Technical Memorandum

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

FROM: Stephanie Renando and Jerry Ninteman, PE

DATE: November 9, 2021

RE: **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
LAI Project No. 0222057.020.021

This technical memorandum presents Addendum No. 2 to the Remedial Investigation/Feasibility Study (RI/FS) Work Plan (work plan) currently being implemented at the former TECT Aerospace Leasehold site (Site; LAI 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. (LAI) 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 (LAI 2019a). Results of the Phase I and Phase II RI were presented in an Interim RI Data Report (LAI 2019b). Results of investigations conducted at the Site prior to the RI are summarized in the work plan.

The purpose of this phase 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).

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 plans to enroll 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 and upon Ecology review of additional data collected.

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 RI as documented in the Interim RI Data Report. The primary data gaps to be addressed are the delineation of chlorinated solvents in soil and groundwater, including deep aquifer groundwater, and evaluation of seasonal fluctuations in groundwater elevations and contaminant concentrations. Additional data gaps that have been identified following the Phase II investigation that will help inform the FS include characterizing fate and transport mechanisms present at the Site

and identifying the extent of piping and/or tanks that remain in place near the former East Fuel Farm area.

Since the Interim RI Data Report was published, 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. Sampling of 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 include 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 are as follows:

- Drill and sample soil and groundwater at 16 shallow borings across all five investigation areas, install one shallow monitoring well (RIGW-3) in the former C-27/fuel farm area and two deep aquifer borings; the deep aquifer borings will be completed as monitoring wells (RIDW-5 and RIDW-6). The 16 borings planned for the shallow aquifer are shown on Figure 4 and the 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 four quarterly groundwater elevation surveys 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.
- Conduct groundwater sampling at all Site wells (15 shallow and 9 deep) immediately following completion of each quarterly groundwater elevation survey and continue sampling until four consecutive quarters of data have been collected. Monitoring well locations are shown on Figure 6.

- Use ground-penetrating radar to survey the former East Fuel Farm area to identify remaining underground storage tanks and/or piping associated with previous fueling operations in that area.

Additional shallow borings and/or deep aquifer monitoring wells may 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. This work plan may be used to guide the installation of these additional borings/wells provided the RI work is still conducted as an independent action under the VCP.

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 volatile organic compounds (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 feet (ft) below ground surface (bgs) to avoid damaging any subsurface utilities or other structures.

Building C-19

Five shallow borings are planned east (RISB-69 through RISB-72) and west (RISB-74) 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 depths 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-73) 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 the County's environmental consultant 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-75 and RISB-76) are planned to help bound elevated 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-77) will be drilled 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-78) will be advanced northeast of the fuel farm, and one (RISB-79) will be advanced northwest of the known VOC plume to bound the elevated VOC contamination identified in groundwater. Four borings (RISB-80 through RISB-83) are planned to bound the extent of VOC contamination west and south of former Building C-27.

One boring (RISB-84) 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-84 to help develop the FS options in this area. Groundwater will be collected from the temporary soil boring RISB-84 and a permanent groundwater monitoring well (RIGW-3) will be installed within 10 ft of RISB-84.

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.

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 and sample soil borings. 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) contained in the work plan (LAI 2018) and are hereby adopted by reference.

Additional procedures to be followed during drilling and sampling of shallow soil borings (RISB-69 through RISB-84) 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 work plan 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.
- If perched groundwater is not observed in the 0- to 20-ft bgs interval, then proceed with the 20- to 30-ft core barrel 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). A summary of planned sampling and analyses for soil and groundwater collected during drilling activities is provided in Table 1.

Groundwater Monitoring and Sampling

Groundwater elevations in the shallow and deep aquifers will be monitored for four consecutive quarters. 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.

Groundwater sampling of the on-Site deep and shallow aquifer wells is planned to occur on a quarterly basis and will coincide with the quarterly elevation monitoring described above. The laboratory analytical suite will be limited to VOCs, dissolved gases, general chemistry parameters, total petroleum hydrocarbons, and a short list of metals where applicable in the former Building C-29/former East Fuel Farm area. These analyses are consistent with previous samples collected at these wells and will continue to provide data that can be used to assess seasonal fluctuations in contaminant concentrations. The planned analytical program for the monitoring wells is shown in Table 1.

