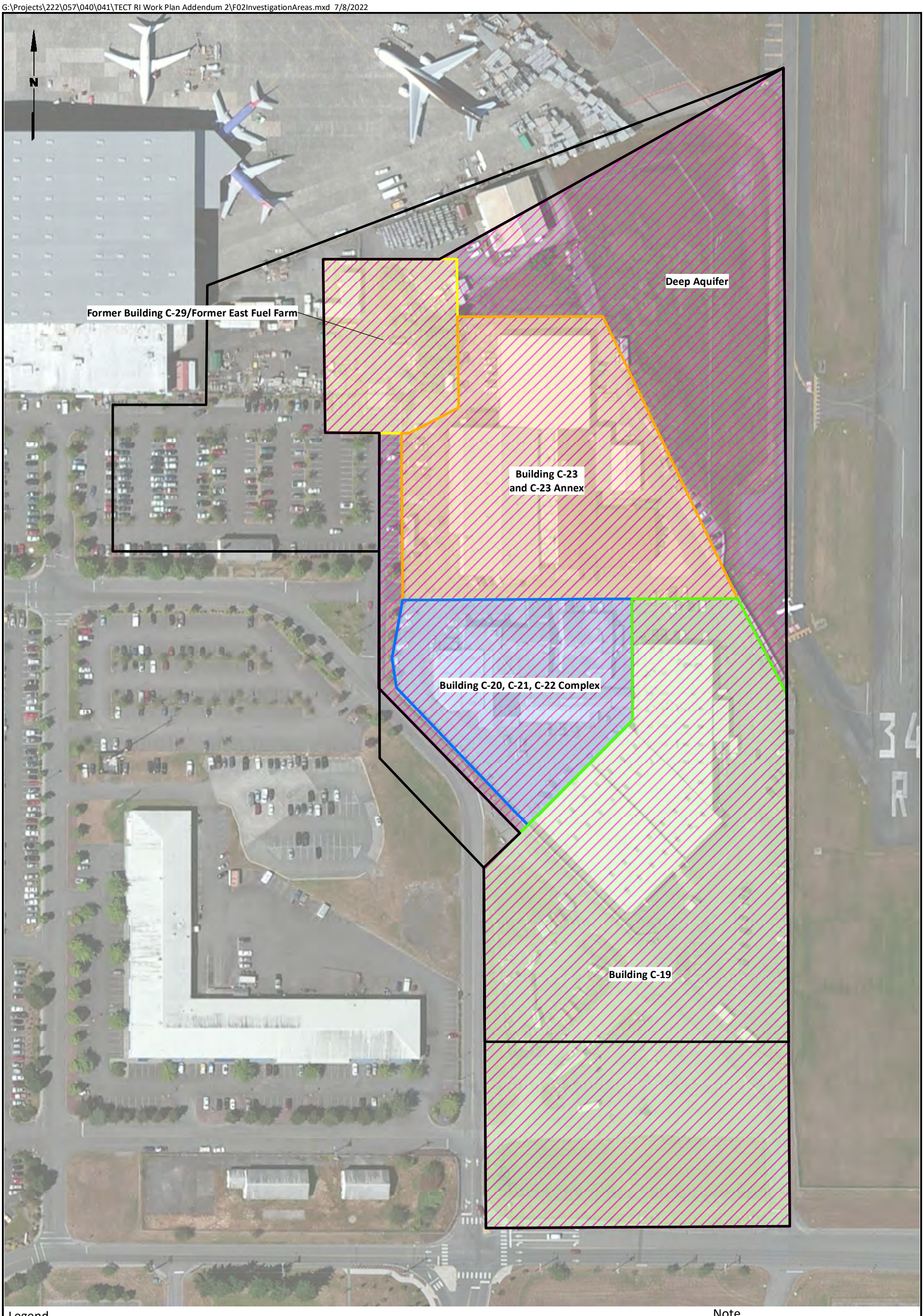

Legend

Approximate Site Boundary

Investigation Areas

- Deep Aquifer
- Building C-19
- Building C-20, C-21, C-22 Complex
- Building C-23 and C-23 Annex
- Former Building C-29/ Former East Fuel Farm

0 125 250

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Sources: AGI 1999; Landau Associates 2006; Esri World Imagery.

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TECT Aerospace Leasehold Everett, Washington	**Investigation Areas**	Figure 2

