3 Affected Environment

The affected environment chapter provides a description of the conditions in 2022 (referred to as "Existing Condition") in and around the vicinity of SEA that may be directly or indirectly affected by the Proposed Action or alternatives. The year 2022 was chosen because it was the last full year for which a complete inventory of annual statistical data was available for SEA after the construction schedule was revised and the forecast was updated.

3.1 Airport Setting and Location

SEA is located primarily within the City of SeaTac in southern King County, Washington, 12 miles south of downtown Seattle, and 20 miles north of the City of Tacoma (**Exhibit 3-1**). SEA is located on approximately 2,800 acres of land generally bound by SR 99 to the east, SR 509 to the west, S. 142nd Place to the north, and S. 200th Street to the south. Additional land owned by the Port and used for runway protection and noise compatibility extends northward to S. 136th Street and southward to S. 216th Street.

Cities nearest to SEA include Burien, Des Moines, Normandy Park, SeaTac, and Tukwila, as well as portions of unincorporated King County. Other nearby cities include Federal Way, Kent, and Seattle. The predominant land use nearest to SEA is residential, with local commercial and some industrial areas. Land uses directly adjacent to Airport property include park land, residential, industrial, and commercial. **Exhibit 3-1** shows SEA and the general pattern of nearby development.

3.2 Identification of the Study Area

The General Study Area (GSA) (see **Exhibit 3-2**) represents the area where reasonably foreseeable direct or indirect impacts may occur as a result of implementing the Proposed Action or alternatives. The GSA includes an area encompassing 3,692 acres (5.8 square miles). The GSA is loosely bounded by S. 140th Street to the north, 33rd Avenue S. to the east, S. 20th Street to the south, and Des Moines Way to the west. The study area for certain resources varies from the GSA. Where that occurs, the applicable study area is explained in the resource section.

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EXHIBIT 3-1: AIRPORT ENVIRONS

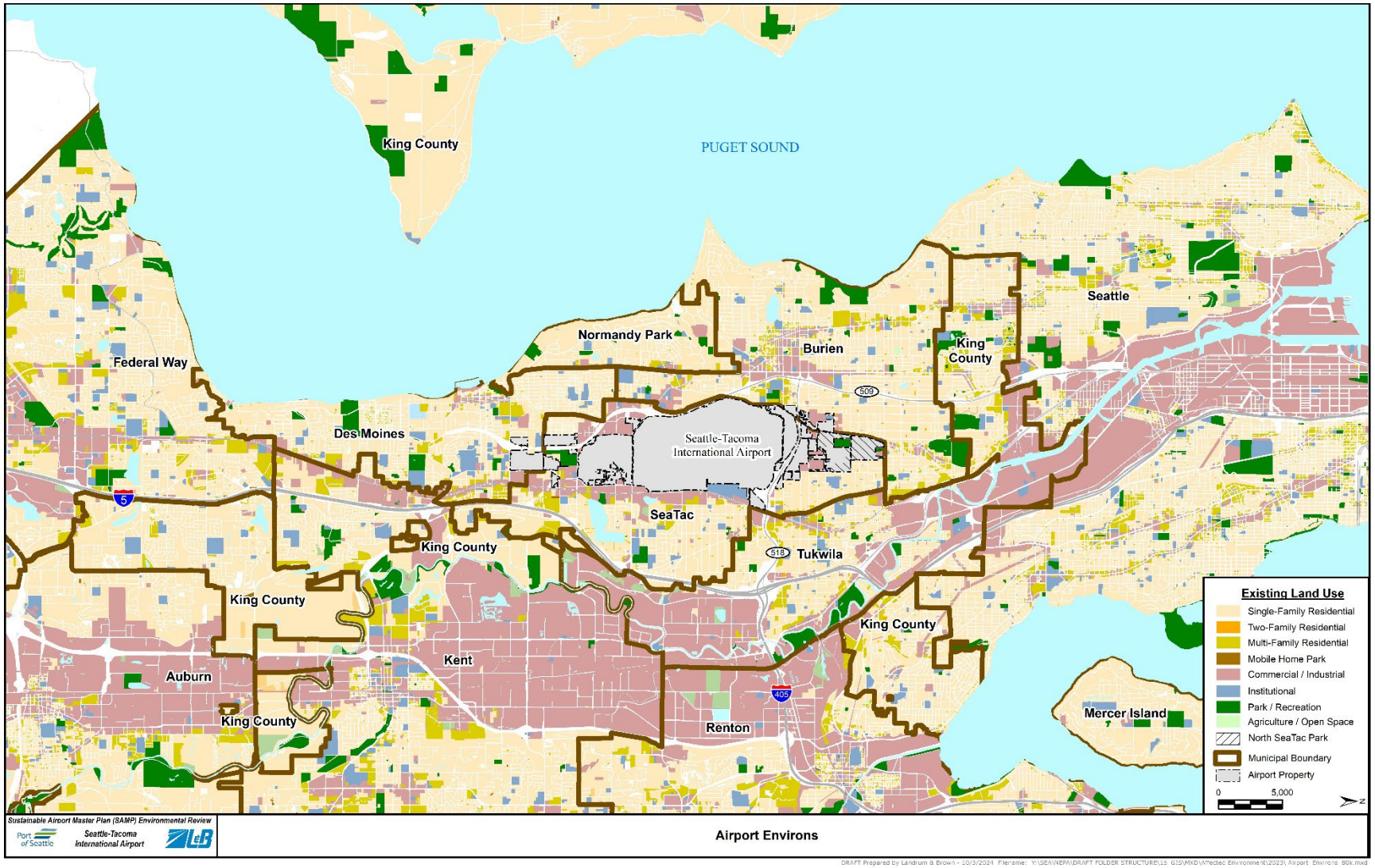

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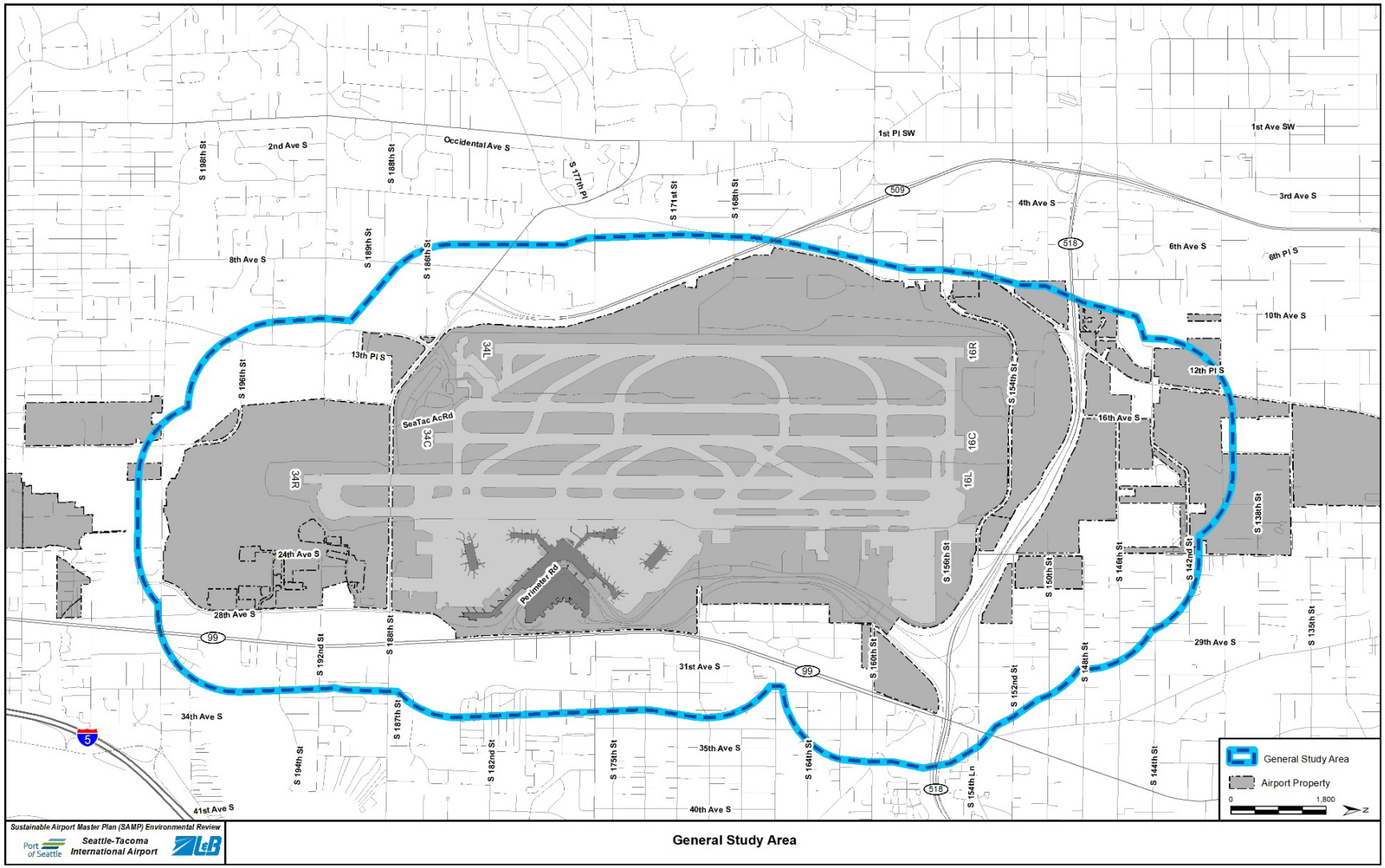
EXHIBIT 3-2: GENERAL STUDY AREA (GSA)



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3.3 Environmental Resources

3.3.1 Air Quality

Air quality is the measure of the condition of the air expressed in terms of ambient pollutant concentrations and their temporal and spatial distribution. Air quality regulations are based on concerns that high concentrations of air pollutants can harm human health, especially for children, the elderly, and people with compromised health conditions; as well as adversely affect public welfare by damage to crops, vegetation, buildings, and other property. **Appendix C, Air Quality and Greenhouse Gas Emissions,** provides detailed information on regulations, methodology, and the Air Quality and Greenhouse Gas Technical Report.

3.3.1.1 Regulatory Setting

Under the Clean Air Act (CAA) the U.S. Environmental Protection Agency (USEPA) established the National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and welfare (criteria air pollutants) (**Table 3-1**). These standards have been established for the following criteria air pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter less than or equal to ten microns aerodynamic diameter (PM_{10}), fine particulate matter less than or equal to 2.5 microns aerodynamic diameter ($PM_{2.5}$), and lead (Pb). Because emissions of O_3 cannot be calculated directly, volatile organic compounds (VOCs) and oxides of nitrogen (NO_X) (precursors to O_3 formation) are used as surrogates.

TABLE 3-1: STATUTE RELATED TO THE PROTECTION OF AIR QUALITY

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Clean Air Act (CAA)	42 U.S.C. §§ 7401-767q 40 CFR parts 6, 9, 50-53, 60, 61, 63, 66, 67, 81, 82 and 83	USEPA	Regulates air pollutant emissions from stationary and mobile sources; authorizes USEPA to establish NAAQS for criteria pollutants

For each of the six criteria pollutants, the USEPA established primary NAAQS intended to protect public health, and secondary standards for the protection of public welfare. The NAAQS are summarized in **Table 3-2**. All areas of the country are required to demonstrate attainment with the NAAQS. Attainment areas are areas where pollutant levels have not exceeded the NAAQS, whereas nonattainment areas are those where one or more NAAQS were exceeded. Maintenance areas are areas that previously exceeded the NAAQS but currently meet the standards. States with nonattainment or maintenance areas are required to have a State Implementation Plan (SIP) in place to identify how the region will attain the NAAQS. Maintenance areas are subject to a SIP for two consecutive 10-year periods (20 years) after reaching attainment to ensure continued attainment.