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 (LAI 2018). Groundwater elevation and analytical data from each quarter will be evaluated and data from all four quarters will be presented in either an interim data report or the pending RI/FS report.

Schedule

Coordination for Phase III RI field activities will begin after receipt of Airport approval of this Addendum. It is expected that the sampling activities will start in 2022 and extend into 2023 to accommodate a quarterly monitoring and sampling schedule. Additional investigation may be required if the Phase III RI results indicate further delineation is required.

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 LAI. 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 LAI, shall be at the user's sole risk. LAI 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. LAI 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

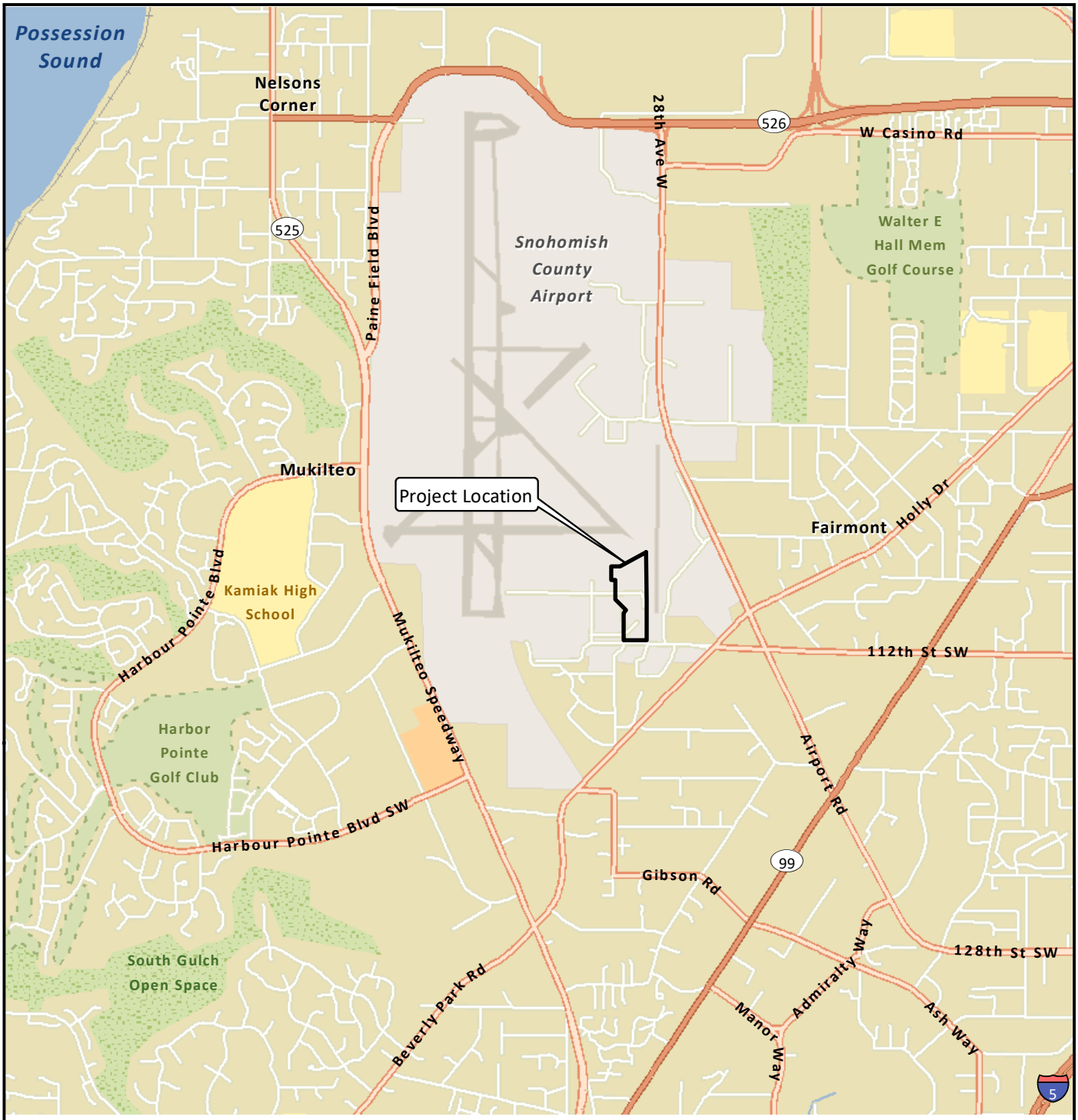
LAI. 2018. Remedial Investigation/Feasibility Study Work Plan, Paine Field TECT Aerospace Leasehold, Everett, Washington. Landau Associates, Inc. September 19.