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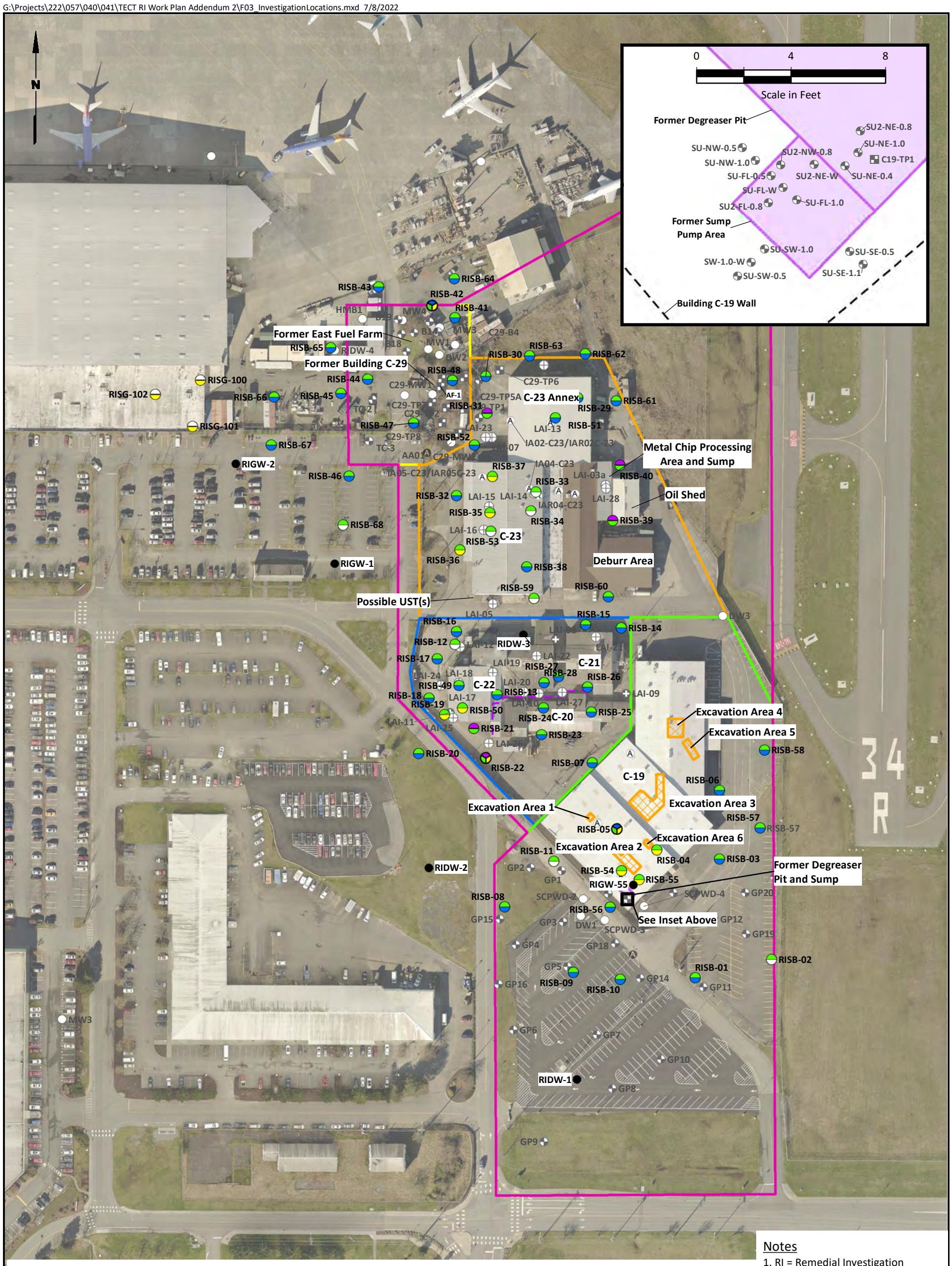

Legend

RI Sampling Location

- RI Soil Sampling Location
- RI Soil Gas Sampling Location
- RI Groundwater Sampling Location
- RI Soil, Soil Gas, and Groundwater Sampling Location
- RI Soil and Groundwater Grab Sampling Location from Saturated Vapor Implant
- RI Monitoring Well Location

Pre-RI Sampling Location

- Ambient Air Sampling Location
- Soil Boring Location
- Indoor Air Sampling Location
- Monitoring Well Location (Sampled During RI)
- Soil and Soil Gas Sampling Location
- Soil Gas Sampling Location
- Test Pit

- Previous Remedial Action Areas
- Deep Aquifer Area of Concern
- Building C-19 Area of Concern
- Building C-20, C-21, C-22 Complex Area of Concern
- Building C-23 and C-23 Annex Area of Concern
- Former Building C-29/Former East Fuel Farm Area of Concern

Notes

1. RI = Remedial Investigation
   UST = underground storage tank.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Sources: AGI 1999; Landau Associates 2006; King County GIS.

0 140 280

Scale in Feet

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Pre-RI and Phase I/II RI Site-Wide Investigation Locations

Figure 3

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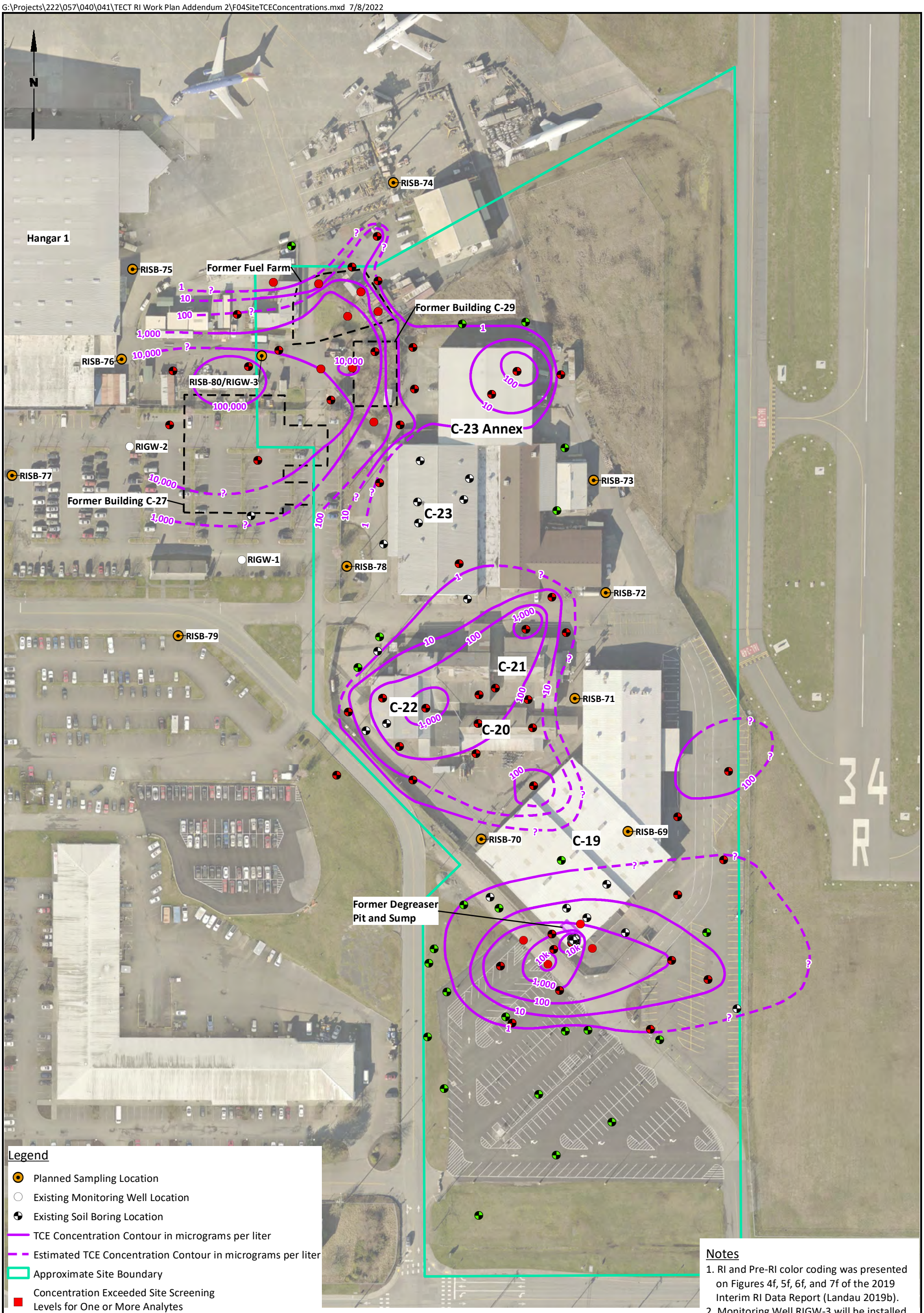

