5.0 ENVIRONMENTAL INVENTORY

FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and Order 5050.4B, *National Environmental Policy Act: Implementation Instruction for Airport Actions*, addresses specific environmental categories that are to be evaluated in environmental documents in accordance with the National Environmental Policy Act (NEPA). This chapter serves as a baseline inventory for the environmental categories within these documents, which exist at Harvey Field (S43 or the Airport).

5.1 Air Quality

Air quality analysis for federally funded projects must be prepared in accordance with applicable air quality statutes and regulations that include the Clean Air Act of 1970[1], the 1977 Clean Air Act Amendments[2], the 1990 Clean Air Act Amendments[3], and the National Ambient Air Quality Standards[4] (NAAQS). In particular, the air pollutants of concern in the assessment of impacts from airport-related sources include six "criteria pollutants:" carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and sulfur dioxide (SO_2).

The EPA sets NAAQS for the aforementioned criteria pollutants. States are required to meet the national standards but can also set more stringent ambient air quality standards within the state. The State of Washington has adopted the current federal NAAQS in state regulations. The federal Clean Air Act requires EPA to review the NAAQS every five years to ensure continued protection of human health and the environment. State regulations are updated when EPA revises or establishes a new standard. The EPA designates areas as "in attainment" or "non-attainment" based on whether the NAAQS are met.

The Airport is located in Snohomish County, which is designated by the EPA as being in attainment status for all parts of the county for all criteria.[5] However, Snohomish County was previously a non-attainment area for O_3 and CO but re-designated to attainment in 2005 and 1996, respectively. To ensure the air quality continues to meet the NAAQS, a Maintenance State Implementation Plan was required.[6]

5.2 Coastal Resources

The Coastal Zone Management Act of 1972 (CZMA) encourages states to preserve, protect, develop, and, where possible, restore or enhance valuable coastal resources (e.g., wetlands, floodplains, estuaries, and wildlife habitats) along the Atlantic and Pacific Oceans and the Gulf of Mexico. The CZMA is unique in that state participation is voluntary and encouraged through federal financial incentives given to coastal states that develop and implement a comprehensive

[1] U.S. Code. The Clean Air Act of 1970. U.S. Congress, Public Law 91-604, 42 U.S.C. §7401
[2] U.S. Code. The 1977 Clean Air Act Amendments, U.S. Congress, Public Law 95-95, 42 U.S.C. §7401
[3] U.S. Code. The 1990 Clean Air Act Amendments, U.S. Congress, Public Law 101-549, 42 U.S.C. §7401
[4] 40 CFR Part 50, Section 121, National Ambient Air Quality Standard
[5] U.S. Environmental Protection Agency, Green Book – Current Nonattainment Counties for All Criteria Pollutants, www.epa.gov/airquality/greenbook/astate.html, accessed January 2015
[6] Department of Ecology, State of Washington, Air Quality, www.ecy.wa.gov, accessed February 2015.

Coastal Zone Management Program (CZMP). Washington was the first state to adopt the program, and its CZMP was approved by the federal government in 1976. Fifteen counties comprise Washington's coastal zone, including Snohomish County, as shown on **Figure 5-1**. The state's program document, *Managing Washington's Coast*[7], was updated in 2003.

Since Washington participates in the voluntary federal CZM Improvements Grants Program (Section 309 Program), it receives special funding to assist in making improvements to the program. The funds have been primarily used for updates and amendments to the Shoreline Master Program Guidelines under the state's Shoreline Management Act.[8]

Washington also participates in the Coastal and Estuarine Land Conservation Program (CELCP), which helps protect important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values and are threatened by conversion to another use. Congress has not yet authorized dedicated grant funds but a state plan has been drafted to assure the state's eligibility for future participation.[9]

FIGURE 5-1 – WASHINGTON'S COASTAL ZONE

Note: Not to scale
Source: Department of Ecology, State of Washington, Coastal Zone Management, www.ecy.wa.gov, accessed February 2015

The Shorelands and Environmental Assistance Program (SEA) administer Washington's CZM grant. SEA's Northwest Office covers Snohomish County who identified 10 Areas of Particular Concern (APC) within the state, based on criteria developed in 1976:

[7] Department of Ecology, State of Washington, Coastal Zone Management, www.ecy.wa.gov, accessed February 2015
[8] Ibid
[9] Ibid

- The area contains a resource feature of environmental value considered to be of greater than local significance or concern;
- The area is identified as an area of particular concern by state or federal legislation, administrative and regulatory programs, or land ownership; or
- The area has the potential for more than one major land or water use or has a resource sought by ostensibly incompatible users.[10]

One APC exists in Snohomish County, Snohomish River Estuary. The estuary benefits from the large amount of fresh water released by the Snohomish River into the Puget Sound from a single source (second largest in the state by volume). The estuary lies just north of Everett, the state's fifth largest city, approximately nine miles northwest of Snohomish.

Because Snohomish County lies within the coastal management area, any federal activities that affect land use, water use, or natural resources of the coastal zone must comply with the six laws identified in the CZMP: The Shoreline Management Act, State Environmental Policy Act (SEPA), Clean Water Act (CWA), Clean Air Act (CAA), Energy Facility Site Evaluation Council (EFSEC), and Ocean Resource Management Act (ORMA).

Federal consistency is the process that evaluates the proposed activity or development. Federal consistency provides an opportunity for the public, local governments, Tribes, and state agencies to review the federal action. Actions must fall into at least one of three categories to trigger the federal consistency process:

- activities undertaken by a federal agency
- activities requiring federal approval
- activities using federal funding

5.3 Compatible Land Use

Harvey Field is located in the City of Snohomish Urban Growth Area (UGA). The primary goal of land use planning in and around Harvey Field is to provide safe airport operations, promote compatible land uses, and implement land use actions that allow for the orderly expansion and development of the Airport as an Essential Public Facility (EPF).

Figure 5-2 illustrates the UGA boundary and the existing zoning surrounding and including the airfield. The county zoning designation for S43 is Industrial Park. Existing land uses and zoning adjacent to Harvey Field consist of light industrial to the north and east, agriculture to the south and west as well as State Route 9 to the west.

Figure 5-3 depicts the future land use surrounding the Airport. The area immediately adjacent to and north of S43 changed from light industrial to urban industrial[11] and expanded to include the land previously zoned as agriculture in the northwest corner. The area within the UGA boundary

[10] Managing Washington's Coast, Washington State's Coastal Zone Management Program, February 2001
[11] Urban Industrial (UI) identifies industrial and manufacturing areas in UGAs (Snohomish County General Policy Plan, Land Use – Adopted June 10, 2015; Effective Date: July 2, 2015).

west and south of the Airport changed from industrial park and agriculture to urban industrial, with the exception of a small area at the southwest portion of the UGA being designated urban horticulture.

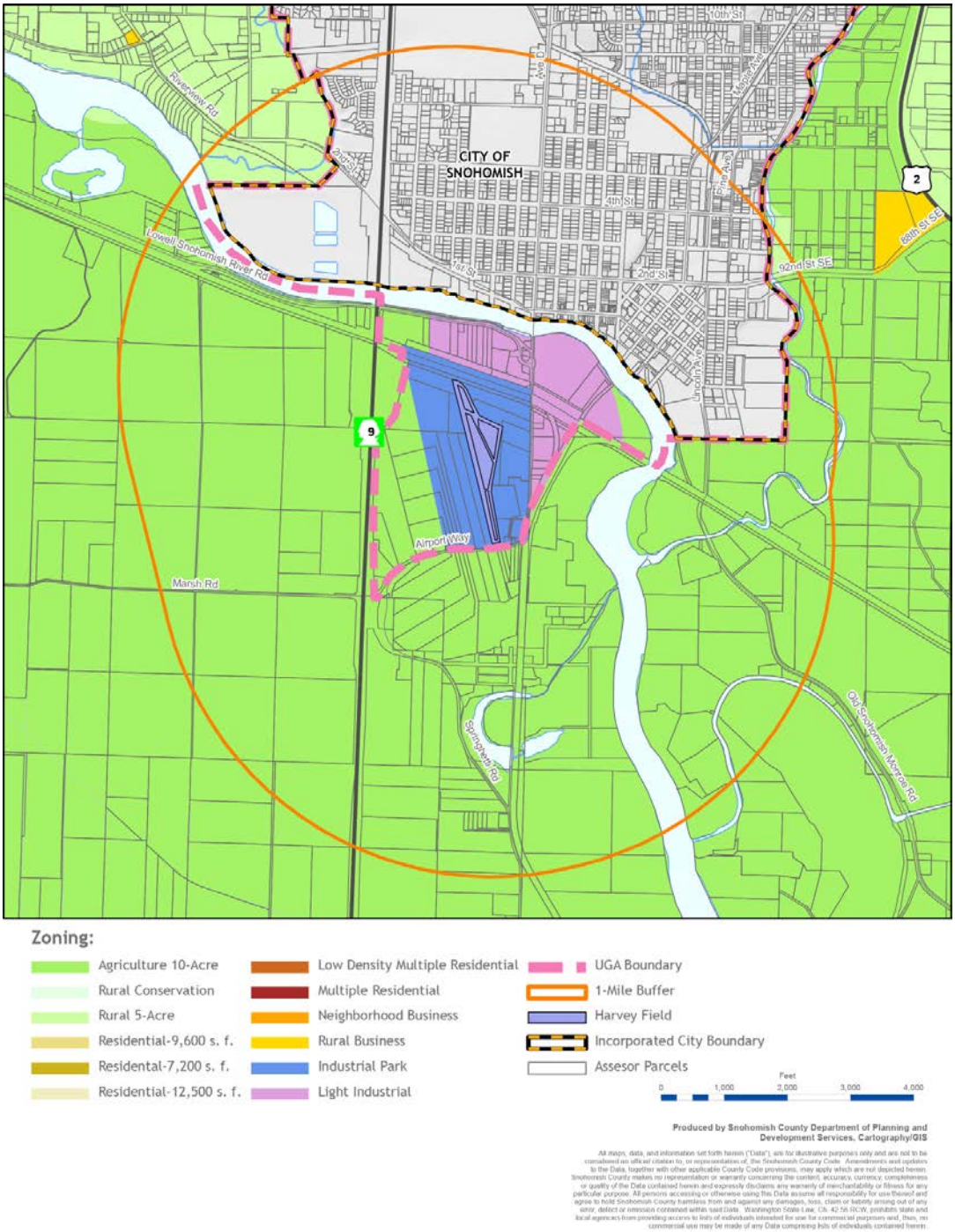
Snohomish County Planning and Development Services recently enacted an Airport and Land Use Compatibility ordinance. The ordinance is a state-mandated project to discourage incompatible land uses around the county's general aviation airports that operate for the benefit of the public.[12]

5.4 Construction Impacts

Construction impacts relate to a specific project's impacts during construction activities including construction noise, dust and noise from heavy equipment traffic, disposal of construction debris, and air and water pollution. As this chapter serves as a baseline and does not address specific project impacts, no further discussion is presented; please reference **Sections 5.1**, **5.12**, and **5.15** for baseline information on air quality, noise, and water quality, respectively.