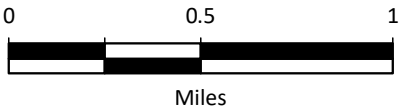
LAI. 2019a. Technical Memorandum: Addendum No. 1 - Phase II Remedial Investigation/Feasibility Study Work Plan, TECT Aerospace Leasehold Site, Snohomish County Airport/Paine Field, Everett, Washington. Landau Associates, Inc. August 20.

LAI. 2019b. Interim Remedial Investigation Data Report, TECT Aerospace Leasehold, Snohomish County Airport/Paine Field, Everett, Washington. Landau Associates, Inc. December 31.

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





Data Source: Esri.

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

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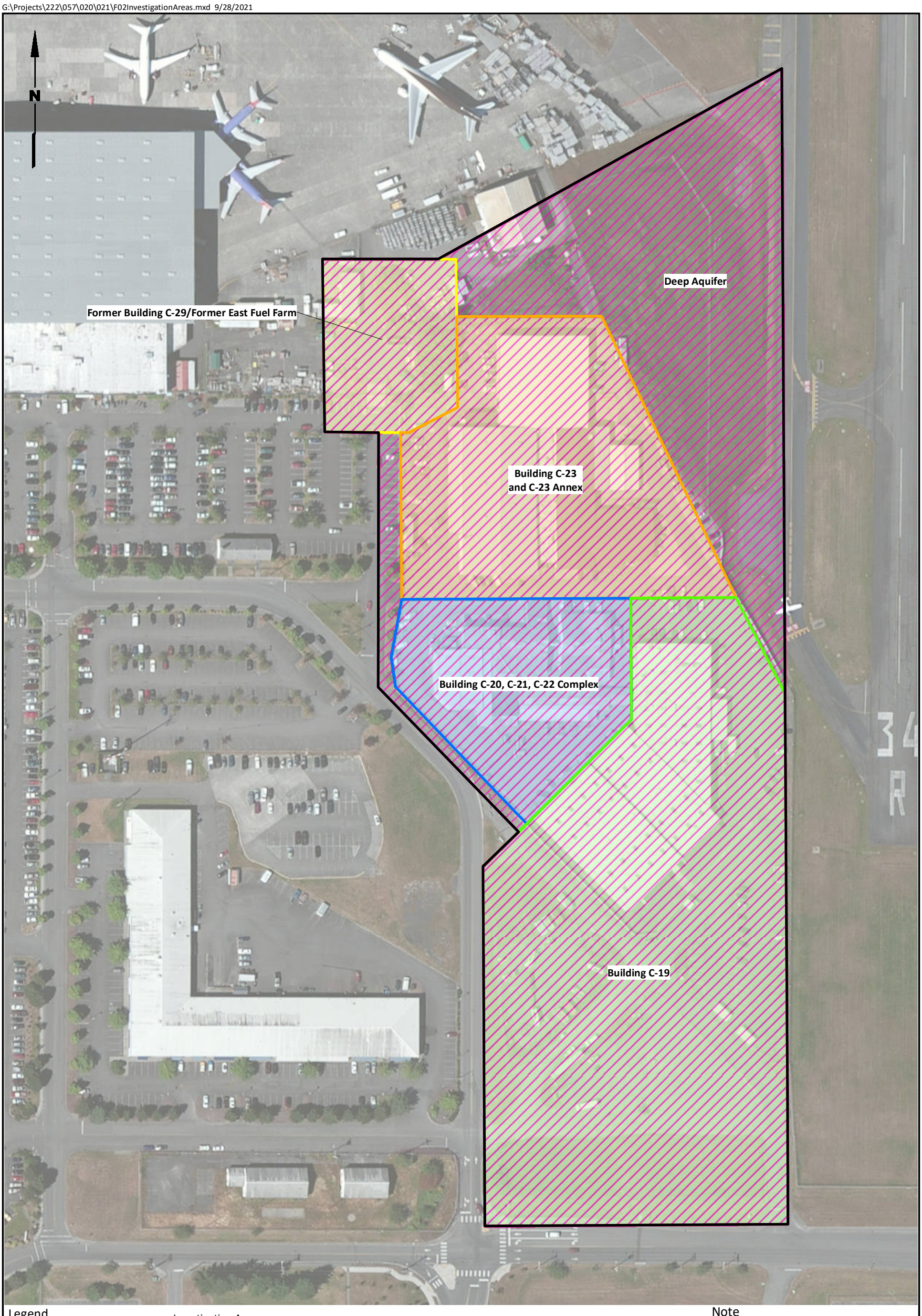

