INITIAL INVESTIGATION FIELD REPORT

WASHINGTON STATE DEPARTMENT OF ECOLOGY

☐ **Check this box if you have attached any documents to this form (using the paperclip icon on the left).**

ERTS #(s):	718130
Parcel #(s):	28042200402400
County:	Snohomish
FSID #:	99999116
CSID #:	16778
UST #:	

SITE INFORMATION

Site Name (Name over door):	Site Address (including City, State and Zip):	Phone / Email
Big Gulch Creek Subbasin 9	Drainage Ditch S of Falcon Drive (see gps coordinates and figures below) Everett, WA 98204	
Site Contact, Title, Business: Andrew Rardin, Environmental & Wildlife Mgr Paine Field / Snohomish County Airport	**Site Contact Address (including City, State and Zip):** 3220 100th St SW, Suite A Everett, WA 98204	Phone Email andrew.rardin@co.snohomish.wa.us
Site Owner, Title, Business: Snohomish County Property Management	**Site Owner Address (including City, State and Zip):**	Phone Email
Site Owner Contact, Title, Business:	**Site Owner Contact Address (including City, State and Zip):**	Phone Email
Previous Site Owner(s): **Alternate Site Name(s):**	**Additional Info (for any Site Information Item):** Drainage area includes multiple parcels, all owned by Snohomish County. Parcel listed above is where samples with confirmed contamination were collected.	

Latitude (Decimal Degrees):	47.89506
Longitude (Decimal Degrees):	-122.28083

INSPECTION INFORMATION

☑ Please check this box if there is relevant inspection information, such as data or photos, in an existing site report for this site.

Inspection Conducted? Yes ☐ No ☒	Date/Time:	Entry Notice: Announced ☐	Unannounced ☐
Photographs taken? Yes ☐	No ☐	Note: Attach photographs or upload to PIMS	
Samples collected? Yes ☐	No ☐	Note: Attach record with media, location, depth, etc.	

RECOMMENDATION

No Further Action (Check appropriate box below):		**LIST on Confirmed and Suspected Contaminated Sites List**: ☒
Release or threatened release does not pose a threat	☐	
No release or threatened release	☐	
Refer to program/agency (Name: _____)	☐	
Independent Cleanup Action Completed (contamination removed)	☐	

COMPLAINT (Brief Summary of ERTS Complaint):

Shannon & Wilson submitted a data report on behalf of Snohomish County Public Works. The data report includes the results of PFAS sampling in two areas on the south end of Paine Field.

CURRENT SITE STATUS (Brief Summary of why Site is recommended for Listing or NFA):

PFAS concentrations in samples from Big Gulch drainage area indicate that a release has occurred, and that additional site investigation is warranted to determine the extent of contamination and the potential for inter-media contaminant transport. Recommendation: add to Confirmed and Suspected Contaminated Sites List.

Investigator: Kim Wooten Date Submitted: 12/27/2022

OBSERVATIONS ☑ **Please check this box if you included information on the Supplemental Page at end of report.**

Description (If site visit made, please be sure to include the following: site observations, site features and cover, chronology of events, sources/past practices likely responsible for contamination, presence of water supply wells and other potential exposure pathways, etc.):

Shannon & WIlson sampled two stormwater drainage areas within Paine Field in May and June 2022. These drainage areas were specifically selected for PFAS sampling because they were known to receive stormwater drainage from an area that includes a large hangar building currently housing the Boeing Everett Modification Center (EMC). This hangar has had multiple occupants and names historically, and is also known to Ecology as the existing Hangar 3 cleanup site (CSID 12381/FSID 62855932; trichloroethylene contamination in soil and groundwater). Based on the information available, the existing Hangar 3 site has a different release and is in a different location than what is evaluated in this IIFR, and should at this point be considered a separate cleanup site. This may be reevaluated in the future as additional information on both releases is available.

The EMC building has a fire suppression system, with documented uses and releases of aqueous film forming foam (AFFF) from the system in the 1990s and 2000s. During these periods of use, AFFF was likely to contain PFAS. Ecology's files contain documentation of at least one of these releases, an inadvertent discharge of the system inside the building that entered the stormwater system and ended up in the Big Gulch drainage area adjacent to the EMC building in 2014. It was reported to Ecology as ERTS 648864, and the Spills and Water Quality programs followed up. The exact amount of AFFF released was unknown, but initial reports indicate an area of approximately 200 ft by 200 ft within the drainage area that had foam 3-4 inches thick on the water surface.