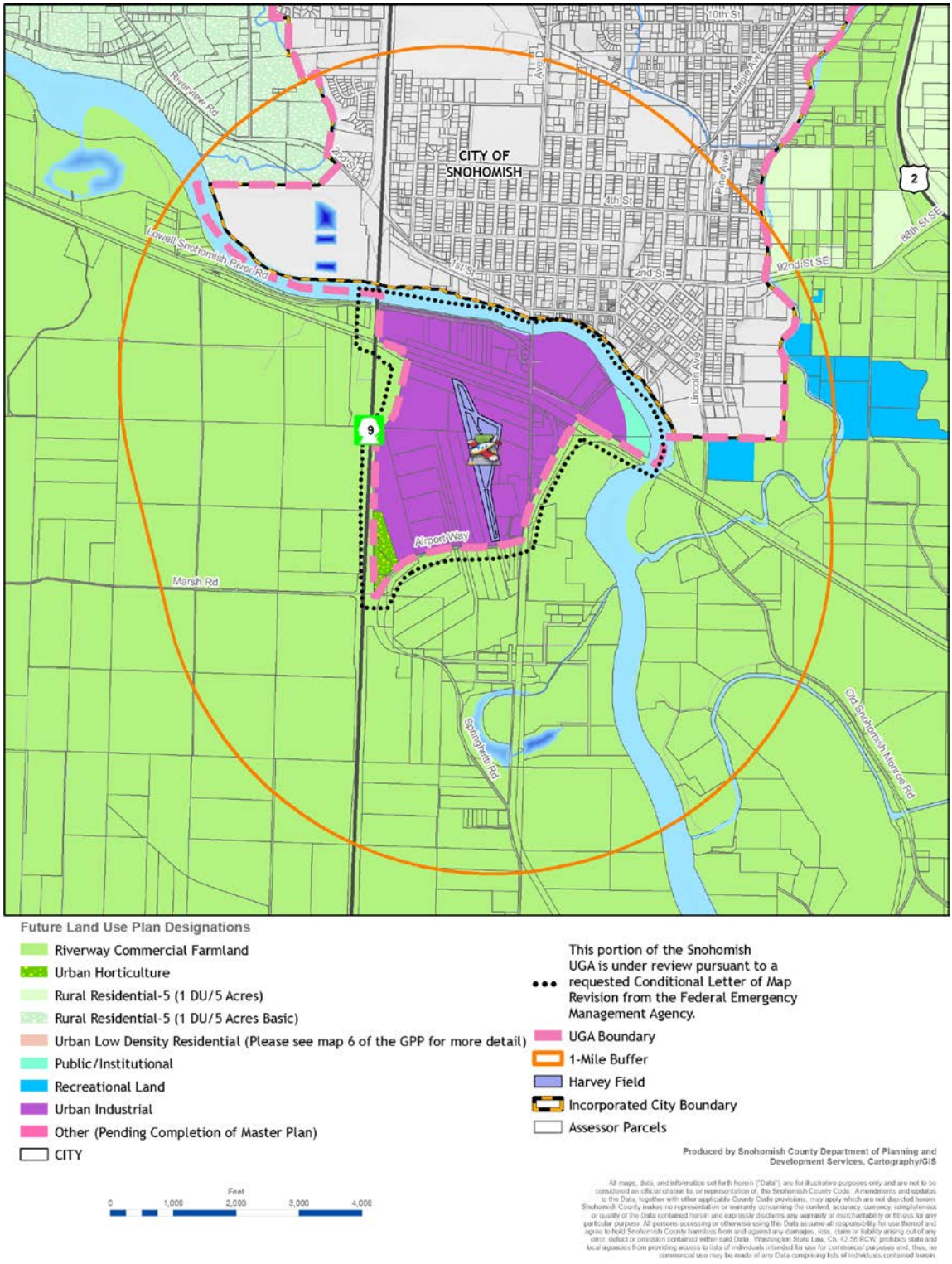
[12] Snohomish County Ordinance 15-025, Chapter 30.32E Airport Compatibility (effective May 24, 2015)

FIGURE 5-2 – SNOHOMISH COUNTY ZONING – ONE-MILE RADIUS



Note: Not to scale
Source: Snohomish County Department of Planning and Development Services, 2015

FIGURE 5-3 – SNOHOMISH COUNTY FUTURE LAND USE – ONE-MILE RADIUS



Note: Not to scale
Source: Snohomish County Department of Planning and Development Services, 2015

5.5 Department of Transportation Act 4(f)

The Department of Transportation (DOT) Act, Section 4(f)[13] provides that the "Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land from a historic site of national, state, or local significance unless there is no feasible or prudent alternative and the use of such land includes all possible planning to minimize harm resulting from the use."

The FAA has adopted the regulations the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issued in March 2008 (23 CFR Part 774)[14] to address project-related effects on Section 4(f) resources.

For Section 4(f) purposes, a proposed action would eliminate a resource's use in one of two ways.

- *Physical use*. Here, the action physically occupies and directly uses the Section 4(f) resource. Here an action's occupancy or direct control (via purchase) causes a change in the use of the Section 4(f) resources. For example, building a runway safety area across a fairway of a publicly-owned golf course is a physical taking because the transportation facility physically used the course by eliminating the fairway.
- *Constructive use*. Here, the action indirectly uses a Section 4(f) resource by substantially impairing the resource's intended use, features, or attributes. For example, a constructive use of an overnight camping area would occur when project-related aircraft noise eliminates the camping area's solitude. Although not physically occupying the area, the project indirectly uses the area by substantially impairing the features and attributes (i.e., solitude) that are necessary for the area to be used as an overnight camping area.

The City of Snohomish has 18 park and recreation areas/facilities. None are located adjacent to the Airport; however, four (Snohomish County Visitor Center, Kla, Ha Ya Park, Riverfront Gazebo, and Cady Landing) are located between a quarter and half mile northeast of the Airport across the Snohomish River.

Two designated historic sites are located within approximately 1,000 feet of Harvey Field. The National Register of Historic Places (NRHP)-listed Snohomish Historic District is north across the Snohomish River from S43 and the Fred Behling Farm, which is listed on the Washington Heritage Barn Register, is south of S43. Six previously inventoried buildings are within the boundaries of S43 but only one has been evaluated for NRHP eligibility and was found not eligible - see **Section 5.10** for further detail.

5.6 Farmlands

The Farmland Protection Policy Act (FPPA) regulates federal actions that may affect or convert farmland to a non-agricultural use. FPPA defines farmland as "prime or unique land as determined

[13] U.S. Department of Transportation Act, section 4(f), recodified and renumbered as § 303(c) of 49 U.S.C.
[14] Vol. 73 Federal Register, page 13395, Mar. 2008

by the participating state or unit of local government and considered to be of statewide or local importance."

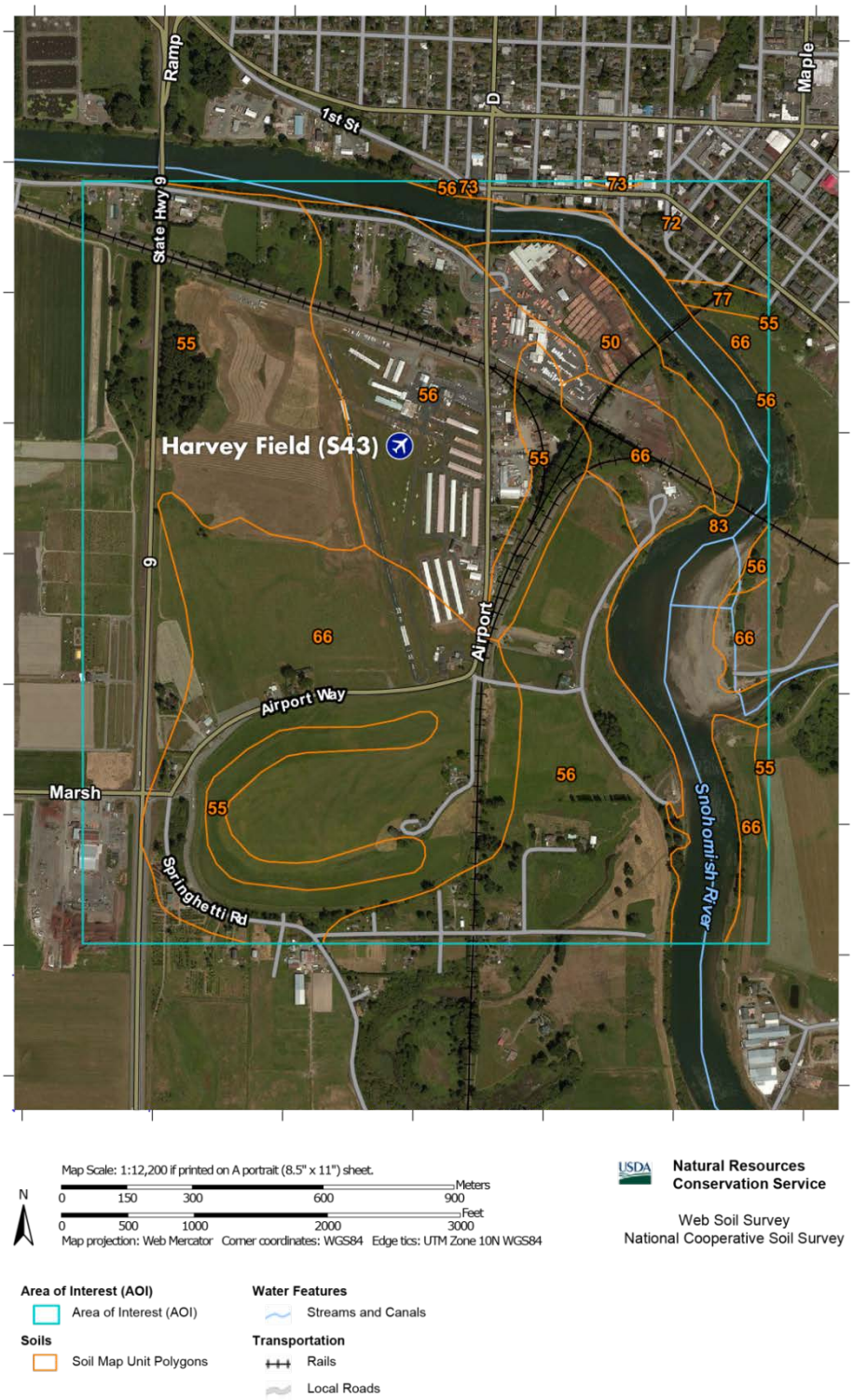
The Natural Resources Conservation Service (NRCS) Web Soil Survey was used to review soils on and around S43. **Table 5-1** details the three soil types on Airport property; all of which are classified as prime farmland; **Figure 5-4** depicts the map unit symbol (soils). The FPPA excludes land that was dedicated to urban use, including aviation, prior to 1982. Map unit symbol 56 was dedicated prior to 1982 and is excluded. The areas that include map unit symbols 55 and 66 are partially used for aviation use and partially dedicated to agricultural use. As these two symbols represent prime farmland, consultation with the NRCS will be necessary prior to any development to conclude if there will be a conversion from prime farmland to classification.