In addition to these federal requirements, SEA is subject to state and local air quality regulations that the Washington State Department of Ecology (WSDE) and Puget Sound Clean Air Agency (PSCAA) enforce, respectively. Based on the Air Quality Data Summary for 2022 prepared by the PSCAA, the State of Washington and the Puget Sound region have adopted the USEPA's NAAQS.[16,17]

[16] Puget Sound Clean Air Agency. 2022 Air Quality Data Summary, December 2023. https://pscleanair.gov/DocumentCenter/View/5360.

[17] The Puget Sound Clean Air Agency has developed an air quality health goal for daily $PM_{2.5}$ concentrations. The health goal of 25 µg/m^3 for a daily average is more protective than the current federal standard of 35 µg/m^3. However, the State of Washington has not approved this health goal as an ambient air quality standard.

TABLE 3-2: NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

Pollutant	Primary / Secondary	Averaging Time	Level	Form Of Measurement
Carbon Monoxide (CO)	Primary	8 hour	9 ppm	Not to be exceeded more than once per year
Carbon Monoxide (CO)	Primary	1 hour	35 ppm	Not to be exceeded more than once per year
Lead (Pb)	Primary and Secondary	Rolling 3-month average	0.15 µg / m^3 (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)	Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Nitrogen Dioxide (NO_2)	Primary and Secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)	Primary and Secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter ($PM_{2.5}$)	Primary	1 year	9.0 µg / m^3	Annual mean, averaged over 3 years
Particulate Matter ($PM_{2.5}$)	Secondary	1 year	15.0 µg / m^3	Annual mean, averaged over 3 years
Particulate Matter ($PM_{2.5}$)	Primary and Secondary	24 hours	35 µg / m^3	98th percentile, averaged over 3 years
Particulate Matter (PM_{10})	Primary and Secondary	24 hours	150 µg / m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)	Primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Sulfur Dioxide (SO_2)	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg / m^3 as a calendar quarter average) also remain in effect.
(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.
(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O_3 standards.
(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is a USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.
Note: ppm is parts per million; ppb is parts per billion and µg / m^3 is micrograms per cubic meter.
Source: USEPA, https://www.epa.gov/criteria-air-pollutants/naaqs-table, accessed March 2024.

3.3.1.2 King County Air Quality Status

SEA is located within King County, Washington, which is included in the Puget Sound Intrastate Air Quality Control Region. The area was previously designated maintenance for ozone under the 1-hour 1979 ozone standard; however, the 1-hour standard was revoked by USEPA effective June 15, 2005. The maintenance period for ozone ended on November 25, 2016.[18] The region is currently designated as in attainment for both the 2015 and 2008 8-hour ozone standard.

In the past, King County was also designated as nonattainment for CO; however, on October 11, 1996, the USEPA determined the area had attained the standard and the region was redesignated to attainment of the 1971 standard. The maintenance period for CO ended on October 11, 2016.[19] Several areas within King County are classified as maintenance for the PM_{10} (coarse particles) standard. The Airport is not within any of these areas. Therefore, the Proposed Action would occur in an area considered in attainment for all criteria pollutants.

3.3.1.3 Existing Conditions

The air quality analysis completed for this EA considered the sources of emissions and local meteorology. Sources of emissions, such as ground support equipment (GSE) or stationary sources, are limited to the project site. The analysis of aircraft operations extends beyond the project site (Port-owned property) up to the mixing height, which is where air pollutants are "capped" from going higher by relative air temperature. The mixing height used in this assessment is defined as 3,084 feet in altitude above field elevation based on the USEPA's *Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States*, as recommended by the FAA and concurred by the PSCAA. Furthermore, the analysis included impacts associated with potential changes to motor vehicle traffic on the surrounding road network. The vehicle traffic analysis included volumes reflecting (1) vehicles traveling Airport roadways; (2) vehicles accessing parking facilities; (3) vehicles accessing the terminal curbside areas for passenger pick-up and drop-off; and (4) vehicles traveling off-Airport roadways.

Methodology

Emissions were evaluated using the FAA's Aviation Environmental Design Tool (AEDT) Version 3f. AEDT models aircraft performance in space and time to estimate fuel consumption, air quality emissions, and noise consequences at airports. Emission factors for motor vehicles were derived from the USEPA's Motor Vehicle Emissions Simulator (MOVES) model version 4. The approach was developed and coordinated with the FAA and the PSCAA.

[18] Washington State Department of Ecology. Plans for Maintaining Air Quality. https://ecology.wa.gov/Regulations-Permits/Plans-policies/State-implementation-plans/Maintenance-SIPs, accessed December 2023.
[19] Ibid.

Existing Condition Criteria Pollutant Emissions Inventory

An emissions inventory for the Existing Condition is a summary of the total criteria air pollutants generated by all active emissions sources that may be affected by the Proposed Action. The emissions inventory provides the total annual pollutant emissions as short tons per year.[20] The emissions inventory for the Existing Condition is shown in **Table 3-3**. The analysis included criteria air pollutants CO, NO_2, PM_{10}, $PM_{2.5}$, SO_2 and ozone precursor pollutants NO_x and VOCs. Lead was not included because Avgas (the only aviation fuel containing lead) fueling ceased at SEA in 2018 and the Proposed Action does not involve any potentially significant source of lead emissions.

In terms of total tons of emissions occurring in 2022, the largest quantity of criteria pollutants emitted was CO at 5,178 short tons followed by the two ozone precursors NO_x and VOC at 2,537 and 332 short tons respectively. The dominant source of emissions of all criteria pollutants was from aircraft operations and motor vehicles.

TABLE 3-3: EXISTING (2022) CONDITION ANNUAL EMISSIONS INVENTORY (SHORT TONS PER YEAR)

Emissions Source	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Aircraft	**1,798**	**255**	**2,081**	**186**	**21**	**21**
LTO (includes Start-Up, Approach, Climb, and Taxiing)	1,681	244	1,977	175	12	12
APUs	1	0	44	2	0	0
Aircraft Run-Ups	116	10	60	9	9	9
GSE	**196**	**6**	**17**	**0**	**1**	**1**
Tenant-Owned GSE	193	6	13	0	1	1
Port-Owned Airfield Vehicles and Equipment	3	0	4	0	0	0
Stationary Sources	**15**	**10**	**25**	**33**	**1**	**1**
Natural Gas Boilers	13	1	16	0	0	0
Diesel Generators	2	0	10	33	0	0
Fuel Farm Tanks	0	9	0	0	0	0
Motor Vehicles	**3,169**	**60**	**413**	**2**	**8**	**8**
Parking Facilities	52	2	6	0	0	0
On and Off-Airport Roadways (includes Airside Deliveries)	3,117	58	408	2	8	8
Total	**5,178**	**332**	**2,537**	**221**	**31**	**31**

SO_x= sulfur oxides, PM_{10}=coarse particulate matter, $PM_{2.5}$= fine particulate matter, LTO = landing / take-off cycle, APU = auxiliary power unit
Note: Totals may not sum due to rounding; Zeros may not indicate an absolute zero value.
Source: Port of Seattle and Landrum & Brown, 2023.

3.3.2 Biological Resources

Biological resources are valued for their intrinsic, aesthetic, economic, and recreational qualities. Typical categories of biological resources include terrestrial and aquatic plant and animal species; game and non-game species; special status species (state or federally-listed threatened or endangered species, or species of concern); and environmentally-sensitive or critical habitats. Detailed information, including survey data, is provided in **Appendix D, Biological Resources**.

[20] A short ton in the United States is commonly just called a ton. One short ton equals 2,000 pounds.

3.3.2.1 Regulatory Setting

TABLE 3-4: STATUTES, REGULATIONS, EXECUTIVE ORDERS, AND OTHER REQUIREMENTS RELATED TO BIOLOGICAL RESOURCES

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Bald and Golden Eagle Protection Act	16 U.S.C. § 668 et seq. 50 CFR part 22	USFWS	Protects bald and golden eagles from the unauthorized capture, purchase, or transportation of the birds, nests, or eggs.
Endangered Species Act	16 U.S.C. §§ 1531-1544 50 CFR parts 17 and 402	USFWS; NMFS	Requires federal agencies to seek to conserve threatened and endangered species. Section 7(a)(2) requires federal agencies, in consultation with the USFWS and / or NMFS, to ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.
Fish and Wildlife Coordination Act	16 U.S.C. §§ 661-667d	USFWS	Requires federal agencies to consult with the USFWS, NMFS (in some instances), and appropriate state fish and wildlife agencies regarding the conservation of wildlife resources when proposed federal projects may result in control or modification of the water of any stream or other water body.
Magnuson-Stevens Fishery Conservation and Management Act	16 U.S.C. § 1801 et seq. 50 CFR part 600	NMFS	Governs the conservation and management of ocean fishing, including essential fish habitat.
Marine Mammal Protection Act	16 U.S.C. § 1361 et seq. 50 CFR parts 18 and 216	NMFS, USFWS	Protects all marine mammals and prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas.
Migratory Bird Treaty Act	16 U.S.C. § 703 et seq.50 CFR part 21	USFWS	Protects migratory birds by prohibiting private parties (and federal agencies in certain judicial circuits) from intentionally taking, selling, or conducting other activities that would harm migratory birds, their eggs, or nests (such as removal of an active nest or nest tree), unless the USFWS authorizes such activities under a special permit.
Executive Order 13751, Safeguarding the Nation from the impacts of Invasive Species	81 Federal Register 88609, December 5, 2016	Not Applicable	Federal agencies must prevent the introduction, establishment, and spread of invasive species, as well as to eradicate and control populations of invasive species that are established.

TABLE 3-4: STATUTES, REGULATIONS, EXECUTIVE ORDERS, AND OTHER REQUIREMENTS RELATED TO BIOLOGICAL RESOURCES (CONTINUED)

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Executive Order 13112, Invasive Species	64 Federal Register 6183, (February 8, 1999)	Not Applicable	Federal agencies whose actions may affect the status of invasive species are directed to use relevant programs and authorities, to the extent practicable and subject to available resources, to prevent the introduction of invasive species, and to provide for the restoration of native species and habitat conditions in ecosystems that have been invaded. Agencies are directed not to carry out actions that they believe are likely to cause or promote the introduction or spread of invasive species unless the benefits of such actions clearly outweigh the potential harm, and all feasible and prudent measures to minimize risk of harm are taken.

Note: NMFS = National Marine Fisheries Service; USFWS = U.S. Fish and Wildlife Service.

3.3.2.2 Existing Conditions

NMFS defined an Endangered Species Act (ESA)-listed species study area specifically to assess impacts to ESA-listed species and habitat as part of Section 7 consultation, as shown in **Exhibit 3-3**. The ESA Study Area includes areas where NMFS indicated direct effects may occur from the construction of the NTPs and where indirect effects may occur from stormwater runoff. It includes most of the GSA and streams receiving stormwater from the GSA to the Puget Sound. The GSA was used to assess impacts to all other species.