Legend

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

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

Note

1. 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	**Investigation Areas**	Figure 2

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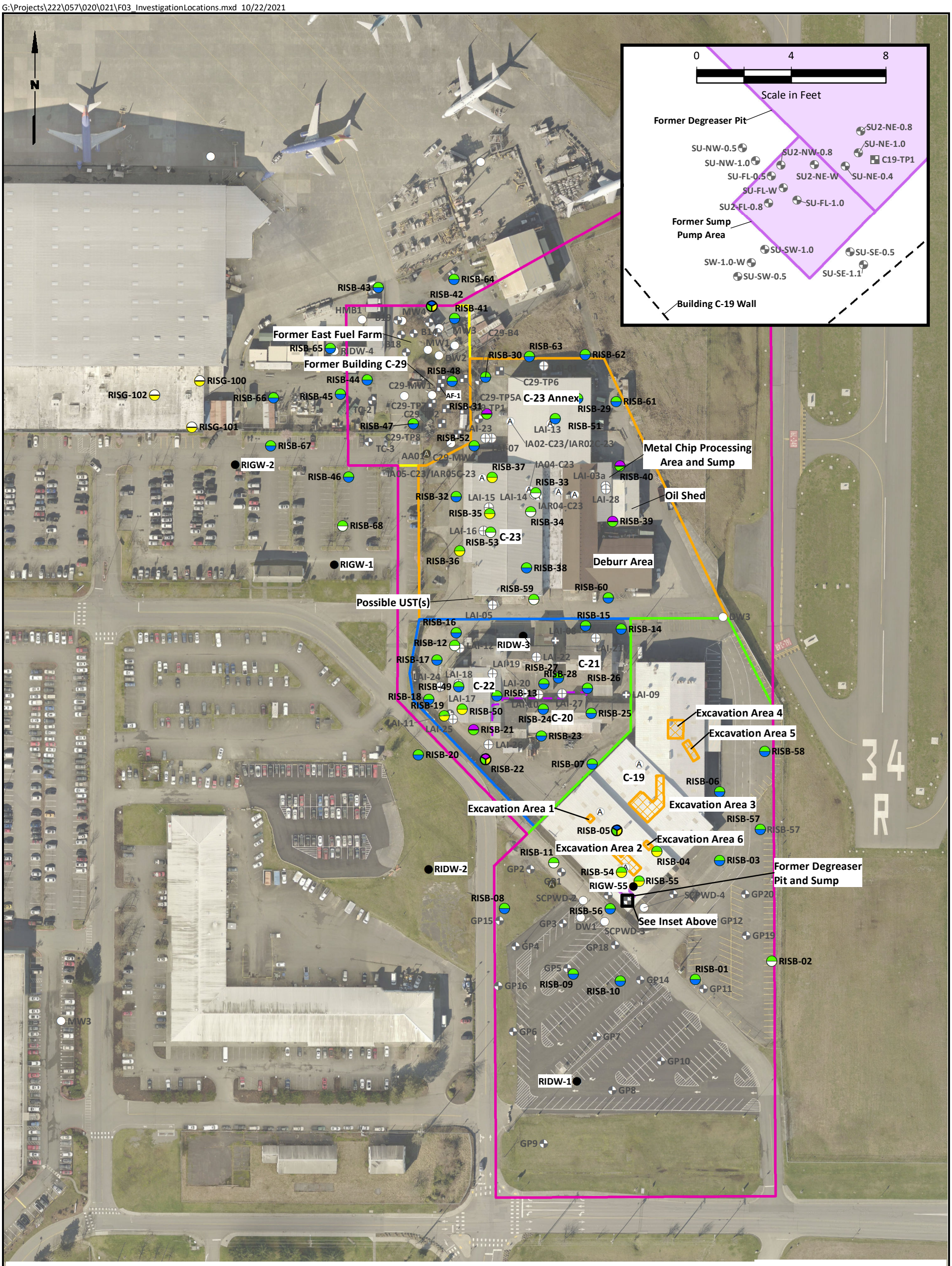