TABLE 5-1 – ON-AIRPORT SOIL CLASSIFICATIONS

Map Unit Symbol	Map Unit Name	Farmland Classification
55	Puget silty clay loam	Prime (if drained and either protected from flooding or not frequently flooded during growing season)
56	Puyallup fine sandy loam	Prime
66	Sultan silt loam	Prime

Source: Natural Resource Conservation Service, Web Soil Survey, www.websoilsurvey.nrcs.usda.gov, accessed February 2015

FIGURE 5-4 – NRCS SOILS



Note: Not to scale
Source: Natural Resource Conservation Service, Web Soil Survey, www.websoilsurvey.nrcs.usda.gov, accessed February 2015

5.7 Fish, Wildlife, and Plants

Requirements have been set forth by the Endangered Species Act[15], Sikes Act[16], Fish and Wildlife Coordination Act[17], Fish and Wildlife Conservation Act[18], and the Migratory Bird Treaty Act[19], for the protection of fish, wildlife, and plants of local and national significance. The Watershed Company conducted a study to review Airport property (see **Appendix E, Biological Assessment** for the resulting technical memorandum). The study included both a desktop and field review.

Eighteen federally listed species occur in Snohomish County and the Airport area, as listed in **Table 5-2**. According to the Priority Habitat and Species Data available from the Washington Department of Fish and Wildlife, there are no listed terrestrial species near Harvey Field. However, multiple threatened or endangered fish species are documented in the Snohomish River and Batt Slough, including Chinook salmon, steelhead, and bull trout.

Additionally, numerous birds protected by the Migratory Bird Treaty Act are potentially present near Harvey Field as shown in **Table 5-3**. There is a known bald eagle nest southeast of the Airport along the Snohomish River.

TABLE 5-2 – ENDANGERED SPECIES ACT (ESA)-LISTED SPECIES PRESENT/HISTORICALLY PRESENT IN SNOHOMISH COUNTY

Species	Federal Status	Date listed	State Status	Habitat Description
Oregon Spotted Frog *Rana pretiosa*	Threatened	9/29/2014	Endangered	Large, emergent wetlands in forested landscapes near a perennial body of water.
Marbled murrelet *Brachyramphus marmoratus*	Threatened	10/1/1992	Threatened	Nearshore areas of Puget Sound for foraging and old-growth and mature coniferous forests for nesting.
Northern spotted owl *Strix occidentalis caurina*	Threatened	6/26/1990	Endangered	Old-growth and mature coniferous forests.
Streaked horned lark *Eremophila alpestris strigata*	Threatened	11/4/2013	Endangered	Native prairies, coastal dunes, and agricultural fields with substantial areas of bare ground. Only historical presence in Snohomish County.
Yellow-billed cuckoo *Coccyzus americanus*	Threatened	11/3/2014	Species of Concern	Large riparian corridors with dense canopy closures provided by cottonwood and willow communities.
Chinook salmon *Oncorhynchus tshwaytscha*	Threatened	6/28/2005	Species of Concern	Marine environment as adults, and estuarine environments for rearing. Mainstem of larger freshwater streams for spawning and seaward migration.
Steelhead *Oncorhynchus mykiss*	Threatened	5/11/2007	None	Variety of environments, including marine and freshwater. Preferred freshwater habitat is fast-moving, well-oxygenated streams with gravel substrate and deep pools.

[15] Endangered Species Act of 1973, U.S. Congress, Public Law 93-205, 16 U.S.C §1531-1544
[16] Sikes Act, Amendments of 1974, U.S. Congress, Public Law 93-452
[17] Fish and Wildlife Coordination Act of 1958, U.S. Congress, Public Law 85-624, 16 U.S.C §661-666c
[18] Fish and Wildlife Conservation Act of 1980, U.S. Congress, Public Law 96-366, 16 U.S.C §2901-2912
[19] Migratory Bird Treaty Act of 1981, 16 U.S.C §703-712

Species	Federal Status	Date listed	State Status	Habitat Description
Bull trout *Salvelinus confluentus*	Threatened	6/10/1998	Species of Concern	Marine environment and cold, clean freshwater streams with stable stream conditions, substantial cover, and clean gravel substrate.
Bocaccio rockfish *Sebastes paucispinus*	Endangered	4/28/2010	Species of Concern	Marine environment. Rocky reefs, kelp canopies, and artificial structures as juveniles, transitioning to rocky bottoms and outcrops as adults. Typically found 50-250 meters deep.
Yellow rockfish *Sebastes ruberrimus*	Threatened	4/28/2010	Species of Concern	Rocky reefs, kelp canopies, and artificial structures as juveniles, transitioning to rocky bottoms and outcrops as adults. Typically found 91-180 meters deep.
Canary rockfish *Sebastes pinnigger*	Threatened	4/28/2010	Species of Concern	Marine environment. Rocky reefs, kelp canopies, and artificial structures as juveniles, transitioning to rocky bottoms and outcrops as adults. Typically found 50-250 meters deep.
Green sturgeon (Southern DPS) *Acipenser medirostris*	Threatened	4/7/2006	None	Spawn in mainstems of large, turbulent rivers with cobble substrate and clean cold water. Southern DPS does not spawn in Washington rivers. Adults inhabit oceans, bays, and estuaries. Rare in Puget Sound.
Eulachon *Thaleichthys pacificus*	Threatened	3/18/2010	Species of Concern	Inhabit ocean waters to 300 meters deep. Spawn in large, snowmelt-fed rivers less than 50^{0}F with sand or coarse gravel substrate. Not believed to spawn in Puget Sound tributaries.
Orca (killer whale) *Orcinus orcus*	Endangered	11/18/2005	Endangered	Marine environment, including Puget Sound residents.
Humpback whale *Megaptera novaeangliae*	Endangered	12/2/1970	Endangered	Marine environment from Central America and Mexico (winter) north to southern British Columbia (summer/fall). Rare in Puget Sound.
Canada lynx *Lynx canadensis*	Threatened	3/24/2000	Threatened	Moist coniferous forests with cold, snowy winters.
Grey wolf *Canis lupis*	Endangered	3/9/1978	Endangered	Anywhere large ungulates are available as prey base and human-caused mortality is not excessive. Only historically found in Snohomish County.
Grizzly bear *Ursus arctos horribilus*	Threatened	7/28/1975	Endangered	Areas with extensive forest cover interspersed with shrublands, grasslands and meadows. Home ranges must have complex habitat types. Only historically found in Snohomish County.

Note: No ESA-listed threatened or endangered plan or insect species are documented to occur in Snohomish County
Source: The Watershed Company, Technical Memorandum, February 2015

TABLE 5-3 – MIGRATORY BIRDS OF CONCERN POTENTIALLY PRESENT WITHIN PROJECT AREA

Species	Seasonal Occurrence in Project Area	Habitat
Bald eagle *Haliaeetus leucocephalus*	Year-round	Coastal areas or near large inland lakes and rivers that have abundant fish and shores with large trees.
Black swift *Cypseloides niger*	Breeding	Forested areas near rivers (nesting) or mountainous areas and coastal cliffs (foraging)
Caspian tern *Hydroprogne caspia*	Breeding	Fresh- and saltwater wetlands, especially estuaries, coastal bays, and beaches.
Cassin's finch *Carpodacus cassinii*	Year-round	Dry, open, coniferous forests
Fox sparrow *Passerella liaca*	Year-round	Breed in high elevations, especially in wet meadows or in scattered conifers. Winter in recent clear-cuts and tangled brush, especially blackberry thickets.
Olive-sided flycatcher *Contopus coopen*	Breeding	Forest openings, preferring recently burned or cleared areas.
Peregrine falcon *Falco peregrinus*	Breeding	Hunt in open areas along coasts or large waterbodies. Nest on cliffs or cliff-like structures, including tall buildings in urban environments.
Purple finch *Carpodacus purpureus*	Year-round	Moist coniferous and mixed lowland forests.
Rufous hummingbird *Selasphorus rufus*	Breeding	Edges and open areas within coniferous forests.
Short-eared owl *Asio flammeus*	Year-round	Open terrain, including shrub-steppe, grasslands, agricultural areas, marshes, wet meadows, and shorelines.
Willow flycatcher *Empidonax traillii*	Breeding	Willow thickets and brushy areas near streams, marshes, or other wetlands, and in clear-cuts and other open areas with nearby trees or brush.