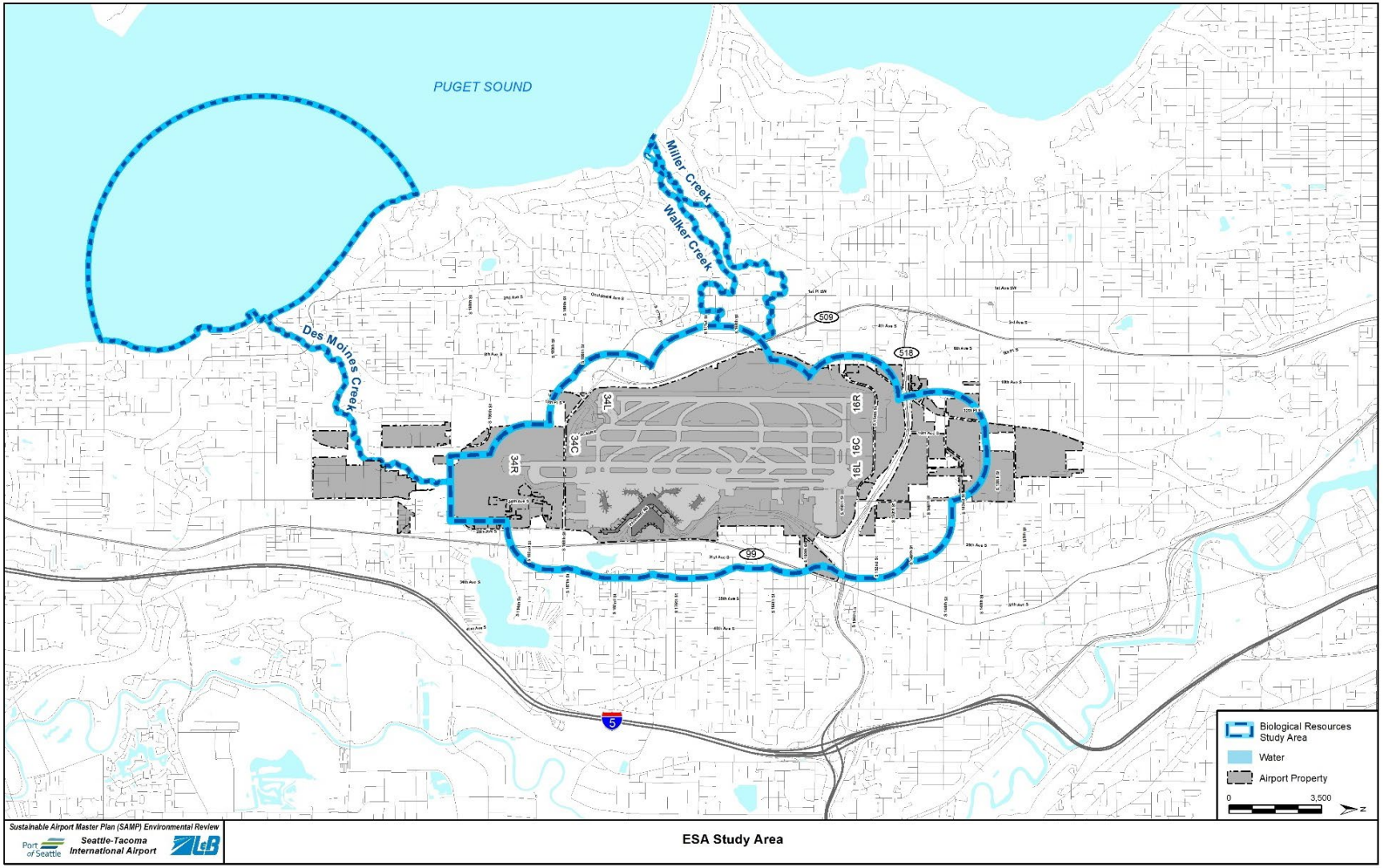
Both study areas are composed primarily of developed areas (buildings and paved surfaces) with areas of vegetated habitats (managed strips adjacent to runways and taxiways, open fields and shrublands, forested areas, stormwater ponds, and wetlands). Vegetated habitats are actively managed to prevent flight corridor obstructions and wildlife hazards. A field reconnaissance survey of affected habitats within the GSA was conducted in October of 2019, as well as a review of previous studies, species databases, and wildlife surveys in 2019, 2021, 2023, and 2024.

Fish and Wildlife

Common bird species present within the GSA include waterfowl (geese and ducks), gulls, pigeons, starlings, and raptors (hawks and owls). Common animals include coyotes, mice, rabbits, racoons, beavers, and several fish species.

The Airport has a comprehensive wildlife management program to make the Airport less attractive to wildlife that could interfere with flight operations, thus ensuring a safe environment for aviation and passengers. This program includes measures such as wildlife deterrent fencing around the perimeter of the airfield and a trapping and relocation program implemented by wildlife biologists. This approach balances wildlife protection and habitat requirements with aviation safety. The Port also works with local jurisdictions to establish an area extending 10,000 feet beyond SEA within which new development is reviewed for potential wildlife attractiveness that could impact aviation safety.

EXHIBIT 3-3: ESA STUDY AREA



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Endangered Species Act (ESA)

Species lists from the USFWS and the NMFS were obtained for this review in November 2019, September 2021, August 2023, April 2024, and June 2025. These lists indicate that several ESA-listed species and designated critical habitat have the potential to occur within the ESA Study Area (see **Table 3-5)**.

TABLE 3-5: ESA-LISTED ANIMAL SPECIES AND DESIGNATED CRITICAL HABITAT

Species	Listing Status	Critical Habitat	Notes
North American Wolverine	Threatened 11/30/2023 88 FR 83726	Not proposed in WA.	No suitable habitat for this species.
Marbled murrelet – Washington, Oregon, and California	Threatened 10/01/1992 57 FR 45328	Designated 08/04/2016 81 FR 51348	No suitable habitat for this species.
Yellow-billed cuckoo – Western U.S.	Threatened 11/03/2014 79 FR 59991	Not proposed in WA.	This species has been extirpated from WA and occurs as a periodic migrant.
Northwestern Pond Turtle	Proposed Threatened 10/03/2023 88 FR 68370	Not proposed in WA.	No suitable habitat for this species.
Bull Trout – Coastal-Puget Sound	Threatened 11/01/1999 64 FR 58910	Designated 10/18/2010 75 FR 63898	Documented to occur in the Puget Sound.
Chinook Salmon – Puget Sound	Threatened 06/28/2005 04/14/14 70 FR 37160	Designated 09/02/2005 70 FR 52630	Documented migration and foraging habitat present in Puget Sound. Documented in Miller Creek and (gradient accessible) in Walker Creek and Des Moines Creek.
Steelhead – Puget Sound	Threatened 04/14/2014 79 FR 20802	Designated 02/24/2016 81 FR 9252	Documented migration and foraging habitat present in the Puget Sound. Documented (gradient accessible) in Miller Creek, Walker Creek, and Des Moines Creek.
Yelloweye Rockfish – Puget Sound/Georgia Basin	Threatened 4/28/2010 75 FR 22276	Designated 11/3/2014 79 FR 68041	Planktonic eggs and larvae, post-settlement juvenile, and adult could occur in Puget Sound.
Bocaccio Rockfish – Puget Sound/Georgia Basin	Endangered 4/28/2010 75 FR 22276	Designated 11/3/2014 79 FR 68041	Planktonic eggs and larvae, post-settlement juvenile, and adult could occur in Puget Sound.
Southern Resident Killer Whale (SRKW)	Endangered 11/18/2005 70 FR 57565	Proposed 08/29/2021 84 FR 41668	SRKW migration and foraging habitat present in Puget Sound.
Humpback whale – Central America and Western North Pacific	Endangered 12/02/1970 81 FR 62259	Designated 4/21/2021 86 FR 21082	This species is not likely found in the Study Area.

TABLE 3-5: ESA-LISTED ANIMAL SPECIES AND DESIGNATED CRITICAL HABITAT (CONTINUED)

Species	Listing Status	Critical Habitat	Notes
Southern green sturgeon	Threatened 04/07/2006 71 FR 17757	Designated 10/09/2009 50 CFR 226.219	No suitable habitat for this species.
Southern Pacific eulachon	Threatened 03/18/2010 75 FR 13012	Designated 10/20/2011 76 FR 65323	No suitable habitat for this species.
Monarch Butterfly	Proposed Threatened 12/12/2024 88 FR 100662	No critical habitat has been designated for this species.	Milkweed is not native to King County. Limited potential for the monarch butterfly to be within Study Area.
Suckley's Cuckoo Bumble Bee	Proposed Endangered 12/17/2024 89 FR 102074	Critical habitat has not been proposed in Washington.	There is limited potential for Suckley's Cuckoo Bumble bee to be within Study Area.
Swamp / Marsh Sandwort	Endangered 08/03/1993 58 FR 41378	No critical habitat has been designated for this species.	No suitable habitat for this species.

Sources: NMFS (2019, 2021, 2023, 2024, 2025); USFWS (2019, 2021, 2023, 2024, 2025); National Oceanographic and Atmospheric Administration (NOAA) (2019, 2021, 2023, 2024, 2025).

Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGPA)

Most bird species in Washington State, except for introduced birds such as the European starling, rock doves (pigeons) and English house sparrows, are protected under the MBTA. **Table 3-6** provides a list of MBTA-protected species observed at SEA during annual wildlife hazard surveys conducted by the Port. The Port has documented bald eagle occurrences within the GSA. There are no known bald eagle nests or roosting sites within the GSA. The golden eagle is rare west of the Cascades and has not been observed in the GSA.

TABLE 3-6: MBTA-PROTECTED BIRD SPECIES WITHIN THE GSA

Species		
American bittern	Common goldeneye	Greater scaup
American coot	Common merganser	Greater white-fronted goose
American crow	Common nighthawk	Greater yellowlegs
American goldfinch	Common raven	Green heron
American kestrel	Common yellowthroat	Green-winged teal
American pipet	Cooper's hawk	Hammond's flycatcher
American robin	Dark-eyed junco	Hairy woodpecker
American tree sparrow	Dickcissel	Hermit thrush
American wigeon	Double-crested cormorant	Herring gull
Anna's hummingbird	Dowitcher	Hooded merganser
Bald eagle	Downy woodpecker	Horned grebe
Band-tailed pigeon	Dunlin	Horned lark
Bank swallow	Earred grebe	House finch
Barn owl	Evening grosbeak	House wren
Barn swallow	Fox sparrow	Killdeer

TABLE 3-6: MBTA-PROTECTED BIRD SPECIES WITHIN THE GSA (CONTINUED)

Species		
Barred owl	Gadwall	Lazuli bunting
Barrow's goldeneye	Glaucous-winged gull	Least sandpiper
Belted kingfisher	Golden-crowned kinglet	Lesser nighthawk
Bewick's wren	Golden-crowned sparrow	Lesser scaup
Black swift	Gray-cheeked thrush	Lincoln's sparrow
Black-capped chickadee	Great blue heron	Long-eared owl
Black-headed grosbeak	Great horned owl	MacGillivray's warbler
Black-throated gray warbler	Greater scaup	Mallard
Blue-winged teal	Greater white-fronted goose	Marsh wren
Broad-winged hawk	Greater yellowlegs	Merlin
Brown creeper	Green heron	Mountain bluebird
Brown-headed cowbird	Green-winged teal	Mourning dove
Bufflehead	Hammond's flycatcher	Northern flicker
Bushtit	Hairy woodpecker	Northern harrier
Cackling goose	Hermit thrush	Northern pintail
California gull	Herring gull	Northern shoveler
California quail	Hooded merganser	Northern shrike
Canada goose	Horned grebe	Northwestern crow
Canvasback	Herring gull	Orange-crowned warbler
Caspian tern	Hooded merganser	Osprey
Cedar waxwing	Horned grebe	Ovenbird
Chestnut-backed chickadee	Evening grosbeak	Pacific golden plover
Chipping sparrow	Fox sparrow	Pacific slope flycatcher
Cliff swallow	Gadwall	Palm warbler
Glaucous-winged gull	Red-breasted nuthatch	Pectoral sandpiper
Golden-crowned kinglet	Red-breasted sapsucker	Peregrine falcon
Golden-crowned sparrow	Red-necked grebe	Pied-billed grebe
Gray-cheeked thrush	Red-necked phalarope	Pileated woodpecker
Great blue heron	Red-shouldered hawk	Pine siskin
Great horned owl	Red-tailed hawk	Purple martin
Red-breasted merganser	Spotted sandpiper	Western tanager
Red-winged blackbird	Spotted towhee	Western wood pewee
Ring-billed gull	Swainson's hawk	Whimbrel
Ring-necked duck	Townsend's warbler	White-crowned sparrow
Rough-legged hawk	Tree swallow	White-throated sparrow
Ruby-crowned kinglet	Tundra swan	White-throated swift
Ruddy duck	Turkey vulture	Willow flycatcher
Rufous hummingbird	Varied thrush	Wilson's snipe
Savannah sparrow	Vaux swift	Wilson's warbler
Sharp-shinned hawk	Violet-green swallow	Winter wren
Short-eared owl	Warbling vireo	Wood duck
Snow bunting	Western grebe	Yellow-headed blackbird
Snow goose	Western gull	Yellow-rumped warbler
Snowy owl	Western meadowlark	Yellow warbler
Song sparrow	Western sandpiper	Western screech owl
Sora		

Source: Port annual surveys (2019 to present).