Legend

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

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.

0 140 280

Scale in Feet

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Everett, Washington

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

Figure 3

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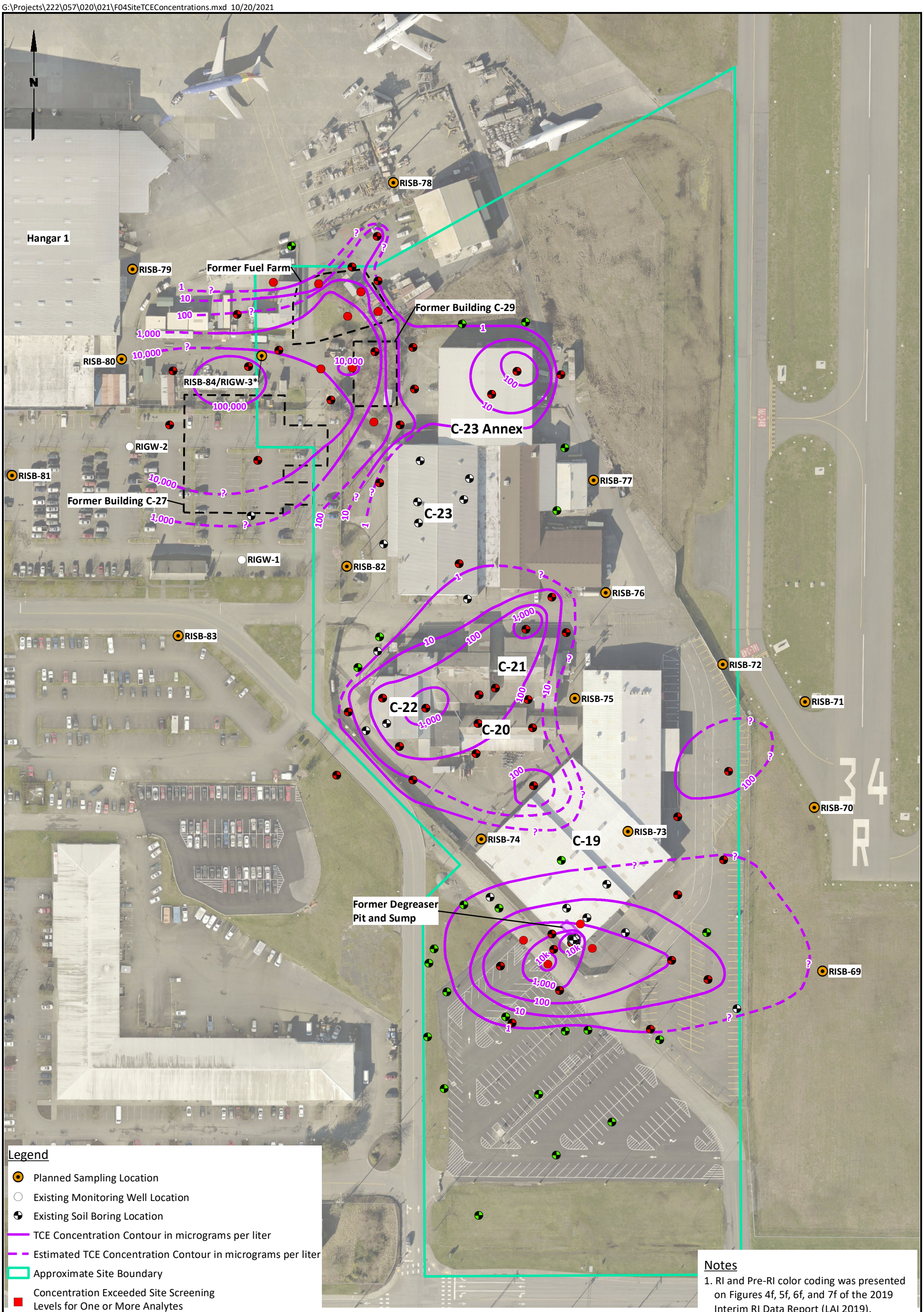