Source: The Watershed Company, Technical Memorandum, February 2015

5.8 Floodplains

Executive Order 11988, *Floodplain Management*[20] directs federal agencies to "avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative." The Federal Emergency Management Administration (FEMA) publishes floodplain maps to illustrate extent and type designations on Flood Insurance Rate Maps (FIRM).

Harvey Field falls on two FIRM panels, 53061C1061F and 53061C1065F, both with effective dates of September 16, 2005. Airport property is within a flood hazard area, Zone AE – density fringe area (base flood elevations determined), as shown on **Figure 5-5**.

Snohomish County Regulations specifically address the density fringe area as discussed in the following subsections:

> The density fringe designation, per Snohomish County Regulations Chapter 30.65.250, is defined as "The land area occupied by any use or development permitted by this chapter that will displace floodwaters shall not exceed two percent of the land area of that portion of the lot located in the density fringe area. The limitations of this section shall not apply to those uses listed in SCC 30.65.260." In this definition, "that will displace floodwaters" means any

[20] Executive Order 11988, Floodplain Management, 1977

fill that would be placed at elevations below the base flood (100-year) water surface elevations. As the "storage area" considers only conservation of mass (water), there is no concept of flow conveyance obstruction other than water connectivity. This new designation essentially limits development to agricultural uses with associated farm buildings.[21]

The above-mentioned regulations in "layman's" terms:

- *"…land area occupied…that will displace floodwaters…"*
  - The fill limitations apply to sites located beneath the 100-yr flood elevation i.e. 23' (NGVD29) or 26.63' (NAVD88) at Harvey Field.
  - All of Harvey Field is lower than 26.63'; thus, SCC applies everywhere.
  - Cut cannot be used to "offset" fill impacts: 1 acre fill minus .25 acres cut ≠ 0.75 acres of fill.
  - Earthwork volume does not matter, only the footprint or 2D area.
- *"…shall not exceed two percent of the land area of that portion of the lot"*
  - Fill footprint divided by total airport land area equals two percent of total property area or less
  - Harvey Field is approximately 204.48 acres; thus, two percent of airport property equals 4.090 acres.
- *"The limitations of this section shall not apply to those uses listed in SCC 30.65.260."*
  - The two-percent limit does NOT apply to public uses, such as roads, specifically, Airport Way.

Snohomish County Regulations Chapter 30.65.255 defines the maximum allowable obstruction within a density fringe area. The regulation states "The maximum width (sum of widths) of all new construction, substantial improvements or other development shall not exceed 15 percent of the length of a line drawn perpendicular to the known floodwater flow direction at the point where the development(s) is located. The length of said line shall not extend beyond the property boundary or the edge of the density fringe area, whichever is less. The limitations of this section shall not apply to those uses listed in SCC 30.65.260."

In simple terms:

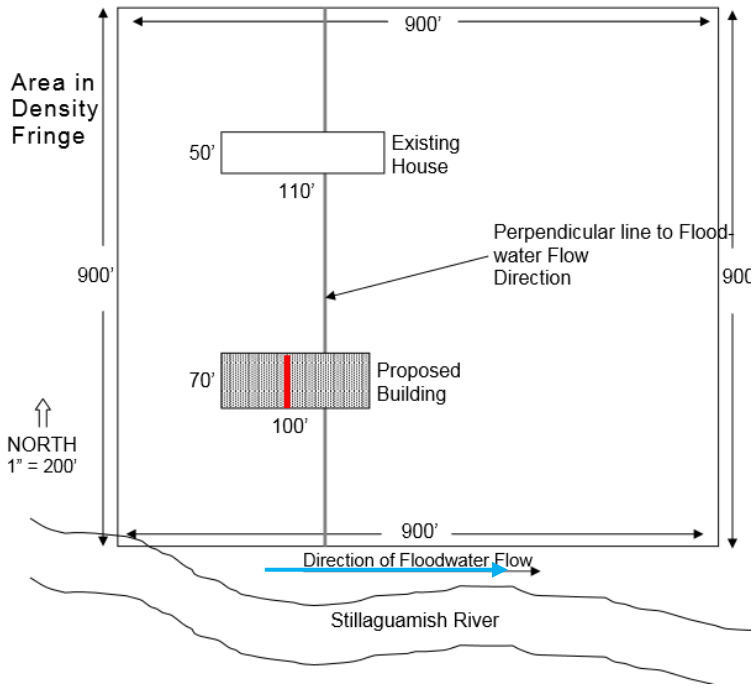
- *"a line drawn perpendicular to the known floodwater flow direction at the point where the development(s) is located. … length … shall not extend beyond the property boundary or the edge of the density fringe area, whichever is less."*

  The following example from the Snohomish County Flood Permit Application provides the best explanation of the regulation:

  - Determine the general floodplain flow direction.

[21] Biological Assessment for South Snohomish Urban Growth Area Letter of Map Revision Request, Curran Environmental Services, LLC, March 2010.

- Draw a line perpendicular to the flow direction.
- Draw the line where it intersects the largest width of new construction as a percentage of property width.
- Sum of fill widths/total property width must be less than 15 percent.



- 900' property width
- 70' new obstruction width
- 70'/900' = 7.8% < 15 %

- *"The maximum width (sum of widths) of all new construction, substantial improvements or other development…"*
  - New construction is fill minus anything that diverts or blocks flood flows.
- *"…shall not exceed 15 percent of the length …"*
  - Sum of fill widths divided by total property width equals 15 percent or less.

Lastly, Snohomish County Regulations Chapter 30.65.260 defines the exception to maximum allowable density and obstruction limitations: "The following uses shall be exempt from the maximum allowable density and obstruction limitations of SCC 30.65.250 and 30.65.255: (1) Water-dependent utilities; (2) Dikes; (3) Utility facilities; and (4) Public works (to include public roads, i.e. Airport Way), when the project proponent demonstrates that the floodwater displacement effects of the proposal when considered together with the maximum potential floodwater displacement allowed by SCC 30.65.250 and 30.65.255 shall not cause a cumulative increase in the base flood elevation of more than one foot. Floodwater displacement information shall be obtained and certified by a professional engineer."

In basic terminology:

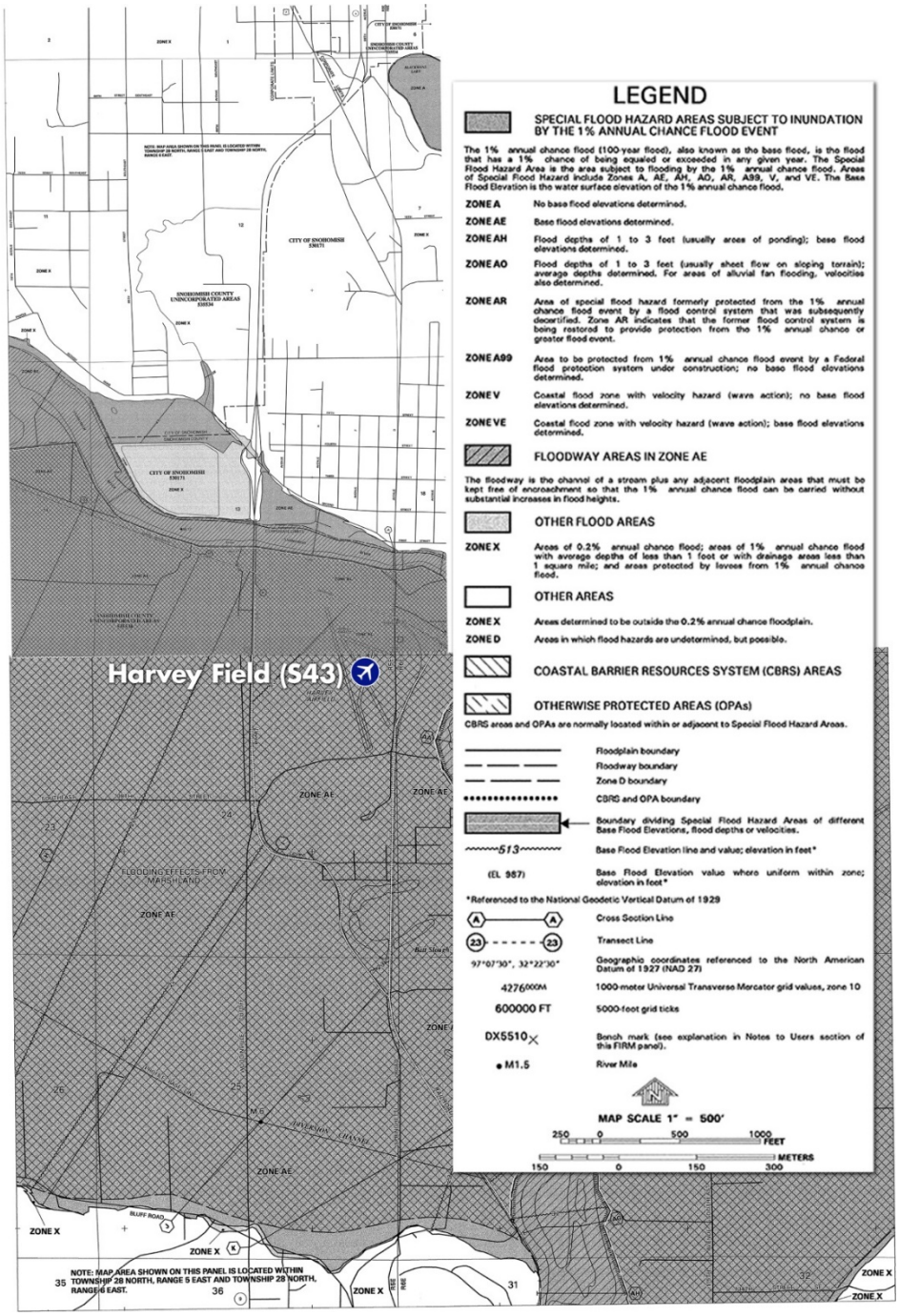
- *"...demonstrates that the floodwater displacement effects of the proposal when considered together with the maximum potential floodwater displacement allowed by SCC 30.65.250 and 30.65.255"*
  - Base Flood equals the 100-year flood elevation, as shown on the current FIRMs.
  - Floodwater displacement means that for every piece of material placed in construction of a road will take up some space that was previously available for water storage or conveyance during a flood.
  - Road relocation floodwater displacement calculation assumes that the maximum two percent area and 15 percent blockages will eventually occur on all properties located in the floodplain.
- *"Floodwater displacement information shall be obtained and certified by a professional engineer.*
  - Ray Walton of WEST Consultants created the original FEMA floodplain model in this area.
  - SCC only requires BFE modeling Public Works projects, i.e. Airport Way.