State Species of Concern

The Washington Threatened, Endangered, and Sensitive Species list includes species listed under the federal ESA, and state listed endangered, threatened or sensitive species. No state listed or sensitive species are likely or known to occur in the GSA and therefore will not be discussed further in the EA. The Washington State Department of Natural Resources Natural Heritage Program has identified two different kinds of natural areas with the goal to conserve and restore rare plant and animal species. These include Natural Area Preserves (NAPs) and Natural Resource Conservation Areas (NRCAs). No NAPs or NRCAs are located within the GSA and therefore will not be discussed further in the EA.

3.3.3 Greenhouse Gas Emissions[21]

Greenhouse Gases (GHGs) are gases that trap heat in the earth's atmosphere. GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), and perfluorocarbons. GHG emissions associated with aviation are principally in the form of CO_2 and are generated from the combustion of fossil fuels and are emitted as by-products contained in engine exhausts. Other GHGs associated with Airport operations (minor emissions compared to CO_2) include CH_4, N_2O, water vapor (H_2O), soot, and sulfates. Details of the analysis are provided in **Appendix C**.

3.3.3.1 Regulatory Setting

TABLE 3-7: STATUTES, REGULATIONS, AND EXECUTIVE ORDERS RELATED TO GHG

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Clean Air Act	42 U.S.C. §§ 7408, 7521, 7571, 7661 et seq. 40 CFR parts 85, 86, and 600 for surface vehicles part 60 for stationary power generation sources	USEPA	Regulates GHG emissions from on-road surface transportation vehicles and stationary power generation sources.

3.3.3.2 Existing Conditions

The GHG analysis completed for this EA considered GHG emissions inventories from three groups, Scope 1, 2, and 3 emissions. Scope 1 includes GHG emissions from sources owned or controlled by the Port at SEA, including Port-owned airfield vehicles, equipment, and stationary sources such as natural gas boilers and diesel generators. Scope 2 GHG emissions are those associated with the off-Airport generation of electricity purchased by the Port and consumed at SEA. Scope 3 includes GHG emissions caused by Airport operations that are not under the direct control of the Port, including sources like aircraft and motor vehicle emissions.

[21] After the publication of the Draft EA, EO 13990, which was relied upon for the January 2023 CEQ draft GHG guidance, was revoked. In addition, CEQ revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, 42 U.S.C. 4321 *et seq*., as amended, in response to EO 14154. As a result of these changes, references to climate and the qualitative climate evaluation that discussed the level of preparedness with respect to the impacts of climate change, the extent to which the alternatives could be affected by future climate conditions, and if the alternatives are consistent with national, state, and local climate goals has been removed from the Final EA.

Methodology

FAA guidance notes that if a project might increase criteria pollutants and / or fuel use, it could increase GHG emissions, warranting a GHG emissions inventory. The GHG emissions inventories were conducted in accordance with FAA guidelines[22] and are described in more detail in **Appendix C**. The approach was developed in coordination with the FAA and the PSCAA.

Existing Condition GHG Emissions Inventory

A GHG emissions inventory was conducted to provide the estimate of the annual rate (metric tons (MT) per year) of emissions attributable to Airport sources for the Existing Condition (**Table 3-8**). Of the six primary GHGs, only CO_2, CH_4 and N_2O are potentially emitted directly or indirectly because of the Proposed Action and are included in this analysis.[23]

GHGs differ from each other in their ability to absorb energy and how long they stay in the atmosphere. The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases by converting each gas amount to a carbon dioxide equivalent (CO_2e). GWPs provide a common unit of measure, which allows for one emission estimate of these different gases. GWPs based on a 100-year period (GWP 100) provided in the FAA's *Aviation Emissions and Air Quality Handbook Version 3 Update 1* and based on the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report are used in this evaluation.[24]

[22] FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (including the Desk Reference); FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions; and FAA's *Aviation Emissions and Air Quality Handbook Version 3 Update 1*.

[23] The other primary GHGs are fluorinated gases. Per USEPA, fluorinated gases are generally emitted as refrigerants and through industrial processes such as aluminum and semiconductor manufacturing. The other GHGs are not included because the Proposed Action does not include a potentially significant source of these GHGs. Additional information from the USEPA on fluorinated gases can be found at https://www.epa.gov/ghgemissions/overview-greenhouse-gases.

[24] There are also 20-year GWP values which prioritize gases with shorter lifetimes. For example, the GWP 20 value for methane is 86, according to IPCC, as compared to the GWP 100 value of 34. There is no difference between GWP 100 and GWP 20 for CO_2 and only a minor difference for nitrous oxides (GWP 100 is 298 and GWP 20 is 268). It is acknowledged that GHG emissions, especially for methane, would be higher using the GWP 20 instead of the GWP 100. However, methane emissions represent a small fraction of the total GHG emissions at SEA, as shown in Appendix C. This analysis used FAA guidance specifically provided in the FAA's *Aviation Emissions and Air Quality Handbook Version 3 Update 1* to determine potential GHG emissions.

TABLE 3-8: GHG EMISSIONS INVENTORY SUMMARY – EXISTING CONDITION

Emissions Source	Annual Emissions (CO_2e MT per year)
Scope 1	
Port-Owned Airfield Vehicles / Equipment	3,722
Natural Gas Boilers	16,844
Diesel Generators	281
Fuel Farm Tanks[1]	0
Total - Scope 1	20,846
Scope 2	
Port of Seattle Electricity Consumption	2,399
Total – Scope 2	2,399
Scope 3	
Aircraft (fuel dispensed)[2]	5,707,018
Tenant-Owned GSE	27,895
Tenant Electricity Consumption	330
Airside Deliveries	523
Roadways	395,406
Parking Facilities	6,623
Total - Scope 3	6,137,795
Total	6,161,040

[1] CO_2, CH_4, and N_2O, are by-products of fuel combustion. Per the FAA's *Aviation Emissions and Air Quality Handbook Version 3 Update 1*, the storage of fuel is a potential source of evaporative hydrocarbons but does not produce the type of hydrocarbons that contribute directly to global climate change.

[2] Based on FAA guidance, the estimated GHG emissions for aircraft operations, APUs, and aircraft engine ground run-ups were developed using the approximate fuel dispensed at the Airport.

Note: Totals may not sum due to rounding. Zeros may not indicate an absolute zero value.
Source: Port of Seattle, L&B, 2024.

3.3.4 Coastal Resources

Coastal resources include all natural resources occurring within coastal waters and their adjacent shorelands. Coastal resources include islands, transitional and intertidal areas, salt marshes, wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as fish and wildlife and their respective habitats within the coastlines of the Atlantic and Pacific oceans, the Great Lakes, and the Gulf of Mexico.

3.3.4.1 Regulatory Setting

TABLE 3-9: STATUTES, REGULATIONS, AND EXECUTIVE ORDERS RELATED TO THE PROTECTION OF COASTAL RESOURCES

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Coastal Barrier Resources Act	16 U.S.C. § 3501 et seq. U.S. DOI Coastal Barrier Act Advisory Guidelines, 57 Federal Register 52730 (November 5, 1992)	USFWS; FEMA	Prohibits, with some exceptions, federal financial assistance for development within the Coastal Barrier Resources System (CBRS) that contains undeveloped coastal barriers along the Atlantic and Gulf coasts and Great Lakes.
Coastal Zone Management Act (CZMA)	16 U.S.C. §§ 1451-1466 15 CFR part 930, subparts C and D 15 CFR part 923	NOAA; Appropriate State Agency	Provides for management of the nation’s coastal resources, including the Great Lakes.

Notes: DOI = U.S. Department of the Interior; FEMA = Federal Emergency Management Agency.

3.3.4.2 Existing Conditions

SEA is not located within the CBRS and there are no coral reefs within the project area. The CZMA applies to states having an approved Coastal Zone Management (CZM) plan. Proposed federal actions within the CZM boundary must work to achieve consistency with the applicable CZM plan. The WSDE administers Washington's CZM Program (CZMP). SEA is located within the CZM boundary.

3.3.5 Department of Transportation Act, Section 4(f) and Section 6(f)

Section 4(f) properties include parks and recreational areas of national, state, or local significance that are both publicly-owned and open to the public; publicly-owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public; and historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public. Section 4(f) protects historic or archaeological properties that are listed, or eligible for inclusion, on the National Register of Historic Places (NRHP), except in unusual circumstances.

3.3.5.1 Regulatory Setting

TABLE 3-10: STATUTES AND REGULATIONS RELATED TO SECTION 4(F) PROPERTIES

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Land and Water Conservation Fund (LWCF) Act of 1965	16 U.S.C. §§ 4601-4 et seq. 36 CFR part 59 et seq.	DOI	Section 6(f) provides funds for buying or developing public use recreational lands through grants to local and state governments. Section 6(f)(3) prevents conversion of lands purchased or developed with LWCF Act funds to non-recreation uses, unless the Secretary of the DOI, through the NPS, approves the conversion.
U.S. Department of Transportation Act – Section 4(f)	49 U.S.C. § 303 23 CFR part 774 et seq.	USDOT	Protects certain properties from use unless the relevant USDOT agency (e.g., the FAA) determines there is no feasible and prudent alternative and a project includes all possible planning to minimize harm.
Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU) – Section 6009	49 U.S.C. § 303 23 CFR part 774 et seq.	USDOT	Amended Section 4(f) to simplify the process and approval of projects that have de minimis impacts on 4(f) properties.

Note: USDOT = U.S. Department of Transportation; NPS = National Park Service.

3.3.5.2 Existing Conditions

The identification of Section 4(f) resources focused on areas where Section 4(f) resources could be physically impacted (physical use) or where noise would substantially affect the use of a 4(f) resource (constructive use) within the GSA. The Section 4(f) resources within the GSA are depicted on **Exhibit 3-4**. Potential Section 4(f) resources include publicly-owned parks and recreation areas. There are no historic resources or wildlife refuges in the GSA. No Section 6(f) funded properties are located within the GSA; therefore, no Section 6(f) properties would be affected.[25] No further discussion of Section 6(f) will be included in this EA.

[25] Trust for Public Land, Past Projects website: https://lwcf.tplgis.org/mappast/, accessed July 12, 2023.