Legend

- 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 (LAI 2019).
2. *Monitoring Well RIGW-3 will be installed within 10 feet of RISB-84.
3. 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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RIDW-5

RIDW-6

Hangar 1

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

Former Fuel Farm

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

Former Building C-29

C-23 Annex

Former Building C-27

C-23

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

C-21

C-22

C-20

C-19

34 R

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

Former Degreaser Pit and Sump

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

Notes

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

0 120 240

Scale in Feet

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

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Everett, Washington

TCE Concentrations in Deep Aquifer and Planned Well Locations

Figure 5

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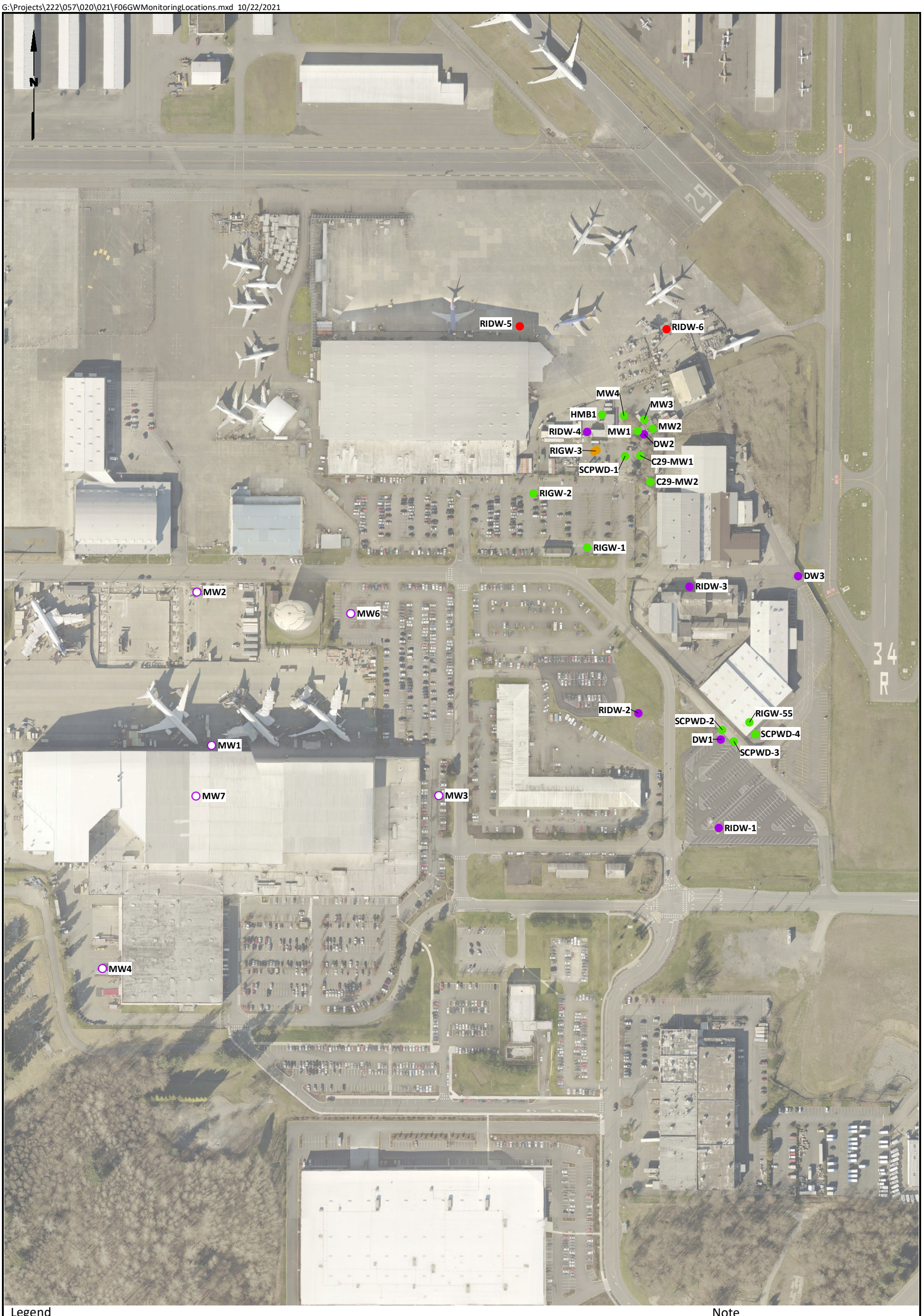