The 2022 sampling included 3 locations in the drainage wetland south of the EMC building (Big Gulch Drainage Sub-basin 9) and 1 location in a drainage area east of the EMC building (Swamp Creek Drainage Sub-basin 8). Samples were collected at depths between 6 and 12 inches below ground surface (bgs) at each location. Samples were called soil in the report, but were all collected below at least 6 inches of standing water. Additional information is needed to determine whether the area is most accurately considered soil or sediment by the MTCA definitions of each.

PFAS were primarily detected in the two samples collected on the eastern side of the Big Gulch drainage area (samples BFG-SH1 and -SH2). Two samples were collected in both of these locations, and the samples collected at 12 inches bgs had a greater number of PFAS detected and higher concentrations present than the samples collected 6 inches bgs in both locations.

PFOS, N-EtFOSAA, and N-MeFOSAA were the PFAS compounds present at the highest concentrations in both locations. Cleanup levels have not been established for any media for N-EtFOSAA and N-MeFOSAA. The maximum sample concentration of PFOS was 1.6 µg/kg. This is below the established Method B soil cleanup level based on direct contact (240 µg/kg, but above the Method B cleanup level protective of soil leaching to groundwater (0.17 µg/kg). Sediment cleanup levels for PFOS have not yet been established.

Documents reviewed:

Shannon & Wilson. September 6, 2022. Sampling Data Report: Big Gulch Creek Drainage Sub-Basin 9 and Swamp Creek Drainage Sub-Basin 8, Paine Field, Washington.

Ecology file and ERTS record for ERTS # 648864, Boeing AFFF Discharge to Wetland.

CONTAMINANT GROUP	CONTAMINANT	SOIL	GROUNDWATER	SURFACE WATER	AIR	SEDIMENT	DESCRIPTION
Non-Halogenated Organics	Phenolic Compounds						Compounds containing phenols (Examples: phenol; 4-methylphenol; 2-methylphenol)
	Non-Halogenated Solvents						Organic solvents, typically volatile or semi-volatile, not containing any halogens. To determine if a product has halogens, search HSDB (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) and look at the Chemical/Physical Properties, and Molecular Formula. If there is not a Cl, I, Br, F in the formula, it's not halogenated. (Examples: acetone, benzene, toluene, xylenes, methyl ethyl ketone, ethyl acetate, methanol, ethanol, isopropranol, formic acid, acetic acid, stoddard solvent, Naptha). *Use this when TEX contaminants are present independently of gasoline.*
	Polynuclear Aromatic Hydrocarbons (PAH)						Hydrocarbons composed of two or more benzene rings.
	Tributyltin						The main active ingredients in biocides used to control a broad spectrum of organisms. Found in antifouling marine paint, antifungal action in textiles and industrial water systems. (Examples: Tributyltin; monobutyltin; dibutyltin)
	Methyl tertiary-butyl ether						MTBE is a volatile oxygen-containing organic compound that was formerly used as a gasoline additive to promote complete combustion and help reduce air pollution.
	Benzene						Benzene
	Other Non-Halogenated Organics						TEX
	Petroleum Diesel						Petroleum Diesel
	Petroleum Gasoline						Petroleum Gasoline
	Petroleum Other						Oil-range organics
Halogenated Organics (see notes at bottom)	PBDE						Polybrominated di-phenyl ether
	Other Halogenated Organics	S		S			Other organic compounds with halogens (chlorine, fluorine, bromine, iodine). search HSDB (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) and look at the Chemical/Physical Properties, and Molecular Formula. If there is a Cl, I, Br, F in the formula, it is halogenated. (Examples: Hexachlorobutadiene; hexachlorobenzene; pentachlorophenol)
	Halogenated solvents						PCE, chloroform, EDB, EDC, MTBE
	Polychlorinated Biphenyls (PCB)						Any of a family of industrial compounds produced by chlorination of biphenyl, noted primarily as an environmental pollutant that accumulates in animal tissue with resultant pathogenic and teratogenic effects
	Dioxin/dibenzofuran compounds (see notes at bottom)						A family of more than 70 compounds of chlorinated dioxins or furans. (Examples: Dioxin; Furan; Dioxin TEQ; PCDD; PCDF; TCDD; TCDF; OCDD; OCDF). *Do not use for 'dibenzofuran', which is a non-chlorinated compound that is detected using the semivolatile organics analysis 8270*
Metals	Metals - Other						Cr, Se, Ag, Ba, Cd
	Lead						Lead
	Mercury						Mercury
	Arsenic						Arsenic
Pesticides	Non-halogenated pesticides						Pesticides without halogens (Examples: parathion, malathion, diazinon, phosmet, carbaryl (sevin), fenoxycarb, aldicarb)
	Halogenated pesticides						Pesticides with halogens (Examples: DDT; DDE; Chlordane; Heptachlor; alpha-beta and delta BHC; Aldrin; Endosulfan, dieldrin, endrin)