Public Parks and Recreation Areas

Under Section 4(f), public parks and recreation areas include properties that are publicly-owned (by any local, state, or federal agency), open and available to the public, and used primarily for the purpose of park or recreational activities. Public parks and recreation areas located within the GSA are listed in **Table 3-11** and shown on **Exhibit 3-4**.

TABLE 3-11: PARKS AND RECREATION AREA LOCATED WITHIN THE GSA

Map ID	Name	Owner
P-1	Des Moines Memorial Park	City of Burien
P-2	Miller Creek Trail	City of Burien
P-3	Moshier Memorial Park	City of Burien
P-4	Walker Creek Wetland	City of Burien
P-5	Angle Lake Park	City of SeaTac
P-6	Des Moines Creek Park - SeaTac	City of SeaTac
P-7	North SeaTac Park[1]	Port of Seattle
P-8	Riverton Heights Park	City of SeaTac
P-9	S. 156th Way Trail	City of SeaTac
P-10	Leased Port of Seattle Property (Rugby)	Port of Seattle
P-11	S. 200th Street Shared Use Path	City of SeaTac
P-12	Westside Trail	City of SeaTac
P-13	Lake to Sound Trail	King County Parks and Recreation
P-14	Leased Port of Seattle Property (Sunset Playfield)	King County Parks and Recreation
P-15	Leased Port of Seattle Property (Ball Fields)	Port of Seattle

[1] North SeaTac Park extends onto Port-owned property under an existing lease agreement that provides for its use as a park until January 21, 2045.
Source: King County GIS data, City of Burien, Port of Seattle.

3.3.6 Farmlands

Farmlands are defined as those agricultural areas considered important and protected by federal, state, and local regulations. Important farmlands include all pasturelands, croplands, and forests considered to be prime, unique, or of statewide or local importance. The Proposed Action and alternatives would occur entirely on Port-owned land that is currently zoned for airport purposes. No farmlands are present within the GSA and therefore no further discussion of farmlands will be included.

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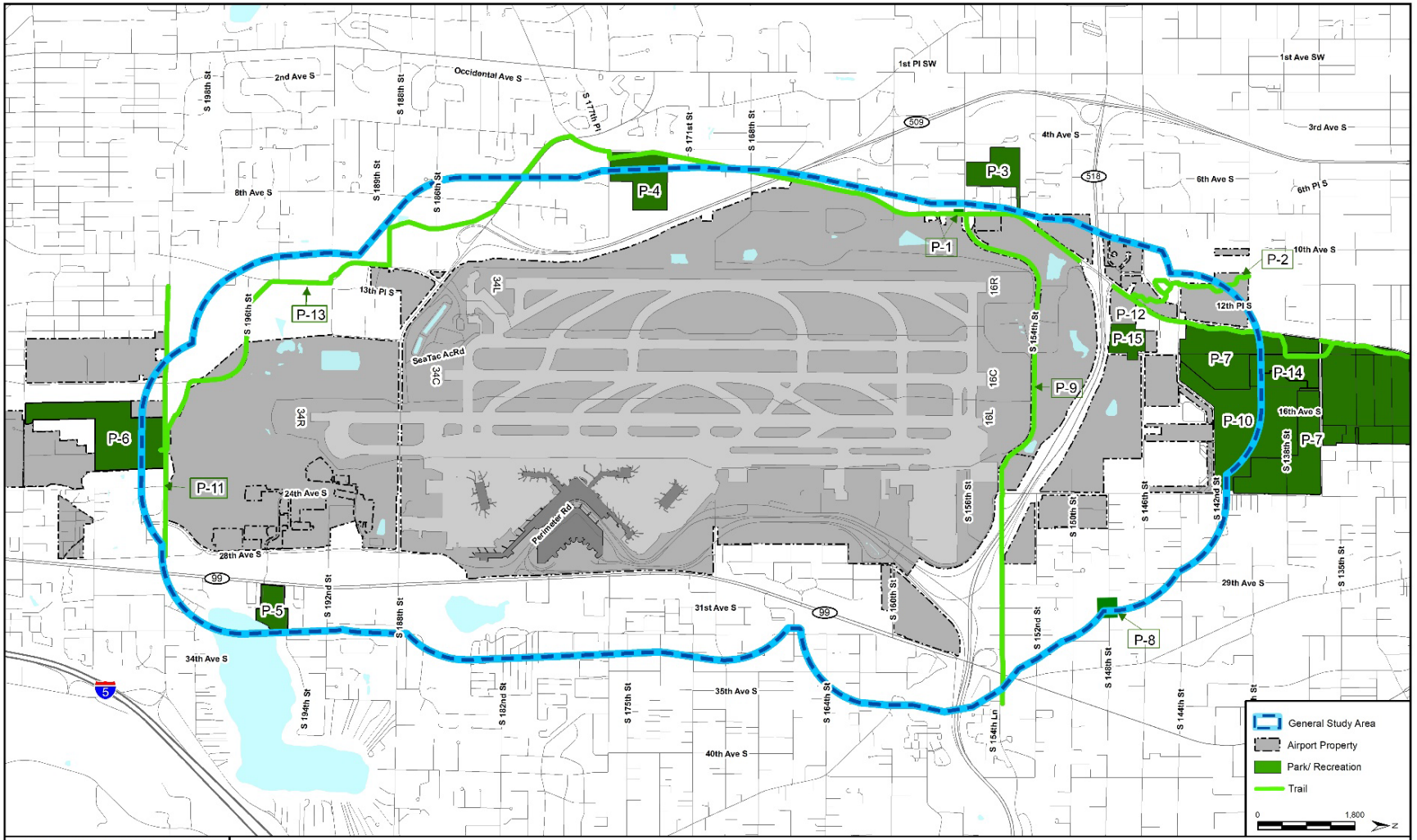
EXHIBIT 3-4: SECTION 4(F) RESOURCES IN THE GSA



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3.3.7 Hazardous Materials, Solid Waste, and Pollution Prevention

Hazardous materials are any substance or material that has been determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce. The term hazardous materials includes both hazardous wastes and hazardous substances, as well as petroleum and natural gas substances and materials. Solid waste is defined by the implementing regulations of the Resource Conservation and Recovery Act (RCRA) generally as any discarded material that meets specific regulatory requirements and can include such items as refuse and scrap metal, spent materials, chemical by-products, and sludge from industrial and municipal wastewater and water treatment plants. Pollution prevention describes methods used to avoid, prevent, or reduce pollutant discharges or emissions. **Appendix F**, **Hazardous Materials and Solid Waste** contains additional information on the regulatory setting, surveys completed, recycling, and pollution prevention.

3.3.7.1 Regulatory Setting

TABLE 3-12: STATUTES, REGULATIONS, EXECUTIVE ORDERS, AND OTHER REQUIREMENTS RELATED TO HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Resource Conservation and Recovery Act (RCRA)	42 U.S.C. §§ 6901-6992k 40 CFR parts 240-299	USEPA	Establishes guidelines for hazardous waste and non-hazardous solid waste management activities in the U.S. Regulates the generation, storage, treatment, and disposal of waste.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)(as amended by the Superfund Amendments Reauthorization Act of 1986 and the Community Environmental Response Facilitation Act of 1992)	42 U.S.C. §§ 9601-9675 40 CFR parts 300, 311, 355, 370, and 373	USEPA	Establishes joint and several liability for those parties responsible for hazardous substance releases to pay cleanup costs and establishes a trust fund to finance cleanup costs in situations in which no responsible party could be identified. Enables the creation of the NPL, a list of sites with known releases or threatened releases of hazardous substances in the U.S. and its territories used to guide the USEPA in determining which sites warrant further investigation.
Pollution Prevention Act	42 U.S.C. §§ 13101-13109	USEPA	Requires pollution prevention and source reduction control so that wastes would have less effect on the environment while in use and after disposal.

Note: NPL = National Priorities List.

3.3.7.2 Existing Conditions

The known hazardous material sites are depicted on **Exhibit 3-5**.

Hazardous Materials

Current activities at SEA that generate or involve the use of hazardous materials include aircraft fueling; maintenance of aircraft, GSE, motor vehicles, buildings, and Airport grounds; various Port maintenance shop operations; and construction activities. Many tenants use hazardous materials and generate hazardous waste. These wastes are disposed of by the tenants, and the Port does not take ownership of tenants' hazardous waste. SEA is considered a federal Small Quantity Generator by the USEPA and a State of Washington Medium Quantity Generator, generating 19,891 pounds of hazardous waste in 2022.[26]

Based on a review of the WSDE's *What's in My Neighborhood* mapping tool, there have been 58 documented incidents of contamination within the GSA requiring further action. These sites are listed in **Table 3-13** (Sites H-1 through H-58) and depicted on **Exhibit 3-5**. Twenty-two of these incidents occurred on SEA property. SEA property sites are indicated in **bold** text in the table. The Port is not responsible for the sites that are not located on SEA property.

SEA also has potential for other contaminants such as per- and polyfluoroalkyl substances (PFAS). PFAS are in several materials used by industry and consumers and include perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), among more than 7,800 chemicals. At the Airport, these substances are primarily found in aqueous film-forming foam (AFFF), a Class B firefighting foam used to fight aviation and other chemical fires.

A review of the Port's records indicates a total of 16 areas where AFFF has been deployed for an incident, used for training purposes, stored, or identified in water sampling (see **Exhibit 3-5** and **Table 3-13**; Sites H-59 through H-75).

The NPL is the list of sites of national priority among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the USEPA in determining which sites warrant further investigation. No NPL-listed sites are located within the GSA.

[26] Data provided by the Port, February 27, 2023.