Legend

- Planned Sampling Location
- Existing Monitoring Well Location
- Existing Soil Boring Location
- TCE Concentration Contour in micrograms per liter
- Estimated TCE Concentration Contour in micrograms per liter
- Approximate Site Boundary
- Concentration Exceeded Site Screening Levels for One or More Analytes
- One or More Analytes were Detected, but did not Exceed Site Screening Levels
- Analysis was Conducted, but Results were not Detected above Laboratory Reporting Limits
- Samples Collected from this Location were not Analyzed

0 120 240

Scale in Feet

Data Sources: AGI 1999; Landau Associates 2006; King County GIS.

Notes

1. RI and Pre-RI color coding was presented on Figures 4f, 5f, 6f, and 7f of the 2019 Interim RI Data Report (Landau 2019b).
2. Monitoring Well RIGW-3 will be installed within 10 feet of RISB-80.
3. TCE = trichloroethene.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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TECT Aerospace Leasehold
Everett, Washington

TCE Concentration Contours in Shallow Groundwater and Planned Sampling Locations

Figure 4

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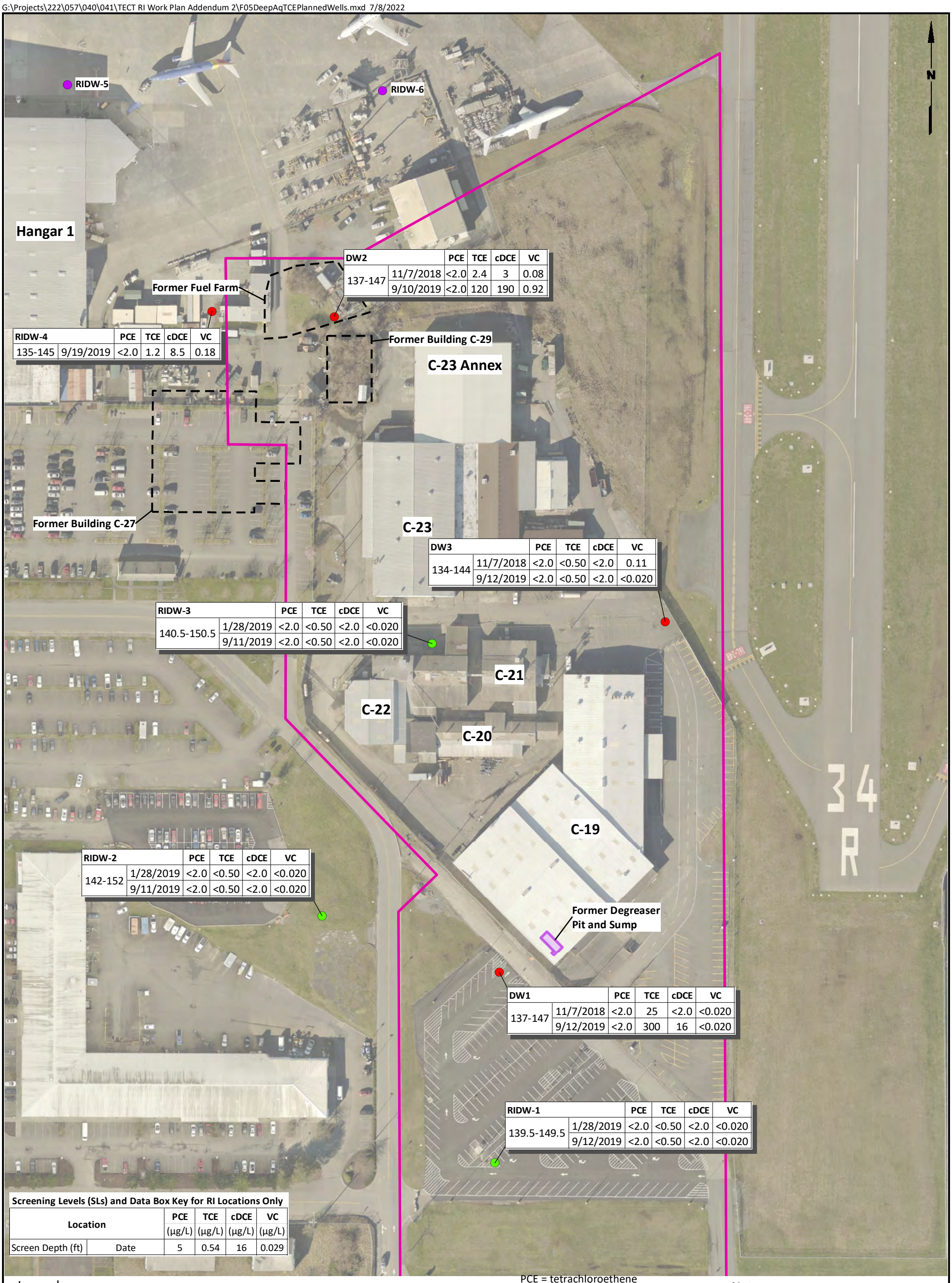