Prior to 2005, S43 was within an area designated as floodway fringe, which is a less restrictive area than density fringe. It is defined as the "portion of a floodplain which is inundated by floodwaters but is not within a defined floodway. Floodway fringes serve as temporary storage areas for floodwaters" (Snohomish County Code, 30.91F.440).

The re-designation, based on a study done in 2001 by WEST Consultants, Inc. (WEST), was conducted for the Seattle District, Corps of Engineers, with funding provided by FEMA Region 10. The study completed a detailed Flood Insurance Re-Study of the Snohomish River, which became effective on September 16, 2005. The hydraulic modeling for the study was based on the Corps' model, UNET, a one-dimensional, unsteady-flow model, which modeled the Snohomish River as a combination of "reaches" (the Snohomish River and distributaries, and Marshlands), and "storage areas". Harvey Field, Airport Way, and the area south of S43 lie entirely within storage area #9 (SA#9), as shown on **Figure 5-6**. Storage areas #2 and #3, which lie to the east and north, respectively, represent overflow pathways from the Snohomish River that directly influence water levels at Harvey Field.

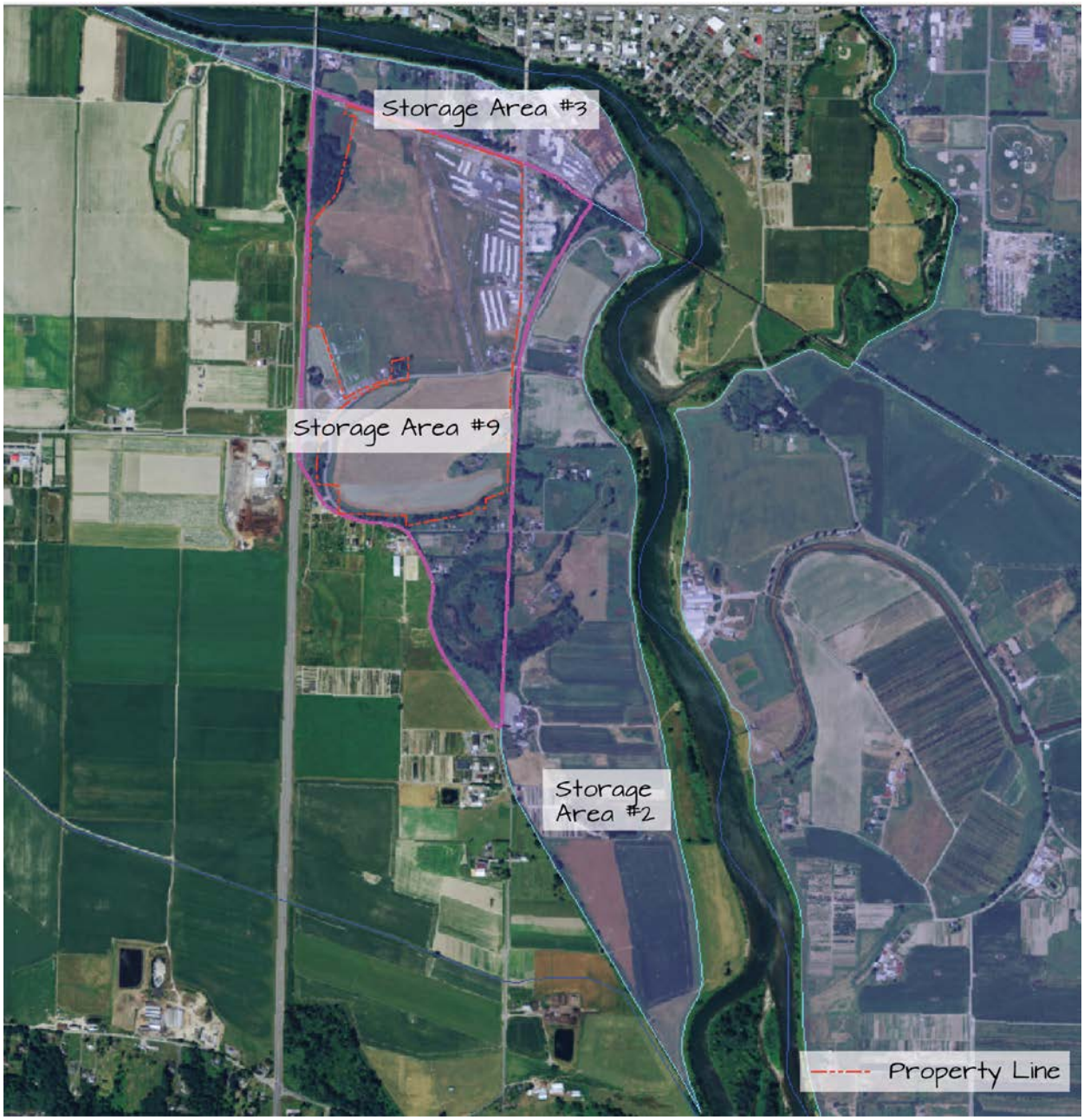
For purposes of this Master Plan, WEST modeled water surface elevations for flood events in storage areas #2, #3, and #9 for the 10, 50, 100, and 500-year events. The results showed that all three storage areas would be completely inundated with water during the 50, 100, and 500-year events; see **Appendix F, Water Surface Elevation Models** for additional detail and figures.

FIGURE 5-5 — FLOODPLAINS



Note: Not to scale
Source: Federal Emergency Management Agency, FIRM, Panels 53061C1061F and 53061C1065F, Effective date September 16, 2005

FIGURE 5-6 – SNOHOMISH RIVER STORAGE AREAS NEAR HARVEY FIELD



Note: Not to scale
Source: West Consultants, Inc. 2015

5.9 Hazardous Material, Pollution Prevention, and Solid Waste

The Resource Conservation and Recovery Act (RCRA)[22], Comprehensive Environmental Response, Compensations, and Liability Act (CERCLA)[23], Superfund Amendments and Reauthorization Act

[22] U.S. Code, 1976, Resource Conservation and Recovery Act, 42 USC, §6901
[23] U.S. Code 1980, Comprehensive Environmental Response, Compensation and Liability Act, 42 USC, §9601-9628

(Superfund)[24], and the Community Environmental Response Facilitation Act (CERFA)[25] are the four predominant laws regulating actions related to the use, storage, transportation, or disposal of hazardous materials, chemicals, substances, and wastes. Federal actions that pertain to the funding or approval of airport projects require the analysis of the potential for environmental impacts per the regulating laws. Furthermore, property listed or considered for the National Priority List (NPL) should be evaluated in relation to Harvey Field's location. According to the NPL, no sites are located near Harvey Field.

Additionally, an **Airport Recycling, Reuse, and Waste Reduction Plan** can be found in **Appendix G**. The Plan provides a review of Harvey Field's recycling, reuse, and waste program and provides guidance on ways to reduce waste and improve recycling and reuse at the Airport.

5.10 Historical, Architectural, Archaeological, and Cultural Resources

The National Historic Preservation Act[26] and the Archaeological and Historical Preservation Act[27] regulate the preservation of historical, architectural, archaeological, and cultural resources. Federal actions and undertakings are required to evaluate the impact on these resources. The National Register of Historic Places (NRHP) and the Washington Heritage Barn Register were reviewed to identify properties close to S43. **Table 5-4** details the historic sites listed on the NRHP and/or the Washington Heritage Barn Register (WHR). **Figure 5-7** depicts their locations in relation to S43.

TABLE 5-4 – HISTORIC RESOURCES WITHIN 1,000 FEET OF HARVEY FIELD

Name	Location	Date Built	Historic Use	Status[a]
Snohomish Historic District	Roughly bounded by Avenue E, Fifth Street, Union Avenue, Northern Pacific Railroad, and Snohomish River	1859-1907	Commerce/Trade	Listed on WHR and NRHP
Fred Behling Farm	11018 Springhetti Road	Ca 1925	Agriculture/Subsistence - Farmstead	Listed on WHR and eligible for NRHP

Note: [a]WHR – Washington Heritage Barn Register; NRHP – National Register of Historic Places
Source: Cultural Resource Consultants, Inc., 2015

For purposes of this Master Plan, Cultural Resource Consultants, Inc. conducted a cultural resource assessment of Harvey Field which was considered to be the area of potential effect (APE). Assessment methods included a review of previous ethnographic, historical, and archaeological investigations in the local area; a records search at the Washington State Department of Archaeology and Historic Preservation (DAHP) for known sites; and a review of relevant background literature and maps. Fieldwork was not conducted as part of the assessment.

The research did not identify any archaeological sites at Harvey Field. However, the Snohomish River floodplain, where Harvey Field is situated, is considered to have a high potential for archaeological sites. An archaeological survey, including subsurface testing is recommended prior to

[24] U.S. Code 1986, Superfund Amendments and Reauthorization Act, 42 USC
[25] U.S. Code 1992, Community Environmental Response Facilitation Act, Public Law 102-426
[26] U.S. Code, 1966, National Historic Preservation Act of 1966, Public Law 89-665
[27] U.S. Code, 1974, Archaeological and Historical Preservation Act of 1974, 16 USC 469

any ground disturbance in the area. There were also numerous sites within a one-mile radius of Harvey Field as recorded at DAHP. Consultation with the tribes and DAHP will be required.

The assessment also discovered six previously inventoried buildings within the APE (**Table 5-5**). These buildings consist of three residences, a restaurant, and two airplane hangars. The building identified with reference number "6" caught fire in 2000 and was heavily damaged - the home was reconstructed following the fire. Buildings over 50 years old should be evaluated for NRHP eligibility and consultation with tribal parties and the Department of Archaeology and Historic Preservation (DAHP) should be completed prior to moving forward with any proposed development.