Legend

- 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.

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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
Paine Field TECT Aerospace Leasehold – Everett, Washington

			Soil							Groundwater					
	Exploration ID	Investigation Area	# of Samples	VOCs	DRO / ORO	GRO	Metals	TOC	Grain Size	VOCs	DRO / ORO	GRO	Dis. Metals	1,4-Dioxane	NA Params
Existing Wells	SCPWD-2	C-19								X				X	X (b)
	SCPWD-3									X				X	X (b)
	SCPWD-4									X				X	X (b)
	RIGW-55									X				X	X (b)
	SCPWD-1	C-29/Fuel Farm								X	X	X	X (a)	X	X (b)
	MW-1									X	X	X	X (a)	X	X (b)
	MW-2									X	X	X	X (a)	X	X (b)
	MW-3									X	X	X	X (a)	X	X (b)
	MW-4									X	X	X	X (a)	X	X (b)
	HMB1									X	X	X	X (a)	X	X (b)
	C29-MW1									X	X	X	X (a)	X	X (b)
	C29-MW2									X	X	X	X (a)	X	X (b)
	RIGW-1									X	X	X	X (a)	X	X (b)
	RIGW-2									X	X	X	X (a)	X	X (b)
	DW1	Deep Aquifer								X				X	X (b)
	DW2									X				X	X (b)
	DW3									X				X	X (b)
	RIDW-1									X				X	X (b)
	RIDW-2									X				X	X (b)
	RIDW-3									X				X	X (b)
	RIDW-4									X				X	X (b)
Phase III Investigation	RIDW-5	Deep Aquifer	3 (e)	X				X	X	X				X	X (b)
	RIDW-6		3 (e)	X				X	X	X				X	X (b)
	RISB-69	C-19	3 (d)	X						X					
	RISB-70		3 (d)	X						X					
	RISB-71		3 (d)	X						X				X	
	RISB-72		3 (d)	X						X					
	RISB-73		3 (d)	X						X				X	
	RISB-74		3 (d)	X						X					
	RISB-75	C-20,-21,-22	3 (d)	X	X (*)	X (*)				X	X (*)	X (*)		X	
	RISB-76		3 (d)	X						X					
	RISB-77	C-23 & Annex	3 (d)	X						X				X	

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

			Soil							Groundwater					
	Exploration ID	Investigation Area	# of Samples	VOCs	DRO / ORO	GRO	Metals	TOC	Grain Size	VOCs	DRO / ORO	GRO	Dis. Metals	1,4-Dioxane	NA Params
Phase III Investigation	RIDW-6	C-29/Fuel Farm								X	X	X	X (a)	X	X (b)
	RISB-78		3 (d)	X	X	X				X	X	X	X(a) (*)		
	RISB-79		3 (d)	X						X					
	RISB-80		3 (d)	X						X	X	X	X (a) (*)	X	
	RISB-81		3 (d)	X						X				X	
	RISB-82		3 (d)	X						X	X (*)	X (*)		X	
	RISB-83		3 (d)	X						X					
	RISB-84		4-5 (d)	X	X	X	X (c)			X	X	X	X	X	

Notes:

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

(b) Sample one quarter only. Natural Attenuation Parameters include nitrate, sulfate, methane, ethane, ethene, total organic carbon, and ferrous iron (kit).

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

(d) **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 ir the text of this addendum.

(e) **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 interva 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 interva (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:

Dis. = dissolved
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