DW2		PCE	TCE	cDCE	VC
137-147	11/7/2018	<2.0	2.4	3	0.08
	9/10/2019	<2.0	120	190	0.92

RIDW-4		PCE	TCE	cDCE	VC
135-145	9/19/2019	<2.0	1.2	8.5	0.18

DW3		PCE	TCE	cDCE	VC
134-144	11/7/2018	<2.0	<0.50	<2.0	0.11
	9/12/2019	<2.0	<0.50	<2.0	<0.020

RIDW-3		PCE	TCE	cDCE	VC
140.5-150.5	1/28/2019	<2.0	<0.50	<2.0	<0.020
	9/11/2019	<2.0	<0.50	<2.0	<0.020

RIDW-2		PCE	TCE	cDCE	VC
142-152	1/28/2019	<2.0	<0.50	<2.0	<0.020
	9/11/2019	<2.0	<0.50	<2.0	<0.020

DW1		PCE	TCE	cDCE	VC
137-147	11/7/2018	<2.0	25	<2.0	<0.020
	9/12/2019	<2.0	300	16	<0.020

RIDW-1		PCE	TCE	cDCE	VC
139.5-149.5	1/28/2019	<2.0	<0.50	<2.0	<0.020
	9/12/2019	<2.0	<0.50	<2.0	<0.020

Screening Levels (SLs) and Data Box Key for RI Locations Only

Location		PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)
Screen Depth (ft)	Date	5	0.54	16	0.029

Legend

Color Coding Key

- Concentration Exceeded Site Screening Levels for One or More Analytes
- One or More Analytes were Detected, but did not Exceed Site Screening Levels
- Analysis was Conducted, but Results were not Detected above Laboratory Reporting Limits
- Samples Collected from this Location were not Analyzed

- Monitoring Well
- Planned Deep Aquifer Monitoring Well
- Deep Aquifer Investigation Area

PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis,1-2,dichloroethene
VC = vinyl chloride
RI = Remedial Investigation
ft = feet

Notes

1. Concentrations reported in micrograms per liter (µg/L).
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Sources: AGI 1999; Landau Associates 2006; King County GIS.

0 120 240

Scale in Feet

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Everett, Washington

TCE Concentrations in Deep Aquifer and Planned Well Locations

Figure 5

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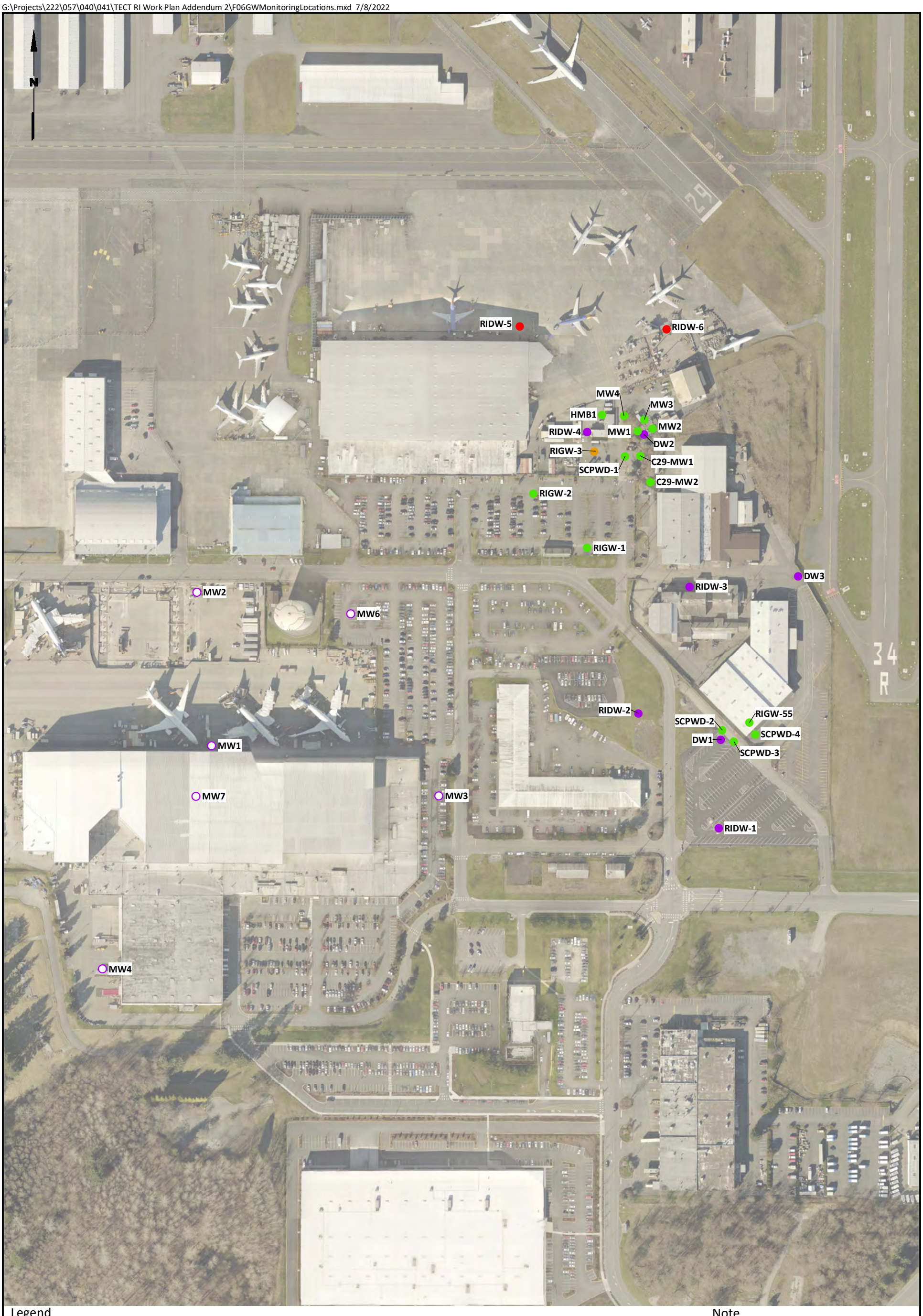


Legend

- Planned Shallow Aquifer Monitoring Well
- Planned Deep Aquifer Monitoring Well
- Existing Onsite Shallow Aquifer Monitoring Well
- Existing Onsite Deep Aquifer Monitoring Well
- Existing Offsite Deep Aquifer Monitoring Well

0 250 500

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Sources: AGI 1999; Landau Associates 2006; King County GIS.