CONTAMINANT GROUP	CONTAMINANT	SOIL	GROUNDWATER	SURFACE WATER	AIR	SEDIMENT	DESCRIPTION
Other Contaminants	Radioactive Wastes						Wastes that emit more than background levels of radiation.
	Conventional Contaminants, Organic						Unspecified organic matter that imposes an oxygen demand during its decomposition (Example: Total Organic Carbon)
	Conventional Contaminants, Inorganic						Non-metallic inorganic substances or indicator parameters that may indicate the existence of contamination if present at unusual levels (Examples: Sulfides, ammonia)
	Asbestos						All forms of Asbestos. Asbestos fibers have been used in products such as building materials, friction products and heat-resistant materials.
	Other Deleterious Substances						Other contaminants or substances that cause subtle or unexpected harm to sediments (Examples: Wood debris; garbage (e.g., dumped in sediments))
	Benthic Failures						Failures of the benthic analysis standards from the Sediment Management Standards.
	Bioassay Failures						For sediments, a failure to meet bioassay criteria from the Sediment Management Standards. For soils, a failure to meet TEE bioassay criteria for plant, animal or soil biota toxicity.
Reactive Wastes	Unexploded Ordinance						Weapons that failed to detonate or discarded shells containing volatile material.
	Other Reactive Wastes						Other Reactive Wastes (Examples: phosphorous, lithium metal, sodium metal)
	Corrosive Wastes						Corrosive wastes are acidic or alkaline (basic) wastes that can readily corrode or dissolve materials they come into contact with. Wastes that are highly corrosive as defined by the Dangerous Waste Regulation (WAC 173-303-090(6)). (Examples: Hydrochloric acid; sulfuric acid; caustic soda)

(fill in contaminant matrix above with appropriate status choice from the key below the table)

Status choices for contaminants	
Contaminant Status	**Definition**
B— Below Cleanup Levels (Confirmed)	The contaminant was tested and found to be below cleanup levels. (Generally, we would not enter each and every contaminant that was tested; for example if an SVOC analysis was done we would not enter each SVOC with a status of "below". We would use this for contaminants that were believed likely to be present but were found to be below standards when tested
S— Suspected	The contaminant is suspected to be present; based on some knowledge about the history of the site, knowledge of regional contaminants, or based on other contaminants known to be present
C— Confirmed Above Cleanup Levels	The contaminant is confirmed to be present above any cleanup level. For example—above MTCA method A, B, or C; above Sediment Quality Standards; or above a presumed site-specific cleanup level (such as human health criteria for a sediment contaminant).
RA— Remediated - Above	The contaminant was remediated, but remains on site above the cleanup standards (for example—capped area).
RB— Remediated - Below	The contaminant was remediated, and no area of the site contains this contaminant above cleanup standards (for example— complete removal of contaminated soils).

Halogenated chemicals and solvents: Any chemical compound with chloro, bromo, iodo or fluoro is halogenated; those with eight or fewer carbons are generally solvents (e.g. halogenated methane, ethane, propane, butane, pentane, hexane, heptane or octane) and may also be used for or registered as pesticides or fumigants. Most are dangerous wastes, either listed or categorical. Organic compounds with more carbons are almost always halogenated pesticides or a contaminant or derivative. Referral to the HSDB is recommended if you are unfamiliar with a chemical name or compound, as it contains useful information about synonyms, uses, trade names, waste codes, and other regulatory information about most toxic or potentially toxic chemicals.

Dibenzodioxins and dibenzofurans are normalized to a combined equivalent toxicity based on 2,3,7,8-tetrachloro-p-dibenzodioxin as set out in WAC 173-340-708(8)(d) and in the Evaluating the Toxicity and Assessing the Carcinogenic Risk of Environmental Mixtures using Toxicity Equivalency Factors Focus Sheet (https://fortress.wa.gov/ecy/clarc/FocusSheets/tef.pdf). Results may be reported as individual compounds and isomers (usually lab results), or as a toxic equivalency value (reports).