TABLE 5-5 – HISTORIC BUILDINGS WITHIN AREA OF POTENTIAL EFFECT

Reference No.	Built Date	Historic Use	WHR/NRHP Status
1	1959	Transportation – Air-Related	Unevaluated
2	1966	Transportation – Air-Related	Unevaluated
3	1885	Domestic – Single Family House	Unevaluated
4	1931	Domestic – Single Family House	Determined not eligible
5	1945	Commerce/Trade - Restaurant	Unevaluated
6[a]	1958	Domestic – Single Family House	Unevaluated

Note: [a]House heavily damaged by fire in 2000 and has since been rebuilt.
Source: Cultural Resource Consultants, Inc., 2015

FIGURE 5-7 – HISTORIC RESOURCES WITHIN 1,000 FEET OF HARVEY FIELD

Note: Not to scale
Source: Cultural Resource Consultants, Inc., 2015

5.11 Light Emissions and Visual Impacts

Federal regulations do not specifically regulate airport light emissions; however, the FAA does consider airport light emissions on communities and properties near an airport. Significant portions of light emissions at airports are a result of safety and security equipment and facilities. Harvey Field has three primary sources of light:

- **Runway Lighting**: lights outlining the runway, classified by the intensity or brightness the lights are capable of producing
- **VASIs**: system of lights on the side of an airport runway threshold that provides visual descent guidance information during approach
- **Apron/Parking Lights**: pole lighting on aprons and parking areas

All sources of light contribute to the safety of operations at the airport and produce an insignificant amount of light on the surrounding area.

5.12 Noise

Aircraft noise and noise surrounding airports are two of the most notorious issues related to the environment at airports. The FAA examines actions and development that may change runway configurations, airport/aircraft operation and/or movements, aircraft types, and flight patterns, all of which could ultimately alter the noise impacts on communities near an airport.

The extent of noise resulting from aircraft operations at S43 was determined using the FAA-approved computer simulation model *Integrated Noise Model (INM-Version 7.0d)*. The INM produces Day-Night Average Sound Level (DNL) contours (i.e., lines of equal noise exposure). The complete noise analysis is in **Appendix H, Noise Analysis**. **Table 5-6** presents S43's 2014 aircraft operational by category while **Table 5-7** provides the 2014 local aircraft and aircraft fleet of itinerant operations by time of day.

TABLE 5-6 – 2014 ANNUAL AIRCRAFT OPERATIONS BY CATEGORY

Aircraft Category	Operations
Air Taxi	1,500
General Aviation Local	51,920
General Aviation Itinerant	46,600
Military	200
Total	100,220

Source: Harvey Field Records, 2015

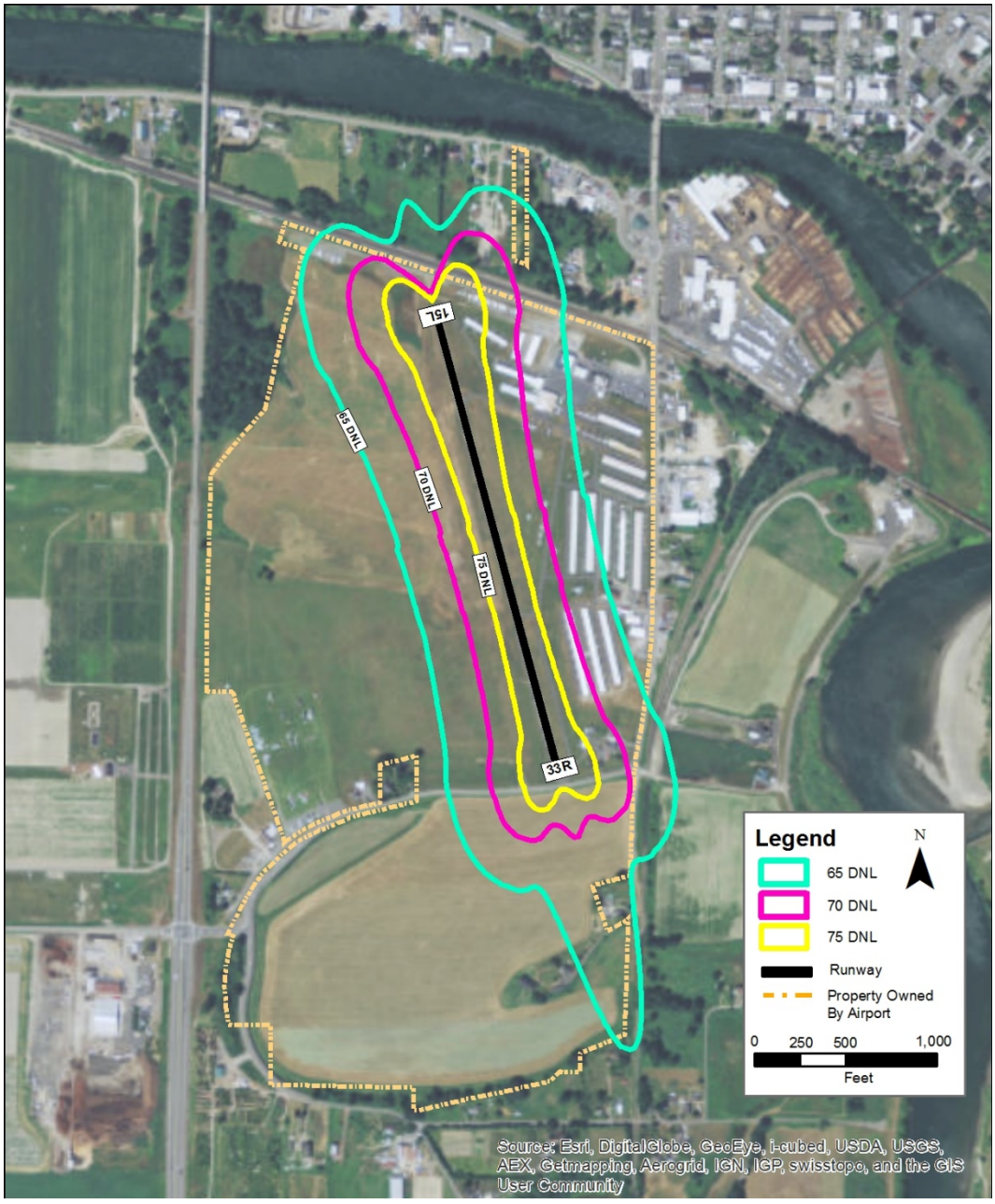
TABLE 5-7 – 2014 AVERAGE ANNUAL OPERATIONS AND INM FLEET MIX

Aircraft Category	Aircraft Types	INM Aircraft	Daytime Operations	Nighttime Operations	Total Operations
Operation Type: General Aviation Itinerant					
Single-Engine Piston	Cessna 150/ 152/ 172/ 177	CNA172	22,636	1,193	23,829
	Beech 33, Mooney M-20J/ K/ L, Piper Dakota/Arrow	GASEPV	5,746	302	6,048
	Cessna 182	CNA182	4,796	252	5,048
	Cessna 180/185/206/210	CNA206	4,645	244	4,889
Multi-Engine Piston	Beech 18/55/ 58, Aero Commander 500, Cessna 303/310/ 320/ 337, Diamond Twin Star	BEC58P	2,317	122	2,439
Turboprop	Cessna 208B, TBM-700	CNA208	1,619	85	1,704
	Cessna 441, Super King Air 200/ 300B, King Air 90/100, Mitsubishi MU-2	CNA441	1,618	85	1,703
Rotorcraft	Schweizer 300C	S300C	1,738	92	1,830
	R-22	R22	580	30	610
	Itinerant Total		45,695	2,405	48,100
Operation Type: General Aviation Local					
Single-Engine Piston	Cessna 150/ 152/ 172/ 177	CNA172	38,647	2,034	40,681
Multi-Engine Piston	Piper PA-23 Apache	BEC58P	3,956	208	4,164
Turboprop	Cessna 208B	CNA208	2,764	145	2,909
Rotorcraft	Schweizer 300C	S300C	3,957	209	4,166
	Local Total		49,324	2,596	51,920
Operation Type: Military					
Rotocraft	UH-60	S70	200		200
	Grand Total		95,219	5,001	100,220

Sources: FAA's Traffic Flow Management System Counts (TFMSC) and KB Environmental Sciences, Inc.

The 2014 65 DNL contour remains primarily within the S43 boundary as shown in **Figure 5-8**. The portions that extend above the north boundaries do not include any residents and are currently zoned as "light industrial" and "agricultural 10-acre" which are compatible with the 65 DNL contour. Three residences, with 13 people total, are within the 65 DNL contour on the southeast. The two within S43 boundaries are owned by the Harvey family and the off-airport property is a private owner.

FIGURE 5-8 – 2014 NOISE CONTOURS



Note: Not to scale
Source: KB Environmental Sciences, 2015

5.13 Secondary (Induced) Impacts

Per Order 1050.1E, secondary impacts result from shifts in population movement or growth; public service demands; and changes in business and economic activity to the extend influenced by airport development. As this chapter serves as a baseline for environmental conditions existing at S43, no further discussion is presented.

5.14 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

Socioeconomic effects could involve relocating people from their homes, moving businesses, or causing substantial changes in local traffic patterns. They also involve dividing or disrupting established communities or planned development, and creating notable changes in employment.

Executive Order 12898 requires Federal agencies to analyze project effects relative to low-income and minority populations. Environmental justice analysis considers the potential of a proposed action's alternatives to cause disproportionate and adverse effects on low-income or minority populations. The analysis of environmental justice impacts and associated mitigation ensures that no low-income or minority population bears a disproportionately high and adverse effects resulting from the implementation of the proposed action.

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* requires Federal agencies to make child protection a high priority because children may be more susceptible to environmental effects than adults.

No impacted populations as described above are within the boundaries of the study area – S43.

5.15 Water Quality

The Clean Water Act[28] provides the federal government the "authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, location with regard to an aquifer or sensitive ecological area such as a wetland area, and regulate other issues concerning water quality."