LANDAU ASSOCIATES

TECT Aerospace Leasehold Everett, Washington	**Groundwater Monitoring Well Locations**	Figure 6

Table 1
Summary of Remedial Investigation Sampling and Analyses
Phase III Remedial Investigation/Feasibility Study Work Plan Addendum No. 2 - Revision 1
Paine Field TECT Aerospace Leasehold – Everett, Washington

		Soil							Groundwater						
Exploration ID	Investigation Area	# of Samples	VOCs	DRO / ORO	GRO	Metals	TOC	Grain Size	VOCs	cPAHs	DRO / ORO	GRO	Tot. Metals	Dis. Metals	1,4-Dioxane
RISB-69	C-19	3 (c)	X						X						X
RISB-70		3 (c)	X						X						
RISB-71	C-20,-21,-22	3 (c)	X	X (*)	X (*)				X	X (*)	X (*)	X (*)			X
RISB-72		3 (c)	X						X						
RISB-73	C-23 & Annex	3 (c)	X						X						X
RISB-74	C-29/Fuel Farm	3 (c)	X	X	X				X	X	X	X	X (a)	X(a) (*)	
RISB-75		3 (c)	X						X						
RISB-76		3 (c)	X						X	X	X	X	X (a)	X (a) (*)	X
RISB-77		3 (c)	X						X						X
RISB-78		3 (c)	X						X	X (*)	X (*)	X (*)			X
RISB-79		3 (c)	X						X						
RISB-80		4-5 (c)	X	X	X	X (b)			X	X	X	X	X	X	X
RIGW-3									X	X	X	X	X	X	X
RIDW-5	Deep Aquifer	3 (d)	X				X	X	X	X	X	X	X (a)	X (a)	X
RIDW-6		3 (d)	X				X	X	X	X	X	X	X (a)	X (a)	X

Notes:

(a) Total and Dissolved Metals: MTCA metals (arsenic, cadmium, chromium, lead, and mercury); One (1) location request RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury), plus nickel and zinc for waste characterization purposes.

(b) Total Metals: MTCA metals; request RCRA 8 plus nickel and zinc for waste characterization purposes.

(c) **For shallow soil borings**, the depth of drilling and the soil interval from which soil samples are collected for laboratory analysis will depend on the results of field screening, as detailed in the text of this addendum.

(d) **For deep soil borings** (for the installation of the deep monitoring well), the depth of drilling will be approximately 150 ft bgs. Soil will be collected for laboratory analysis as detailed below:

One sample will be collected from each of the following three depth intervals: 0 ft-50 ft, 50 ft-100 ft, and 100 ft-150 ft. The actual sample will be collected from the portion of the interval that yields the greatest level of field-observed contamination. If no field-observed contamination is present, a sample will be collected from the approximate midpoint of the interval (e.g., 24-25 ft for the 0 ft-50 ft depth interval).

(*) Collect sample only if field screening indicates hydrocarbon contamination; for soil, collect sample from most contaminated zone.

Abbreviations and Acronyms:

bgs = below ground surface
cPAHs = carcinogenic polycyclic aromatic hydrocarbons
Dis. = dissolved
DRO = diesel-range organics
ft = foot/feet
GRO = gasoline-range organics
ID = identification
MTCA = Model Toxics Control Act
NA = natural attenuation
ORO = oil-range organics
Param = parameters
RCRA = Resource Conservation and Recovery Act
TOC = total organic carbon
VOC = volatile organic compounds

ATTACHMENT 1

Inadvertent Discovery Plan

INADVERTENT DISCOVERY PLAN

PLAN AND PROCEDURES FOR THE DISCOVERY OF CULTURAL RESOURCES AND HUMAN SKELETAL REMAINS

To request ADA accommodation, including materials in a format for the visually impaired, call Ecology at 360-407-6000 or visit https://ecology.wa.gov/accessibility. People with impaired hearing may call Washington Relay Service at 711. People with a speech disability may call TTY at 877-833-6341.

Site Name(s): Former TECT Aerospace Everett Location: Snohomish County Airport

Project Lead/Organization: Snohomish County Airport County: Snohomish

If this Inadvertent Discovery Plan (IDP) is for multiple (batched) projects, ensure the location information covers all project areas.

1. INTRODUCTION

The IDP outlines procedures to perform in the event of a discovery of archaeological materials or human remains, in accordance with applicable state and federal laws. An IDP is required, as part of Agency Terms and Conditions for all grants and loans, for any project that creates disturbance above or below the ground. An IDP is not a substitute for a formal cultural resource review (Executive 21-02 or Section 106).

Once completed, **the IDP should always be kept at the project site** during all project activities. All staff, contractors, and volunteers should be familiar with its contents and know where to find it.

2. CULTURAL RESOURCE DISCOVERIES

A cultural resource discovery could be prehistoric or historic. Examples include (see images for further examples):

- An accumulation of shell, burned rocks, or other food related materials.
- Bones, intact or in small pieces.
- An area of charcoal or very dark stained soil with artifacts.
- Stone tools or waste flakes (for example, an arrowhead or stone chips).
- Modified or stripped trees, often cedar or aspen, or other modified natural features, such as rock drawings.
- Agricultural or logging materials that appear older than 50 years. These could include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, and many other items.
- Clusters of tin cans or bottles, or other debris that appear older than 50 years.
- Old munitions casings. ***Always assume these are live and never touch or move.***
- Buried railroad tracks, decking, foundations, or other industrial materials.
- Remnants of homesteading. These could include bricks, nails, household items, toys, food containers, and other items associated with homes or farming sites.

The above list does not cover every possible cultural resource. When in doubt, assume the material is a cultural resource.