EXHIBIT 3-5: AREAS OF KNOWN CONTAMINATION

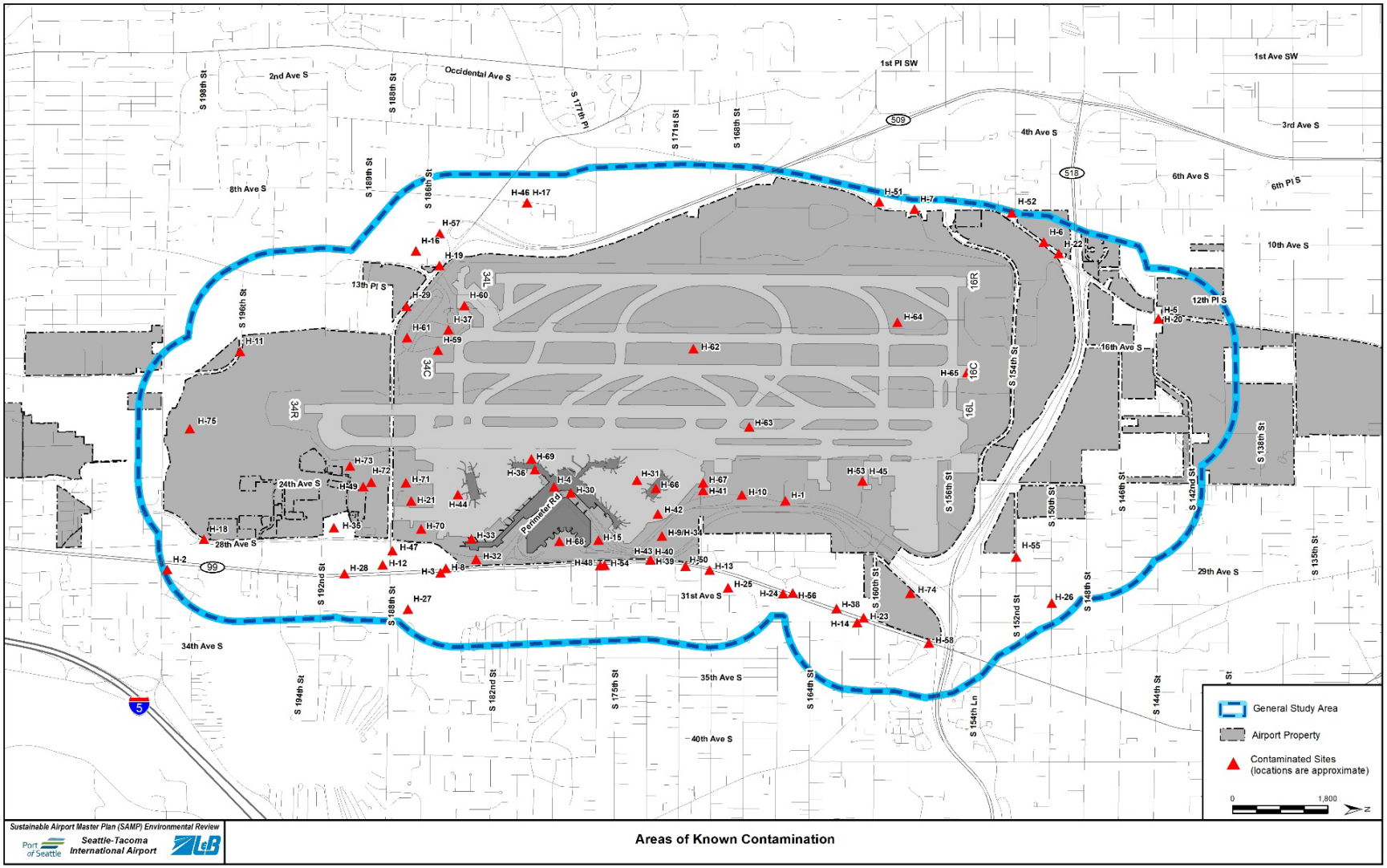

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TABLE 3-13: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION

Map ID	Name	Address / Location	Site Status	Cleanup Type
H-1	**Airborne Express**	**2580 S. 166th Street, Seattle, Washington, 98158**	**Cleanup Started**	**Independent Action**
H-2	British Petroleum (BP) 11255	19924 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-3	Budget Rent a Car of WA & OR Pacific HWY	18445 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-4	**Budget Rent a Car of WA / OR**	**17801 International Blvd, Seattle, Washington, 98158**	**Cleanup Started**	**Independent Action**
H-5	Burien Fuel	14260 Des Moines Memorial Drive S., Seattle, Washington, 98168	Cleanup Started	Independent Action
H-6	Charley's Shell	15041 Des Moines Memorial Drive S., Seattle, Washington, 98148	Cleanup Started	Independent Action
H-7	Chevron Crombies	15804 Des Moines Memorial Drive S., Seattle, Washington, 98148	Cleanup Started	Independent Action
H-8	Chevron Station 92259	18514 Pacific Hwy S., Seattle, Washington, 98188	Cleanup Started	Independent Action
H-9	**Continental Olympic United Fuel Farm**	**Air Cargo Rd, Seattle, Washington, 98158**	**Cleanup Completed under Participation Agreement conditions**	**Independent Action**
H-10	**Delta Air Lines Seattle**	**16745 Air Cargo Rd, Seattle, Washington, 98158**	**Cleanup Started**	**Independent Action**
H-11	Des Moines Creek Regional Detention Facility	S. 196th St & 18th Ave S., Seattle, Washington, 98148	Cleanup Started	Independent Action
H-12	Exxon 73287	2841 S. 188th Street, Seattle, Washington, 98188	Cleanup Started	PLIA Petroleum Technical Assistance Program
H-13	Exxon 79047	16850 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-14	Gordon Tang Co Inc	16020 32nd Avenue S., Seattle, Washington, 98188	Cleanup Started	Independent Action
H-15	**Hertz Avis National Fuel Facility QTA**	**SEA**	**Cleanup Started**	**Independent Action**
H-16	Hertz Corp	18625 Des Moines Memorial Drive S., Seattle, Washington, 98148	Cleanup Started	Independent Action
H-17	Highline SD Maintenance Yard	17910 8th Avenue S., Seattle, Washington, 98148	Cleanup Started	Independent Action
H-18	Highline Water District	19863 28th Avenue S., Seattle, Washington, 98188	Cleanup Started	Independent Action
H-19	Jim's Detail Shop	98148-1919, Seattle, Washington	Cleanup Started	Independent Action

TABLE 3-13: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION (CONTINUED)

Map ID	Name	Address / Location	Site Status	Cleanup Type
H-20	Joe's Inc.	14260 Des Moines Memorial Drive S., Seattle, Washington, 98168	Cleanup Started	Independent Action
H-21	**Lockheed Air Terminal**	**SEA**	**Cleanup Started**	**Independent Action**
H-22	**Lora Lake Apartments**	**15001 Des Moines Memorial Drive S., Seattle, Washington, 98148**	**Cleanup Completed. Port is currently monitoring**	**WSDE-supervised or conducted**
H-23	Loudon Real Estate	16015 International Blvd, Seattle, Washington, 98188	Awaiting Cleanup	Independent Action
H-24	M & M Finishers Inc	16600 Pacific Hwy S., Seattle, Washington, 98188	Cleanup Started	Voluntary Cleanup Program
H-25	Master Park	16826 International Blvd, Seattle, Washington, 98188	Awaiting Cleanup	No Process
H-26	Minchew Property	3025 S.150th Street, Seattle, Washington, 98188	Awaiting Cleanup	Independent Action
H-27	Red Lion Hotel SeaTac	18740 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-28	Retail Building	19023 Pacific Hwy S., Seattle, Washington, 98188	Cleanup Started	Independent Action
H-29	SAFCO Environmental Corp	1255 S.188th Street, Seattle, Washington, 98148	Cleanup Started	Independent Action
H-30	**SEA**	**SEA**	**Cleanup Started**	**WSDE-supervised or conducted**
H-31	**SEA NW Baggage Tunnel**	**SEA**	**Cleanup Started**	**Independent Action**
H-32	**SEA NW Fuel Farm**	**SEA**	**Awaiting Cleanup**	**Independent Action**
H-33	**SEA Pan Am Fuel Farm**	**SEA**	**Cleanup Started**	**Independent Action**
H-34	**SEA United Fuel Farm**	**SEA**	**N/A. See H-9**	**N/A. See H-9**
H-35	Sea-Tac Alaska Airlines BLDG-1995	2651 S.192nd Street, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-36	**SEA Concourse B Gate B2**	**SEA**	**Cleanup Started**	**Independent Action**
H-37	**Sea-Tac Crawford Aviation**	**SEA**	**Cleanup Started**	**Independent Action**
H-38	SeaTac Development	16025 International Blvd, Seattle, Washington, 98188	Cleanup Started	WSDE-supervised or conducted
H-39	**SEA Pan Am Hangar**	**17205 Pacific Hwy S., Seattle, Washington, 98188**	**Cleanup Started**	**Independent Action**
H-40	**SEA Pan Am Tanks 10A-10D**	**17205 Pacific Hwy S., Seattle, Washington, 98188**	**Cleanup Started**	**Independent Action**
H-41	**SEA NW Air Bulk Fuel**	**SEA**	**Cleanup Started**	**Independent Action**

TABLE 3-13: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION (CONTINUED)

Map ID	Name	Address / Location	Site Status	Cleanup Type
H-42	**SEA NW Airlines Front Hangar**	**SEA**	**Cleanup Started**	**Independent Action**
H-43	SEA Pan Am Av Gas Tanks	17205 Pacific Hwy S., Seattle, Washington, 98188	Cleanup Started	Independent Action
H-44	**SEA South Satellite / NW Air**	**SEA**	**Cleanup Started**	**Independent Action**
H-45	**SEA United Tank Removal**	**2230 S.161st Street, Seattle, Washington, 98158**	**Cleanup Started**	**Independent Action**
H-46	Seattle School Highline Maintenance	17910 8th Avenue S., Seattle, Washington, 98148	Cleanup Started	Independent Action
H-47	Shell at Sea-Tac	2806 S.188th Street, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-48	Sound Transit Parcel A1 109	17600 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-49	**Swissport Fueling**	**2350 S. 190th Street, Seattle, Washington, 98188**	**Cleanup Started**	**Independent Action**
H-50	Tac Sea Motel	17024 Pacific Hwy S., Seattle, Washington, 98188	Cleanup Complete -O&M / Monitoring	WSDE-supervised or conducted
H-51	Willie's Texaco	15939 Des Moines Memorial Drive S., Seattle, Washington, 98148	Awaiting Cleanup	Independent Action
H-52	Tucker Upholstery	15217 Des Moines Memorial Drive S., Seattle, Washington, 98148	Cleanup Started	PLIA Petroleum Technical Assistance Program
H-53	**United Airlines Sea-Tac Intl Airport**	**2230 S. 161st Street, Seattle, Washington, 98158**	**Closed under VCP**	**N/A**
H-54	UNOCAL 4871	17606 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-55	Victoria Town Homes	2805 S.152nd Street, Seattle, Washington, 98188	Cleanup Started	Voluntary Cleanup Program
H-56	Washington Memorial Park	16445 Pacific Hwy S., Seattle, Washington, 98188	Cleanup Started	Independent Action
H-57	Washington Department of Transportation Foreman A1 Towing	SR509 and 18451 12th Avenue S.	Cleanup Started	Independent Action
H-58	WSP Tukwila	15666 Pacific Hwy S., Seattle, Washington, 98188	Cleanup Started	Independent Action
H-59	**AFFF Testing and Training Location**	**Southern portion of Airfield, between Runway 34L and Runway 34 C**	**N/A**	**N/A**
H-60	**AFFF Testing and Training Location**	**Southern portion of Airfield, between Runway 34L and Runway 34C**	**N/A**	**N/A**

TABLE 3-13: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION (CONTINUED)

Map ID	Name	Address / Location	Site Status	Cleanup Type
H-61	**Annual (Summer) Testing / Training**	**Southern portion of Airfield, near industrial wastewater system (IWS) Lagoon 1**	**N/A**	**N/A**
H-62	**Small Aircraft Fire / AFFF Release**	**Central Airfield near Taxiway T**	**N/A**	**N/A**
H-63	**Aircraft Engine Fire / AFFF Release**	**Central Airfield on Taxiway B**	**N/A**	**N/A**
H-64	**Cargo Aircraft Crash/AFFF Release**	**Intersection of Taxiway E and Taxiway T**	**N/A**	**N/A**
H-65	**Grass Fire / AFFF Release**	**Northern portion of Airfield near end of Runway 16C**	**N/A**	**N/A**
H-66	**North Satellite Terminal AFFF Storage**	**North Satellite Terminal**	**N/A**	**N/A**
H-67	**ARFF Station AFFF Storage and Testing / Training**	**ARFF Station**	**N/A**	**N/A**
H-68	**Small Plane Crash/AFFF Release**	**Near Main Terminal Parking Garage**	**N/A**	**N/A**
H-69	**B-Terminal Airplane Crash / AFFF Release**	**Main Terminal, Concourse B**	**N/A**	**N/A**
H-70	**AFFF in Hangar Fire Suppression System**	**Delta Airlines Hangar**	**N/A**	**N/A**
H-71	**AFFF in Hangar Fire Suppression System**	**Alaska Airlines Hangar**	**N/A**	**N/A**
H-72	**AFFF Accidental Release**	**Airport Fuel Farm**	**N/A**	**N/A**
H-73	**AFFF Storage for Fuel Farm**	**Airport Fuel Farm**	**N/A**	**N/A**
H-74	**AFFF in QTA Fire Suppression System**	**Rental Car Facility**	**N/A**	**N/A**
H-75*	**Tyee Well**	**2152 S. 200th Street**	**PFAS detected at levels exceeding State Action Level**	**Well removed from service**

N/A: Information is not available or not applicable.
Independent actions: contamination cleanup is done independently without a legal agreement.
WSDE-supervised cleanup: contamination cleanup is done under an agreed order of consent decree.
Voluntary Cleanup Program (VCP): under the VCP, people who independently cleanup a contaminated site may request fee-based services from the WSDE, including technical assistance and written opinions on whether requirements have been met.
No Process: Sites not under WSDE or federal oversight, not enrolled in the VCP, and where no independent action has been taken.
PLIA Petroleum Technical Assistance Program: this state program provides qualifying petroleum sites with consultation and opinion under the authority of Chapter 70A.330 RCW and the Model Toxics Control Act (MTCA), Chapter 70A.305 RCW and Chapter 173-340 WAC.
* https://doh.wa.gov/data-and-statistical-reports/washington-tracking-network-wtn/pfas/dashboard, accessed February 11, 2024.
Note: **Bold** font = site is located on SEA property.
Source: Washington Department of Ecology, What's in My Neighborhood Tool. https://apps.ecology.wa.gov/neighborhood/, accessed February 2023. WSDE data was supplemented with current Port of Seattle data where applicable.