FOR ECOLOGY II REVIEWER USE ONLY (For Listing Sites):

How did the Site come to be known: ☑ **Site Discovery (received a report):** _____ (Date Report Received)
☐ **ERTS Complaint**
☐ **Other (please explain):** _____

Does an Early Notice Letter need to be sent: ☒ Yes ☐ No
If *No*, please explain why: _____

NAICS Code (if known): _____
Otherwise, briefly explain how property is/was used (i.e., gas station, dry cleaner, paint shop, vacant land, etc.):
_____

Site Unit(s) to be created (Unit Type): ☒ Upland (includes VCP & LUST) ☐ Sediment
If multiple Units needed, please explain why: _____

Cleanup Process Type (for the Unit): ☐ No Process ☑ Independent Action
☐ Voluntary Cleanup Program ☐ Ecology-supervised or conducted
☐ Federal-supervised or conducted

Site Status: ☒ Awaiting Cleanup ☐ Construction Complete – Performance Monitoring
☐ Cleanup Started ☐ Cleanup Complete – Active O&M/Monitoring
☐ No Further Action Required

Model Remedy Used? ☐
If yes, was this a transformer spill? ☐

Site Manager (Default: _____): _____

Specific confirmed contaminants include:

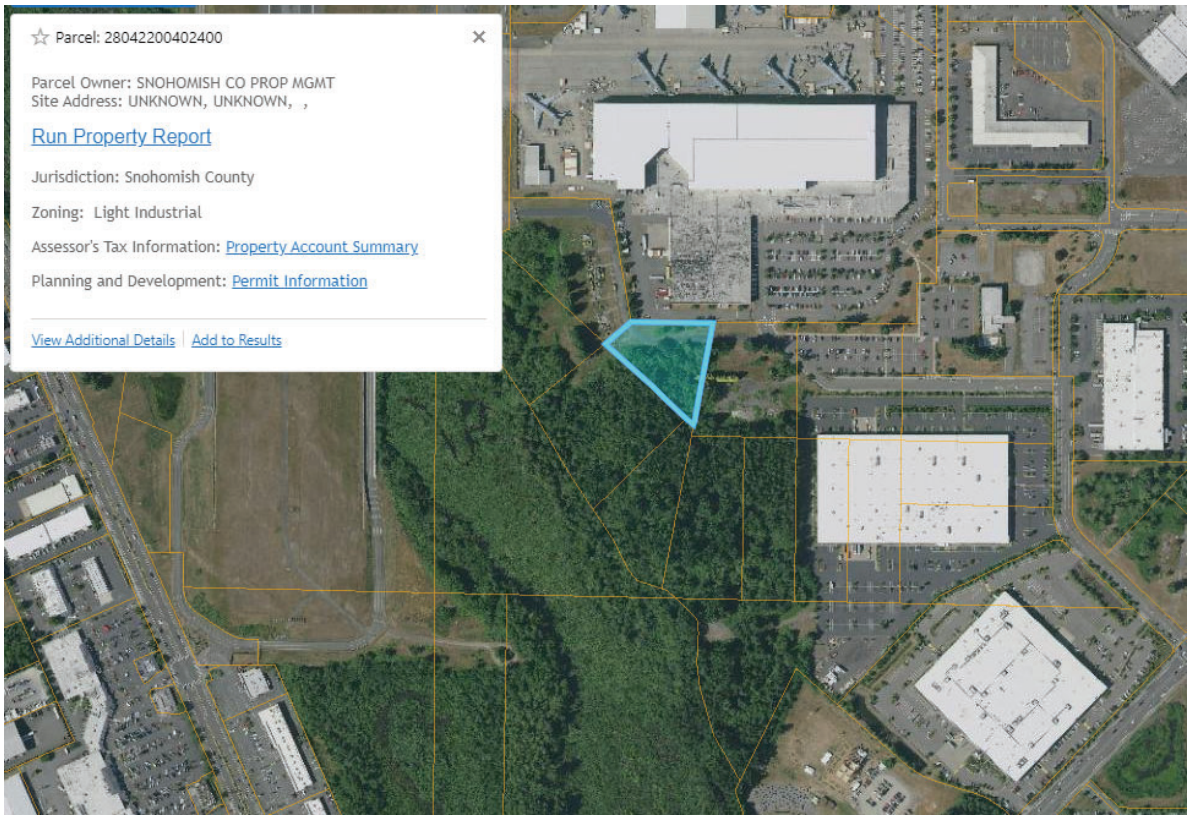
PFAS in Soil

_____ in Groundwater

PFAS in Other (specify matrix: Surface Water)