3. ON-SITE RESPONSIBILITIES

If any employee, contractor, or subcontractor believes that they have uncovered cultural resources or human remains at any point in the project, take the following steps to ***Stop-Protect-Notify***. **If you suspect that the discovery includes human remains, also follow Sections 5 and 6.**

STEP A: Stop Work.

All work must stop immediately in the vicinity of the discovery.

STEP B: Protect the Discovery.

Leave the discovery and the surrounding area untouched and create a clear, identifiable, and wide boundary (30 feet or larger) with temporary fencing, flagging, stakes, or other clear markings. Provide protection and ensure integrity of the discovery until cleared by the Department of Archaeological and Historical Preservation (DAHP) or a licensed, professional archaeologist.

Do not permit vehicles, equipment, or unauthorized personnel to traverse the discovery site. Do not allow work to resume within the boundary until the requirements of this IDP are met.

STEP C: Notify Project Archaeologist (if applicable).

If the project has an archaeologist, notify that person. If there is a monitoring plan in place, the archaeologist will follow the outlined procedure.

STEP D: Notify Project and Washington Department of Ecology (Ecology) contacts.

Project Lead Contacts

Primary Contact		Alternate Contact	
Name:	Andrew C. Rardin	Name:	Jerry Ninteman
Organization:	Snohomish County Airpor	Organization:	Landau Associates
Phone:	425-508-7472	Phone:	425-329-0272
Email:	andrew.rardin@snoco.org	Email:	JNinteman@landauinc.com

Ecology Contacts (completed by Ecology Project Manager)

Ecology Project Manager		Alternate or Cultural Resource Contact	
Name:	David Unruh	Name:	Ali Furmall
Program:	Toxics Cleanup Program	Program:	Toxics Cleanup Program
Phone:	206.459.6287	Phone:	509-655-0538
Email:	david.unruh@ecy.wa.gov	Email:	ali.furmall@ecy.wa.gov

STEP E: Ecology will notify DAHP.

Once notified, the Ecology Cultural Resource Contact or the Ecology Project Manager will contact DAHP to report and confirm the discovery. To avoid delay, the Project Lead/Organization will contact DAHP if they are not able to reach Ecology.

DAHP will provide the steps to assist with identification. DAHP, Ecology, and Tribal representatives may coordinate a site visit following any necessary safety protocols. DAHP may also inform the Project Lead/Organization and Ecology of additional steps to further protect the site.

Do not continue work until DAHP has issued an approval for work to proceed in the area of, or near, the discovery.

DAHP Contacts:

Name: Rob Whitlam, PhD
Title: State Archaeologist
Cell: 360-890-2615
Email: Rob.Whitlam@dahp.wa.gov
Main Office: 360-586-3065

Human Remains/Bones:

Name: Guy Tasa, PhD
Title: State Anthropologist
Cell: 360-790-1633 (24/7)
Email: Guy.Tasa@dahp.wa.gov

4. TRIBAL CONTACTS

In the event cultural resources are discovered, the following tribes will be contacted. See Section 10 for Additional Resources.

Tribe:	Tulalip Tribes	Tribe:	Stillaguamish Tribe of Indians
Name:	Richard Young	Name:	Kerry Lyste
Title:	Cultural Resources Manager	Title:	THPO, Cultural Resources
Phone:	360-716-2652	Phone:	360-652-7362 ext. 226
Email:	ryoung@tulaliptribes-nsn.gov	Email:	klyste@stillaguamish.com
Tribe:	Muckleshoot Indian Tribe	Tribe:	Samish Indian Nation
Name:	Laura Murphy	Name:	Jackie Ferry
Title:	Archaeologist Cultural Resources	Title:	THPO
Phone:	253-876-3272	Phone:	360-293-6404 ext. 126
Email:	laura.murphy@muckleshoot.nsn.us	Email:	jferry@samishtribe.nsn.us

Please provide contact information for additional tribes within your project area, if needed, in Section 11.

5. FURTHER CONTACTS (if applicable)

If the discovery is confirmed by DAHP as a cultural or archaeological resource, or as human remains, and there is a partnering federal or state agency, Ecology or the Project Lead/Organization will ensure the partnering agency is immediately notified.

Federal Agency:		State Agency:	
Agency:	NA	Agency:	NA
Name:		Name:	
Title:		Title:	
Phone:		Phone:	
Email:		Email:	

6. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL MATERIAL

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect. Follow the steps under ***Stop-Protect-Notify.*** For specific instructions on how to handle a human remains discovery, see: *RCW 68.50.645: Skeletal human remains—Duty to notify—Ground disturbing activities—Coroner determination—Definitions*.

Suggestion: If you are unsure whether the discovery is human bone or not, contact Guy Tasa with DAHP, for identification and next steps. Do not pick up the discovery.

Guy Tasa, PhD State Physical Anthropologist
Guy.Tasa@dahp.wa.gov
(360) 790-1633 (Cell/Office)

For discoveries that are confirmed or suspected human remains, follow these steps:

1. Notify law enforcement and the Medical Examiner/Coroner using the contacts below. **Do not call 911** unless it is the only number available to you.

   Enter contact information below (required):
   - Local Medical Examiner or Coroner name and phone: J. Matthew Lacy, M.D. 425-438-6205
   - Local Law Enforcement main name and phone: Adam Fortney, 425-388-3026
   - Local Non-Emergency phone number (911 if without a non-emergency number): Snohomish County Sheriff's Office, 425-407-3999
2. The Medical Examiner/Coroner (with assistance of law enforcement personnel) will determine if the remains are human or if the discovery site constitutes a crime scene and will notify DAHP.
3. **DO NOT speak with the media, allow photography or disturbance of the remains, or release any information about the discovery on social media.**
4. If the remains are determined to be non-forensic, Cover the remains with a tarp or other materials (not soil or rocks) for temporary protection and to shield them from being photographed by others or disturbed.

Further activities:

- Per RCW 27.44.055, RCW 68.50, and RCW 68.60, DAHP will have jurisdiction over non-forensic human remains. Ecology staff will participate in consultation. Organizations may also participate in consultation.
- Documentation of human skeletal remains and funerary objects will be agreed upon through the consultation process described in RCW 27.44.055, RCW 68.50, and RCW 68.60.
- When consultation and documentation activities are complete, work in the discovery area may resume as described in Section 8.