Solid Waste

SEA uses a centralized waste collection system divided between terminal and support areas and airfield areas. The collection and disposal of solid waste at SEA in 2022 is summarized in **Table 3-14**. Municipal Solid Wastes (MSW or garbage) collected in publicly and non-publicly accessible terminal and support areas are transported to central collection sites on SEA, where MSW vendors who are under contract with the Port collect them for offsite disposal. Flight kitchens, some cargo operators, and airline maintenance hangars manage their waste separately from the Airport system.

Each centralized waste collection site has at minimum one compactor for comingled recyclables and one compactor for garbage. Additional containers for compostable material, used cooking oil, scrap metal, construction debris, and garbage are located at various terminal loading docks and remote collection sites. Multiple service providers haul garbage, recyclables, compostable waste, and other wastes from compactors, drop boxes, and dumpsters in the Port's central waste collection sites.

TABLE 3-14: SOLID WASTE SUMMARY (2022) IN TONNAGE

Material	Vendor	Fate	Destination	Terminal	Airfield
Garbage (MSW)	Recology (contract held by City of SeaTac)	Landfilled	Cedar Hills Regional Landfill (CHRL)[1]	4,291	2,525
Mixed Recycling	Recology	Recycled	Recology Materials Recovery Facility – South Seattle, WA	2,097	129
Food + Compostables	Cedar Grove Composting	Composted	Cedar Grove compost facility in Maple Valley, WA	1,070	N/A
Used Cooking Oil	Mahoney Environmental	Converted to Biodiesel	Mahoney Biodiesel Facility in Seattle	43	N/A
Glass	Recology	Recycled	Recology Materials Recovery Facility – South Seattle, WA	20	N/A
Scrap Metal	Young's Salvage	Recycled	Various local metal recycling facilities	55	N/A
Plastic Film	Recology	Recycled / Landfilled	Recology Materials Recovery Facility – South Seattle, WA / CHRL	N/A	N/A
Donated Food	Des Moines Area Food Bank	Donated	Des Moines Area Food Bank and neighboring communities	16	N/A
Checkpoint/Terminal Liquids	Zone 1-3 Custodial Vendors	Diverted	Drained to Sanitary Sewer	158	N/A
Plastic Water Bottle Prevention	Estimated via liquid refill station use	Prevented	N/A	24	N/A
Other materials (lamps, ballasts, e-scrap, used oil & antifreeze, batteries, tires, paper reduction)	Various vendors	Recycled & Prevented	Various local recycling facilities	28	N/A
Construction Waste – In Terminal	Recology	Recycled	Various King County certified Construction Waste Recycling facilities	61	N/A
Biohazardous	Trilogy	Autoclaved, Landfilled	Covanta Waste to Energy in Brooks, OR; Autoclave / Landfill in California or Utah	1	N/A
Regulated Waste (International)	Stericycle	Autoclaved, Landfilled	Covanta WTE Brooks, OR	75	N/A

[1] In November 2022 the County identified a preferred alternative for landfill development. This development is estimated to increase Cedar Hills Regional Landfill life until early 2038. https://kingcounty.gov/en/dept/dnrp/waste-services/garbage-recycling-compost/solid-waste-facilities/cedar-hills-development, accessed February 11, 2024.
Source: Data provided by Port, 2023.

3.3.8 Historic, Architectural, Archaeological, and Cultural Resources

Historical, architectural, archaeological, and cultural resources encompass a range of sites, properties, and physical resources relating to human activities, society, and cultural institutions. Such resources include past and present expressions of human culture and history in the physical environment, such as prehistoric and historic archaeological sites, structures, objects, districts, which are considered important to a culture or community. **Appendix G, Historic Resources** contains additional information including surveys completed and correspondence.

3.3.8.1 Regulatory Setting

TABLE 3-15: STATUTES, REGULATIONS, EXECUTIVE ORDERS, AND OTHER REQUIREMENTS RELATED TO HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
National Historic Preservation Act (NHPA)	54 U.S.C. § 300101 et seq. 36 CFR part 800 (Section 106 process); part 60 (NRHP); part 62.1 (National Natural Landmarks); part 65 (National Historic Landmarks); part 68 (standards); part 73 (World Heritage Program); part 78 (waiver of federal agency Section 110 responsibilities); part 79 (curation)	NPS; ACHP; SHPO; THPO	Establishes the ACHP, an independent agency, and the NRHP within the NPS. Section 106 of the NHPA requires federal agencies to consider the effects of their undertaking (or action) on properties listed in or eligible for listing in the NRHP. Within the State of Washington, the Washington Department of Archaeology and Historic Preservation (DAHP) administers the NRHP program under the direction of the SHPO.
Executive Order 13175, Consultation and Coordination with Indian Tribal Governments	65 Federal Register 67249 (November 9, 2000)	Not Applicable	Requires federal agencies to have an accountable tribal consultation process that ensures timely and meaningful input from Indian Tribes on the development of federal policies that have tribal implications. Directs executive departments and agencies to engage in government-to-government relations with Native American tribal governments in a knowledgeable, sensitive manner.

Notes: ACHP = Advisory Council on Historic Preservation; SHPO = State Historic Preservation Officer; THPO = Tribal Historic Preservation Officer.

3.3.8.2 Existing Conditions

The FAA identified the Area of Potential Effect (APE) and DAHP concurred. An APE is "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties" (36 CFR § 800.16(d)). The APE encompasses the areas where ground disturbing activities are anticipated to be located and for areas that may be affected by a change in visual character or setting (see **Exhibit 3-6**).

Definition of the Undertaking

An undertaking, as defined in 36 CFR 800.16(y), is a project funded in whole or in part under the jurisdiction of a federal agency. This includes projects carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

As explained in Chapter 1, Section 163 of the FAA Reauthorization Act of 2018 and Section 743 of the FAA Reauthorization Act of 2024 limited FAA's ALP approval authority and land use approval authority. While the Proposed Action details the Port's intended development at SEA, only some of these development components are subject to FAA's approval and / or funding. Therefore, the undertaking is slightly different from the Proposed Action. The undertaking does not include L04 – Main Terminal North GT Lot and S01 – Fuel Farm Expansion. The FAA determined it does not have approval authority for these two projects and they are not related to any of the projects that the FAA does have authority over. Therefore, these projects are not included as part of the undertaking.

Study Completed

Stell Environmental Enterprises, Inc (Stell) completed a cultural resource survey of the APE in February 2021. Stell documented four archaeological sites and 12 historic properties. None of the historic properties or archaeological sites were determined to be eligible for listing on the NRHP. Fieldwork Studio LLC (Fieldwork) completed a focused reconnaissance survey in December 2023. None of the properties documented were determined to be eligible for listing on the NRHP. Fieldwork also completed an evaluation of the Washington Memorial Park Cemetery in March 2024. The Cemetery was determined not eligible for listing on the NRHP.

EXHIBIT 3-6: AREA OF POTENTIAL EFFECT (APE)

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3.3.9 Land Use

Aviation-related land use planning is integral to safe, sustainable operations. Ensuring compatibility requires an analysis of how the Airport functions within the community and how the community can be impacted by the Airport.

3.3.9.1 Regulatory Setting

TABLE 3-16: STATUTES, REGULATIONS, AND EXECUTIVE ORDERS RELATED TO LAND USE

Statute	US Code Implementing Regulation	Oversight Agency	Summary
Airport and Airway Improvement Act of 1982, and subsequent amendments	49 U.S.C. § 47107(a)(10)	FAA	AIP funding for an airport development project may not be approved unless the Secretary of Transportation receives written assurance satisfactory to the Secretary that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including the landing and take-off of aircraft.
Airport Improvement Program (AIP)	49 U.S.C. § 47106(a)(1)	FAA	AIP funding for an airport development project may not be approved unless the Secretary of Transportation is satisfied that a project is consistent with plans (existing at the time a project is approved) of public agencies for development of the area in which the airport is located.
Airport Safety, Protection of Environment, Criteria for Municipal Solid Waste Landfills	40 CFR § 258.10	USEPA	Addresses restrictions on municipal solid waste landfills relative to airports.

3.3.9.2 Existing Conditions

The land use analysis focused on the areas within the GSA where the Proposed Action or alternatives may create impacts that are incompatible with existing or future planned land uses. The analysis considered the City of SeaTac and those jurisdictions within the GSA (see **Exhibit 3-7**).

Existing Land Use

The predominant existing land use within the GSA is commercial / industrial. Land uses surrounding the Airport property include parkland, residential, industrial, and commercial.

Planned and Future Land Use

General land use within each jurisdiction is established through a comprehensive plan and applied through zoning regulations. Zoning provides an indication of possible future land use and does not always reflect the current land use. Zoning directly adjacent to Port-owned property is predominantly commercial along the east; park and residential to the north; mixed use to the south; and mixed commercial, industrial, and residential to the west (see **Exhibit 3-8**).

Title 36, Chapter 36.70.547 of the Revised Code of Washington[27] requires every county, city, and town in which a general aviation airport, that is operated for the benefit of the general public, is located to, through its comprehensive plan and development regulations, discourage the siting of incompatible uses adjacent to such general aviation airport. Thus, local plans and land use regulations have been developed by adjacent jurisdictions to discourage uses incompatible with Airport operations.

Local and county comprehensive plans, local redevelopment plans, regional transportation plans, and other agreements from the jurisdictions within the GSA were collected for this EA to understand planned and future land uses. These included the following:

- Port and City of SeaTac Interlocal Agreement (ILA) (2018)
- SeaTac Comprehensive Plan (last update: November 23, 2021)
- City of Des Moines Comprehensive Plan (June 25, 2015, amended: December 3, 2020)
- The Burien Plan (updated on November 7, 2022)
- Tukwila Comprehensive Plan (2015)
- Puget Sound Regional Council (PSRC) Vision 2050 (adopted in October 2020)

Information on each plan / agreement is provided in **Appendix H, Land Use**.