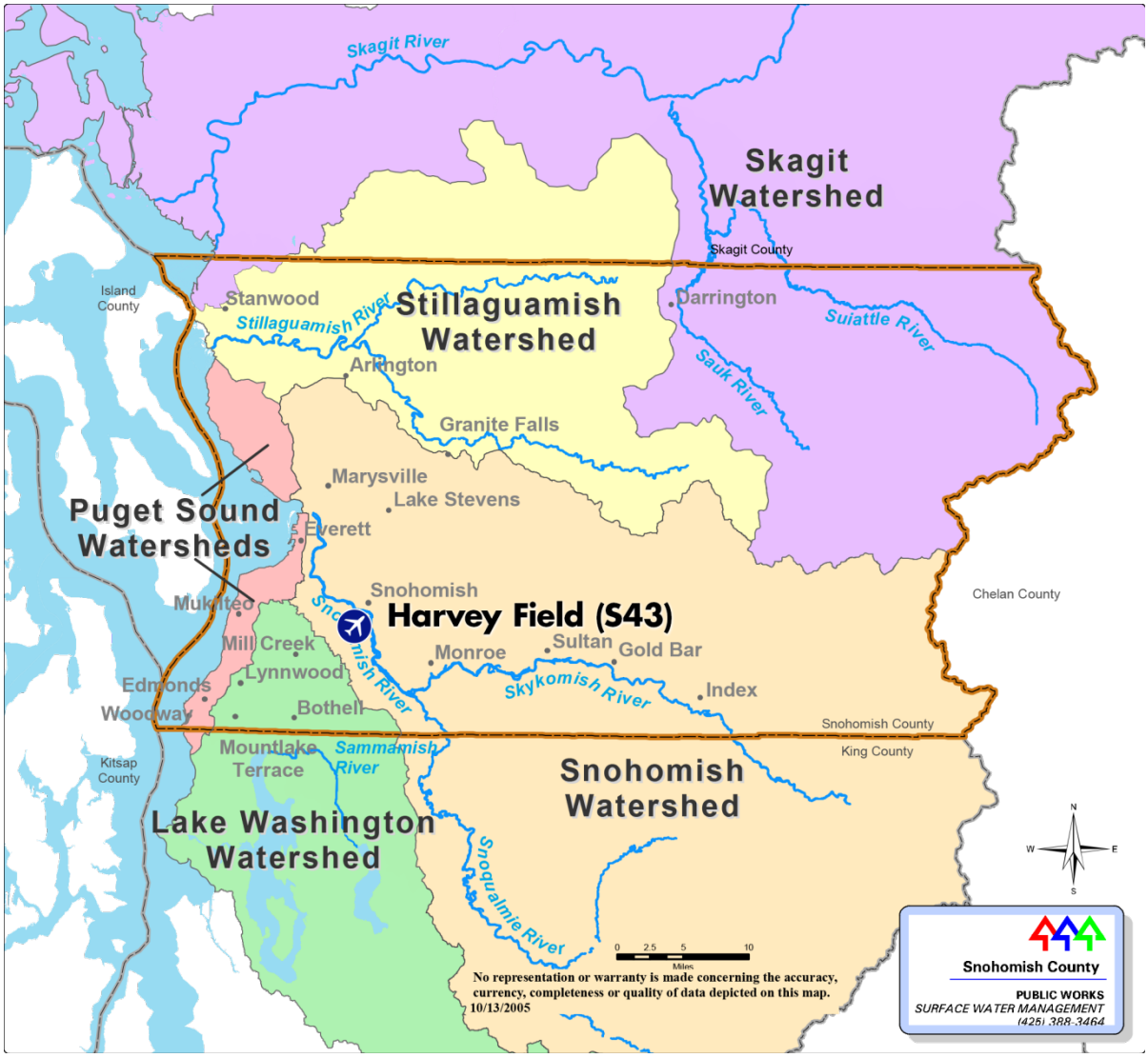
Snohomish County has five watersheds, depicted in **Figure 5-9**. Harvey Field is in the Snohomish Watershed. The City of Snohomish provides the Airport's water supply from the City's water system.

The EPA and Snohomish County's Public Works Surface Water Management Division coordinate and issue water quality permits. S43 does not have any stormwater permits at this time.

Guidance on the measures necessary to control the quantity and quality of stormwater produced by new development and redevelopment to comply with water quality standards and contribute to the protection of receiving waters is provided by Washington's Department of Ecology's 2012 Stormwater Management Manual for Western Washington, as Amended in December 2014.

[28] U.S. Code, 1977 The Clean Water Act, 33 U.S.C. §1251-1387

FIGURE 5-9 – SNOHOMISH COUNTY WATERSHEDS



Note: Not to scale
Source: Snohomish County, Washington, snohomishcountywa.gov, accessed March 2015

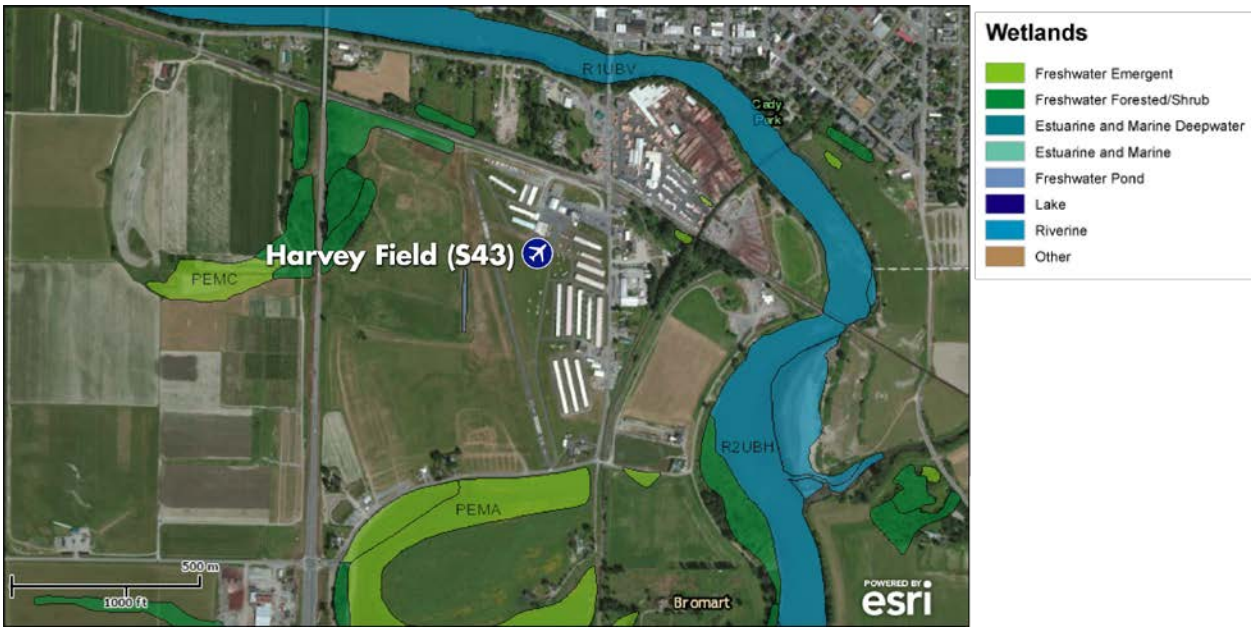
5.16 Wetlands

Wetlands are regulated under Secitons 401 and 404 of the Clean Water Act. The Washington Depatment of Ecology is responsible for compliance with Seciton 401 and the Army Corps of Engineers (Corps) is responsible for administering compliance with Section 404. Thereby, both are required to minimize the destruction, loss, or degradation of wetlands.

Executive Order 11990, *Protection of Wetlands*, defines wetlands as "those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction."

According to the National Wetlands Inventory (NWI), wetlands exist both around and on Airport property. **Figure 5-10** illustrates wetlands as identified in the NWI.

FIGURE 5-10 – NATIONAL WETLANDS INVENTORY MAP



Note: Not to scale
Source: U.S. Fish and Wildlife Service, National Wetlands Inventory, Wetlands Mapper, www.fws.gov/wetlands/Data/Mapper.html

The Watershed Company conducted a wetland delineation within the boundaries of S43; **Figure 5-11** depicts the study area. The complete Wetland Delineation Study is located in **Appendix I, Wetland Delineation**.

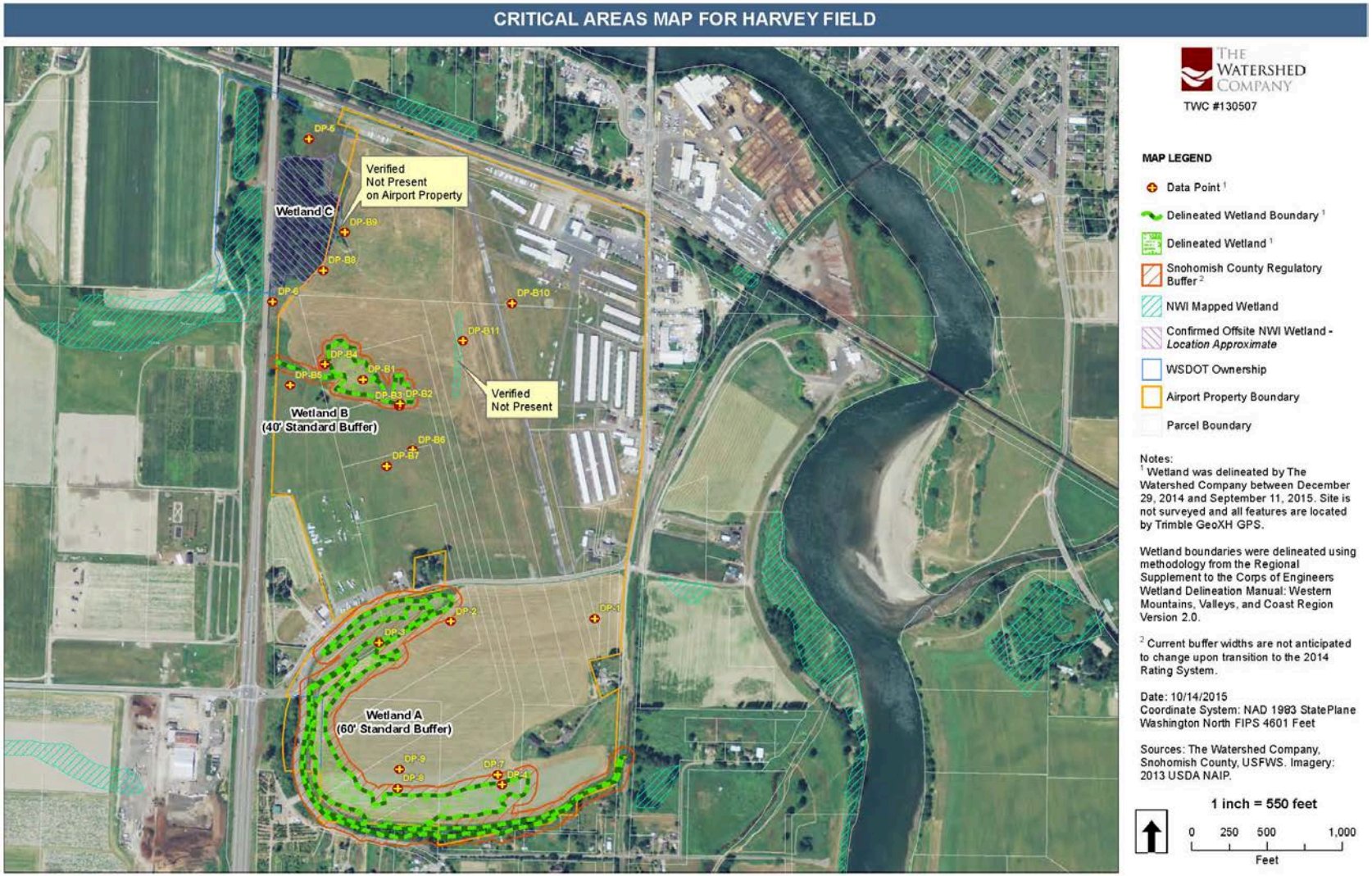
The study confirmed two wetlands within S43 boundaries - Wetlands A and B, as shown on **Figure 5-12** – and one located off-site near the northwest corner of the S43 boundary – Wetland C.