If the project occurs on federal lands (such as a national forest or park or a military reservation) the provisions of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) apply and the responsible federal agency will follow its provisions. Note that state highways that cross federal lands are on an easement and are not owned by the state.

If the project occurs on non-federal lands, the Project Lead/Organization will comply with applicable state and federal laws, and the above protocol.

7. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS

Archaeological resources discovered during construction are protected by state law RCW 27.53 and assumed eligible for inclusion in the National Register of Historic Places under Criterion D until a formal Determination of Eligibility is made.

The Project Lead/Organization must ensure that proper documentation and field assessment are made of all discovered cultural resources in cooperation with all parties: the federal agencies (if any), DAHP, Ecology, affected tribes, and the archaeologist.

The archaeologist will record all prehistoric and historic cultural material discovered during project construction on a standard DAHP archaeological site or isolate inventory form. They will photograph site overviews, features, and artifacts and prepare stratigraphic profiles and soil/sediment descriptions for minimal subsurface exposures. They will document discovery locations on scaled site plans and site location maps.

Cultural features, horizons, and artifacts detected in buried sediments may require the archaeologist to conduct further evaluation using hand-dug test units. They will excavate units in a controlled fashion to expose features, collect samples from undisturbed contexts, or to interpret complex stratigraphy. They may also use a test unit or trench excavation to determine if an intact occupation surface is present. They will only use test units when necessary to gather information on the nature, extent, and integrity of subsurface cultural deposits to evaluate the site's significance. They will conduct excavations using standard archaeological techniques to precisely document the location of cultural deposits, artifacts, and features.

The archaeologist will record spatial information, depth of excavation levels, natural and cultural stratigraphy, presence or absence of cultural material, and depth to sterile soil, regolith, or bedrock for each unit on a standard form. They will complete test excavation unit level forms, which will include plan maps for each excavation level and artifact counts and material types, number, and vertical provenience (depth below

surface and stratum association where applicable) for all recovered artifacts. They will draw a stratigraphic profile for at least one wall of each test excavation unit.

The archaeologist will screen sediments excavated for purposes of cultural resources investigation through 1/8-inch mesh, unless soil conditions warrant 1/4-inch mesh.

The archaeologist will analyze, catalogue, and temporarily curate all prehistoric and historic artifacts collected from the surface and from probes and excavation units. The ultimate disposition of cultural materials will be determined in consultation with the federal agencies (if any), DAHP, Ecology, and the affected tribe(s).

Within 90 days of concluding fieldwork, the archaeologist will provide a technical report describing any and all monitoring and resultant archaeological excavations to the Project Lead/Organization, who will forward the report to Ecology, the federal agencies (if any), DAHP, and the affected tribe(s) for review and comment.

If assessment activities expose human remains (burials, isolated teeth, or bones), the archaeologist and Project Lead/Organization will follow the process described in **Section 6**.

8. PROCEEDING WITH WORK

The Project Lead/Organization shall work with the archaeologist, DAHP, and affected tribe(s) to determine the appropriate discovery boundary and where work can continue.

Work may continue at the discovery location only after the process outlined in this plan is followed and the Project Lead/Organization, DAHP, any affected tribe(s), Ecology, and the federal agencies (if any) determine that compliance with state and federal laws is complete.

9. ORGANIZATION RESPONSIBILITY

The Project Lead/Organization is responsible for ensuring:

- This IDP has complete and accurate information.
- This IDP is immediately available to all field staff at the sites and available by request to any party.
- This IDP is implemented to address any discovery at the site.
- That all field staff, contractors, and volunteers are instructed on how to implement this IDP.

10. ADDITIONAL RESOURCES

Informative Video

Ecology recommends that all project staff, contractors, and volunteers view this informative video explaining the value of IDP protocol and what to do in the event of a discovery. The target audience is anyone working on the project who could unexpectedly find cultural resources or human remains while excavating or digging. The video is also posted on DAHP's inadvertent discovery language website.

Ecology's IDP Video (https://www.youtube.com/watch?v=ioX-4cXfbDY)

Informational Resources

DAHP (https://dahp.wa.gov)

Washington State Archeology (DAHP 2003)
(https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

Association of Washington Archaeologists (https://www.archaeologyinwashington.com)

Potentially Interested Tribes

Interactive Map of Tribes by Area
(https://dahp.wa.gov/archaeology/tribal-consultation-information)

WSDOT Tribal Contact Website
(https://wsdot.wa.gov/tribal/TribalContacts.htm)

11. ADDITIONAL INFORMATION

Please add any additional contact information or other information needed within this IDP.

Sauk-Suiattle Indian Tribe
Kevin Joseph, THPO
kJoseph@sauk-suiattle.com
Phone: 360-436-0333
Cultural Resources
thpo@sauk-suiattle.com

Snoqualmie Tribe
Steven Mullen-Moses, Director
Archaeology and Historic Preservation
425-292-0249x2010
steve@snoqualmietribe.us

Suquamish Tribe
Dennis Lewarch, THPO
Phone: 360-394-8529
dlewarch@Suquamish.nsn.us

Swinomish Indian Tribal Community
Josephine Jefferson, CR Technician
jpeters@swinomish.nsn.us
Phone: 360-466-7352

Implement the IDP if you see…

Chipped stone artifacts.

Examples are:

- Glass-like material.
- Angular material.
- “Unusual” material or shape for the area.
- Regularity of flaking.
- Variability of size.

Stone artifacts from Oregon.

Stone artifacts from Washington.

Biface-knife, scraper, or pre-form found in NE Washington. Thought to be a well knapped object of great antiquity. Courtesy of Methow Salmon Rec. Foundation.

Implement the IDP if you see…

Ground stone artifacts.

Examples are:

- Unusual or unnatural shapes or unusual stone.
- Striations or scratching.
- Etching, perforations, or pecking.
- Regularity in modifications.
- Variability of size, function, or complexity.