Facility/Site ID No. (if known):
99999116
Cleanup Site ID No. (if known):
16778

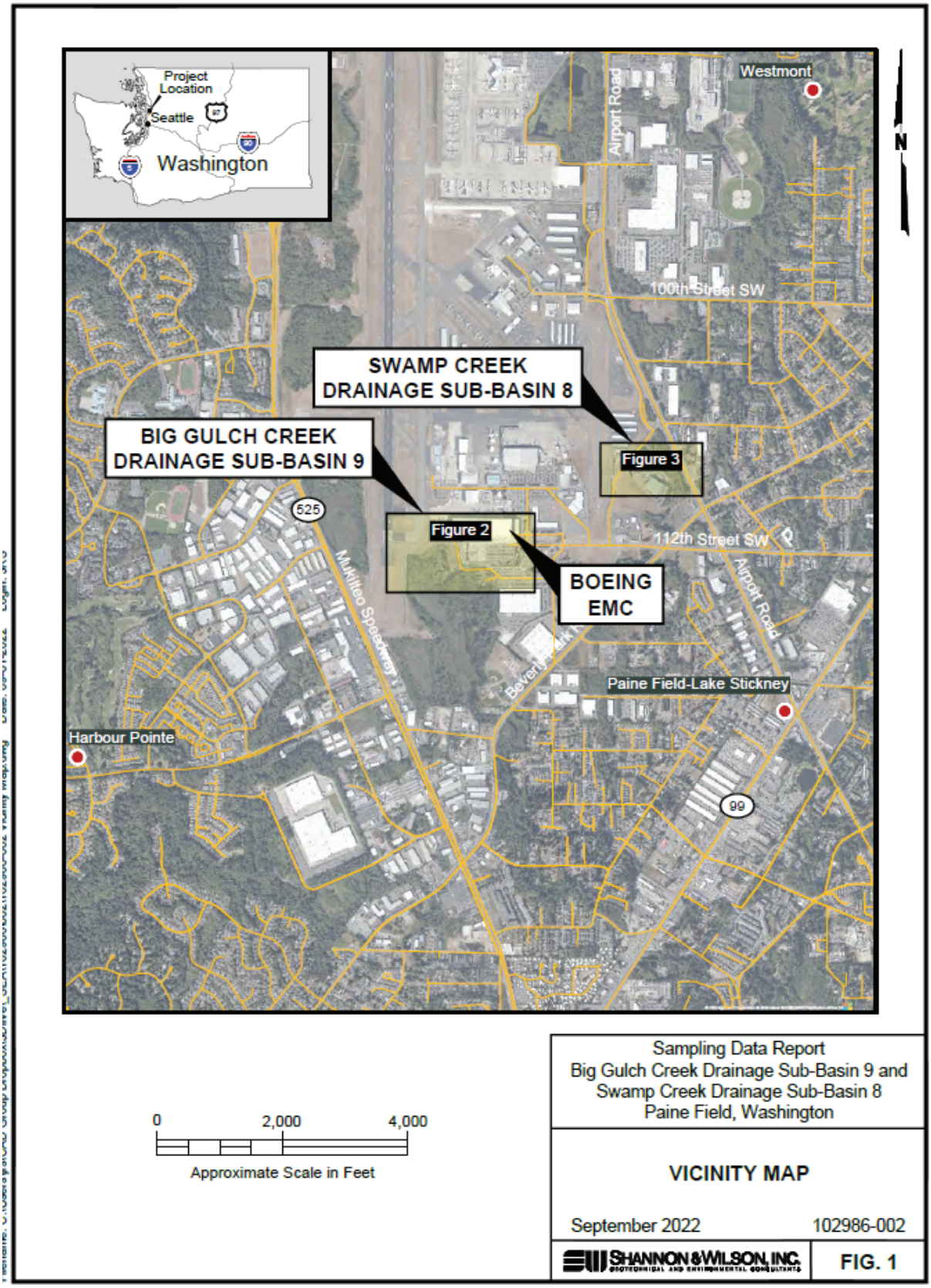
COUNTY ASSESSOR INFO: Please attach to this report a copy of the tax parcel/ownership information for each parcel associated with the site, as well as a parcel map illustrating the parcel boundary and location.



Additional or Supplemental Information from Observations Page

Please use this box for any text that requires special formatting

General sampling areas and location of the current EMC building. Figure from Shannon & Wilson (2022).



Results of PFAS sampling from both areas, including PFAS for which there are existing cleanup levels. Results for additional PFAS area available in the report. Figures from Shannon & Wilson (2022).