The extent of Wetland A, a large depressional wetland, at approximately 12 acres, is smaller than indicated on the NWI map (**Figure 5-10**). Wetland B is approximately 2.2 acres and is a depressional wetland located west of Runway 15L/33R. Wetland C, a depressional wetland, was also located but not field delineated and determined to be of smaller scale than shown on the NWI map.

FIGURE 5-11 – WETLAND DELINEATION STUDY AREA

Note: Not to scale
Source: The Watershed Company, September 2015

FIGURE 5-12 – WETLAND AREAS ON HARVEY FIELD



Note: Not to scale
Source: The Watershed Company, September 2015

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Wetlands in Snohomish County are regulated under Snohomish County Code (SCC) 30.62A, *Wetlands and Fish and Wildlife Habitat Conservation Areas*. Under SCC 30.62A, wetlands are classified as one of four categories based on the rating system. The County currently uses the 2004 rating system but it plans to adopt the 2014 rating system in 2015. Consequently, the 2014 rating system was used to classify wetlands on S43. Wetland A was determined to be a Category III; Wetland B, a Category IV; and Wetland C, a Category III. These categories are used in combination with the intensity of adjacent land use to determine the buffer area.

Table 5-8 depicts the 2014 rating system's draft buffer widths.

TABLE 5-8 – DRAFT WETLAND BUFFER WIDTHS

Wetland	Category	Standard Buffer Width[/a/]
A	III	60 feet
B	IV	40 feet
C	III	60 feet

Note: [/a/]Per Snohomish County 2014 Rating System
Source: The Watershed Company, September 2015

Impacts to wetlands require coordination with Snohomish County. The County does permit certain structures or facilities within wetlands and buffers, including utilities and transportation structures providing there are no feasible alternatives or the alternative would result in unreasonable or disproportionate costs. Stormwater detention/retention facilities, access and pedestrian walkways, vegetation trimming, and reconstruction or replacement of existing buildings are also allowed.

Direct impacts to wetlands require compensatory mitigation through wetland creation and/or wetland enhancement. There are several mitigation bank opportunities with service areas encompassing Harvey Field Airport. Snohomish River Basin and Skykomish Habitat Bank are mitigation banks approved for credit release in the Snohomish River basin. Both banks currently have credits available for release and are approved for use by the Corps, Ecology and Snohomish County. A third mitigation bank, Blue Heron Slough, is close to gaining approval from agencies. While this project may not need credits for many months, it is unlikely all credits would be sold within the timeframe of this project.

Prior to development, a Jurisdictional Determination will be required from the Corps and a permit application submitted to approve wetland impacts and mitigation. Purchasing credits at a wetland bank is typically the Corps preferred mitigation.

5.17 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968, as amended[29], describes those river segments designated as, or eligible to be included in, the Wild and Scenic Rivers System. Impacts to designated rivers should be avoided or minimized to the extent possible. In addition, the President's 1979 *Environmental Message Directive* on Wild and Scenic Rivers[30] directs federal agencies to avoid or mitigate adverse

[29] U.S. Code, The Wild and Scenic Rivers Act of 1968, 16 USC 1271-1287, 1977
[30] Office of Environmental Policy, 1979, Policy Guidelines for Wild and Scenic Rivers, 1980

effects on rivers identified in the Nationwide Rivers Inventory as having potential for designation under the Wild and Scenic Rivers Act.

The act classifies rivers as wild, scenic, or recreational. **Table 5-9** describes each classification. However, regardless of classification, each river in the National System is administered with the goal of protecting and enhancing the values that caused it to be designated. A designated river is neither prohibited from development nor does it give the federal government control over private property. Voluntary stewardship by landowners and river users provides protection of the designated river as well as regulation and programs of federal, state, local, or tribal governments. In most cases not all land within boundaries is, or will be, publicly owned, and the act limits how much land the federal government is allowed to acquire from willing sellers.[31]

As of July 2011, the National System protects 12,598 miles of 203 rivers in 38 states and the Commonwealth of Puerto Rico; this is less than one-quarter of one percent of the nation's rivers.[32] Washington has approximately 70,439 miles of river, of which 197 miles are designated as wild and scenic.

TABLE 5-9 – WILD AND SCENIC RIVER CLASSIFICATIONS

Classification	Description
Wild	Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
Scenic	Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
Recreational	Those rivers or sections of rivers readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Source: National Wild and Scenic Rivers System, www.rivers.gov, accessed December 2014

Table 5-10 lists the wild and scenic rivers in Washington; **Figure 5-13** depicts the designated rivers in relation to S43.

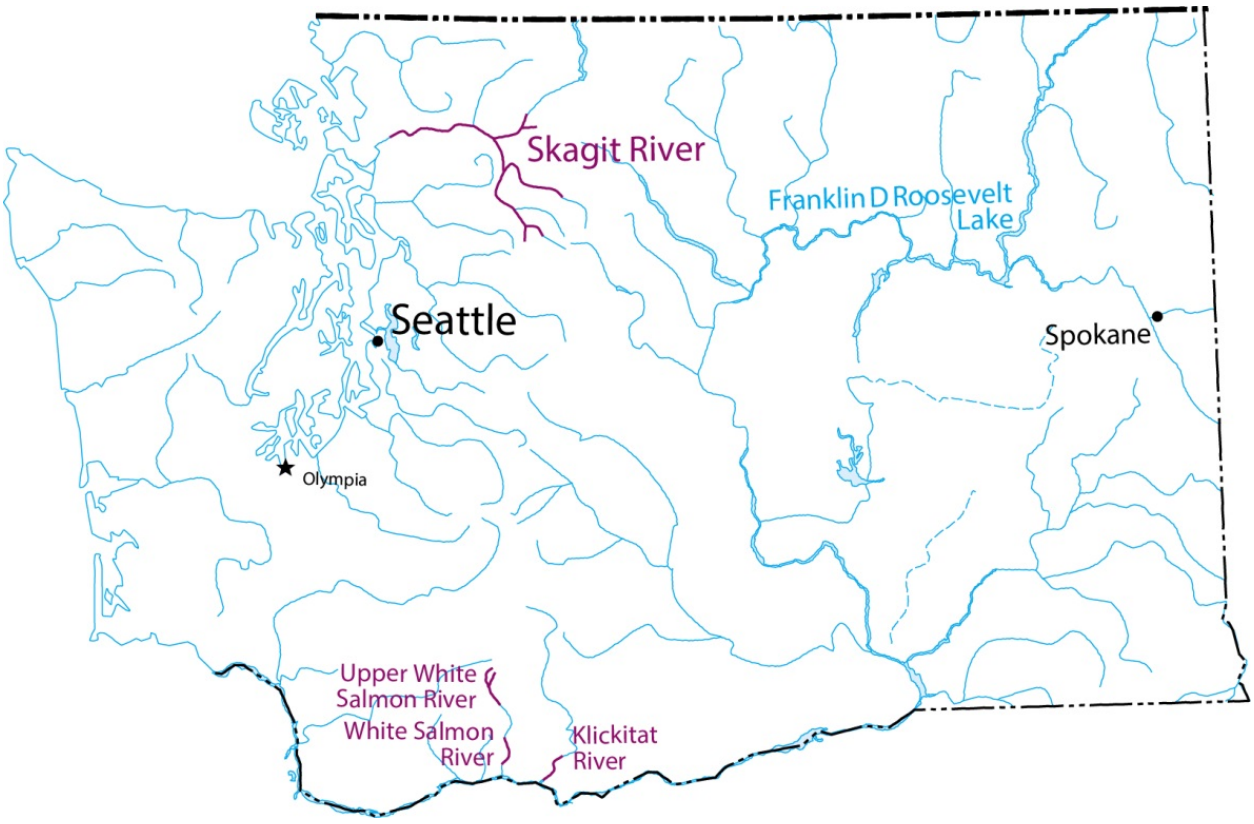
TABLE 5-10 – WILD AND SCENIC RIVERS IN WASHINGTON

River	Classification	Miles Designated
Klickitat River	Recreational	10.8
Skagit River	Scenic Recreational	100.0 58.5
White Salmon River	Wild Scenic	6.7 21.0

Source: National Wild and Scenic Rivers System, www.rivers.gov, accessed December 2014

[31] National Wild and Scenic Rivers System, www.rivers.gov, accessed July 2014
[32] Ibid

FIGURE 5-13 – WASHINGTON WILD AND SCENIC RIVER SEGMENTS



Note: Not to scale
Source: National Wild and Scenic Rivers System, www.rivers.gov, accessed December 2014