Above: Fishing Weight - credit CRITFC Treaty Fishing Rights website.

Artifacts from unknown locations (left and right images).

Implement the IDP if you see…

Bone or shell artifacts, tools, or beads.

Examples are:

- Smooth or carved materials.
- Unusual shape.
- Pointed as if used as a tool.
- Wedge shaped like a “shoehorn”.
- Variability of size.
- Beads from shell (dentalium) or tusk.

Upper Left:*Bone Awls from Oregon.*

Upper Center: *Bone Wedge from California.*

Upper Right: *Plateau dentalium choker and bracelet, from Nez Perce National Historical Park, 19th century, made using Antalis pretiosa shells Credit: Nez Perce - Nez Perce National Historical Park, NEPE 8762, Public Domain.*

Above: *Tooth Pendants. Right: Bone Pendants. Both from Oregon and Washington.*

Implement the IDP if you see…

Culturally modified trees, fiber, or wood artifacts.

Examples are:

- Trees with bark stripped or peeled, carvings, axe cuts, de-limbing, wood removal, and other human modifications.
- Fiber or wood artifacts in a wet environment.
- Variability of size, function, and complexity.

Left and Below: *Culturally modified tree and an old carving on an aspen (Courtesy of DAHP).*

Right, Top to Bottom: *Artifacts from Mud Bay, Olympia: Toy war club, two strand cedar rope, wet basketry*.

Implement the IDP if you see…

Strange, different, or interesting looking dirt, rocks, or shells.

Human activities leave traces in the ground that may or may not have artifacts associated with them. Examples are:

- "Unusual" accumulations of rock (especially fire-cracked rock).
- "Unusual" shaped accumulations of rock (such as a shape similar to a fire ring).
- Charcoal or charcoal-stained soils, burnt-looking soils, or soil that has a "layer cake" appearance.
- Accumulations of shell, bones, or artifacts. Shells may be crushed.
- Look for the "unusual" or out of place (for example, rock piles in areas with otherwise few rocks).

Shell Midden pocket in modern fill discovered in sewer trench.

Underground oven. Courtesy of DAHP.

Shell midden with fire cracked rock.

Hearth excavated near Hamilton, WA.

Implement the IDP if you see…

Historic period artifacts (historic archaeology considered older than 50 years).

Examples are:

- Agricultural or logging equipment. May include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, etc.
- Domestic items including square or wire nails, amethyst colored glass, or painted stoneware.

Left: Top to Bottom: *Willow pattern serving bowl and slip joint pocket knife discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*

Right: *Collections of historic artifacts discovered during excavations in eastern Washington cities.*

Implement the IDP if you see…

Historic period artifacts (historic archaeology considered older than 50 years).

Examples are:

- Railway tokens, coins, and buttons.
- Spectacles, toys, clothing, and personal items.
- Items helping to understand a culture or identity.
- Food containers and dishware.

Main Image: *Dishes, bottles, workboot found at the North Shore Japanese bath house (ofuro) site, Courtesy Bob Muckle, Archaeologist, Capilano University, B.C. This is an example of an above ground resource.*

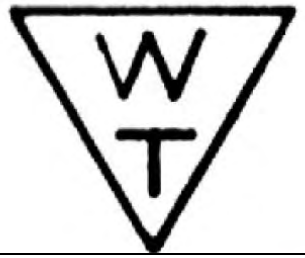
Right, from Top to Bottom: *Coins, token, spectacles and Montgomery Ward pitchfork toy discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*

Implement the IDP if you see…

- Old munition casings – if you see ammunition of any type – ***always assume they are live and never touch or move!***
- Tin cans or glass bottles with an older manufacturer's technique – maker's mark, distinct colors such as turquoise, or an older method of opening the container.

Far Left: .303 British cartridge found by a WCC planting crew on Skagit River. Don't ever touch something like this!
Left: Maker's mark on bottom of old bottle.

Right: *Old beer can found in Oregon. ACME was owned by Olympia Brewery. Courtesy of Heather Simmons.*



Logo employed by Whithall Tatum & Co. between 1924 to 1938 (Lockhart et al. 2016).

Can opening dates, courtesy of W.M. Schroeder.

Implement the IDP if you see…

You see historic foundations or buried structures.

Examples are:

- Foundations.
- Railroad and trolley tracks.
- Remnants of structures.

Counter Clockwise, Left to Right: *Historic structure 45KI924, in WSDOT right of way for SR99 tunnel. Remnants of Smith Cove shantytown (45-KI-1200) discovered during Ecology CSO excavation, City of Spokane historic trolley tracks uncovered during stormwater project, intact foundation of historic home that survived the Great Ellensburg Fire of July 4, 1889, uncovered beneath parking lot in Ellensburg.*

Implement the IDP if you see...

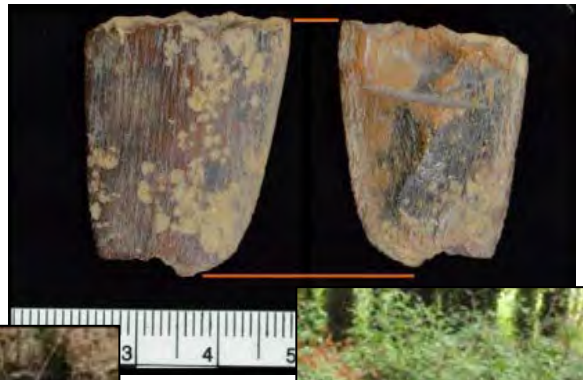
Potential human remains.

Examples are:

- Grave headstones that appear to be older than 50 years.
- Bones or bone tools--intact or in small pieces. It can be difficult to differentiate animal from human so they must be identified by an expert.
- These are all examples of animal bones and are not human.

Center: *Bone wedge tool, courtesy of Smith Cove Shantytown excavation (45KI1200).*

Other images (Top Right, Bottom Left, and Bottom) Center: Courtesy of DAHP.



Directly Above: This is a real discovery at an Ecology sewer project site.

What would you do if you found these items at a site? Who would be the first person you would call?

Hint: *Read the plan!*