[27] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70.547

EXHIBIT 3-7: LAND USE NEAR THE AIRPORT

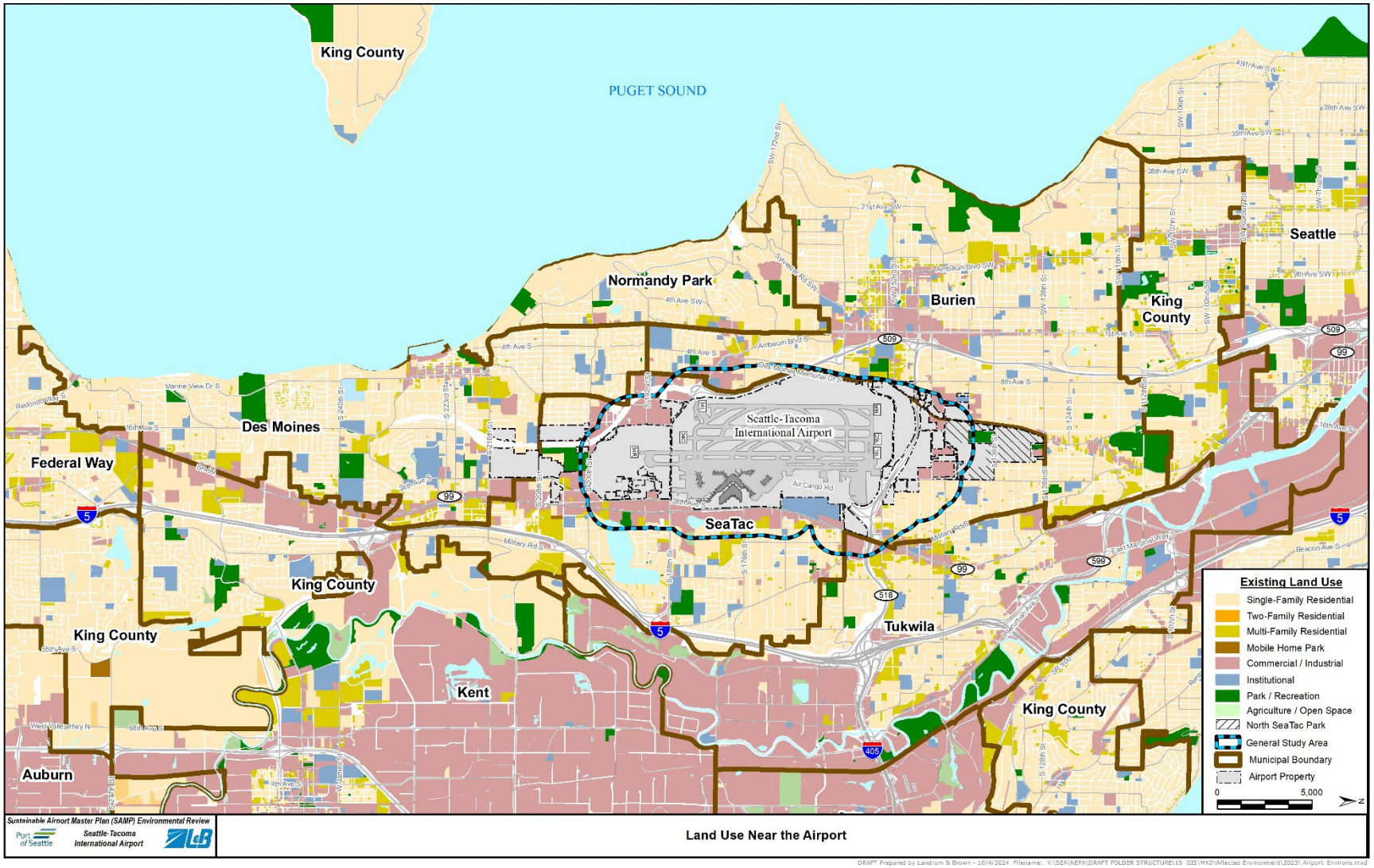

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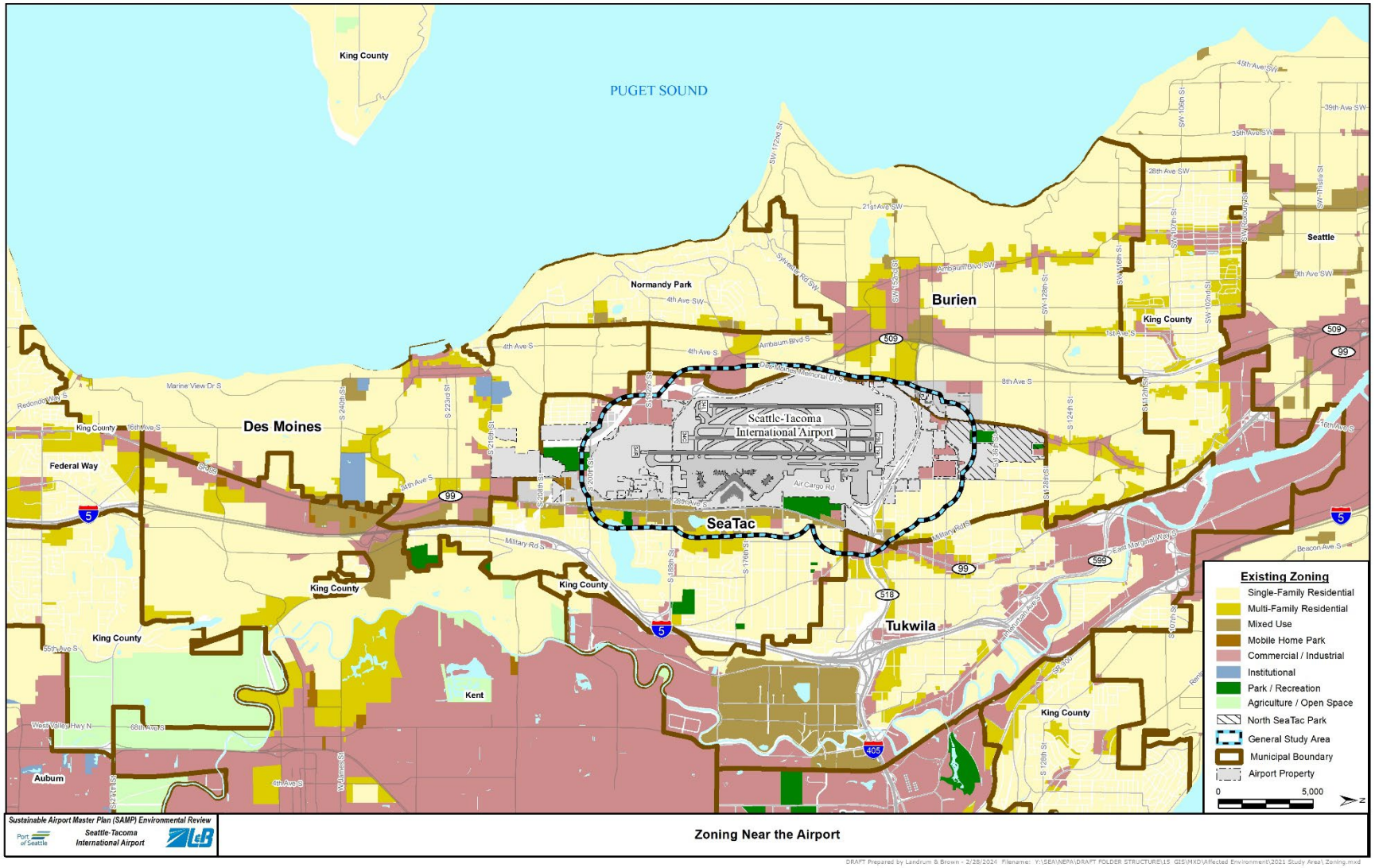
EXHIBIT 3-8: ZONING NEAR THE AIRPORT



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3.3.10 Natural Resources and Energy Supply

This impact category evaluates a project's consumption of natural resources (such as water, asphalt, aggregate, wood, etc.) and use of energy supplies (such as coal for electricity; natural gas for heating; and fuel for aircraft, or other ground vehicles) from construction, operation, and / or maintenance of the Proposed Action or alternative(s).

3.3.10.1 Regulatory Setting

There are no special purpose laws or requirements for natural resources or energy supply that apply to the NTPs.

3.3.10.2 Existing Conditions

The Seattle-Tacoma area is a well-developed urban area with adequate access to natural resources for facility operations, aircraft operations, and construction projects. Under normal operating circumstances, SEA has access to utilities and fuel, and these energy sources are currently not in short supply in the area.[28]

Electricity and Natural Gas

Energy demands from the operation of Airport facilities are met through the consumption of electricity, natural gas, and liquid fuels. The Bonneville Power Administration (BPA), Puget Sound Energy (PSE) and Seattle City Light (SCL) provide electricity, and PSE and Cost Management Services provide natural gas. Electricity is the primary source of energy used for lighting and cooling of the SEA facilities, including the terminal building. On the airfield, runway and taxiway lighting, aircraft ground power, and various navigational systems use electricity. BPA provides power and transmission services to SEA, which operates as the electric utility within the fence line of the Airport property. This accounts for over 90 percent of the electricity used at SEA. PSE and SCL serve smaller retail loads outside the Main Terminal, such as the bus maintenance facility, distribution center, cargo buildings, airfield lighting, and similar smaller uses.

Natural gas provides heat, steam, and hot water to the SEA facilities. The boilers in SEA's main heating plant use natural gas as the primary energy source, with diesel as a backup source when the natural gas supply is interrupted. The Port also uses natural gas to fuel certain vehicles used at SEA, including its Rental Car Facility and employee shuttle buses.

Table 3-17 and **Table 3-18** show the electricity and natural gas usage at SEA in selected years from 2010 to 2022.

TABLE 3-17: ELECTRICITY CONSUMPTION (MEGAWATT HOUR)

Year	Total BPA Electricity Consumption (non-tenant)	Tenant BPA Electricity Consumption	Total SCL Electricity Consumption	Total PSE Electricity Consumption
2010	114,000	31,000	1,600	700
2015	115,000	32,000	1,600	1,900
2019	118,000	28,000	2,100	2,300
2022	117,000	26,376	2,100	2,207

Note: Numbers are rounded to the nearest 100.
Source: Data provided by the Port of Seattle.

[28] United States Energy Information Administration, Washington State profile and energy estimates. www.eia.gov/state/analysis, accessed July 12, 2023.

TABLE 3-18: NATURAL GAS CONSUMPTION (THERMS)

Year	Total Central Plant Natural Gas Consumption	Total CNG Fueling Station Natural Gas Consumption	Total Other Buildings Natural Gas Consumption	Renewable Natural Gas (started 10/2020)
2010	2,700,000	0	115,000	0
2015	2,550,000	500,000	115,000	0
2019	2,500,000	560,000	200,000	0
2022	2,980,291	447,000	190,434	50% of the total natural gas is renewable; 100% of CNG in buses

Notes: Numbers are rounded to the nearest 100.
1 therm = a unit of heat equivalent to 100,000 British Thermal Units.
CNG – Compressed Natural Gas
Source: Data provided by the Port of Seattle.

Renewable Natural Gas (RNG)

The Port has a contract for RNG supply that began in October 2020 to replace approximately 60 percent of the existing fossil gas usage in the boilers and all of the supply at its CNG fueling station. RNG is a natural gas produced by the decomposition of organic matter. The term “renewable” is used to describe this gas because it is derived from waste that is continuously produced by present-day activities, such as landfills, wastewater treatment plants, and food and animal waste digesters. These waste sources naturally produce a potent GHG – methane – as they decompose, so RNG production captures methane that would otherwise escape into the atmosphere. The captured gas is purified to remove components such as water, carbon dioxide, and hydrogen sulfide.

Fuel Consumption

Jet A fuel is delivered via the BP Olympic Pipeline. The total volume of Jet A supplied to aircraft at SEA in 2022 was 595,696,138 gallons. The BP Olympic Pipeline is near capacity with delivery of its existing fuel products and during summer peak operations at SEA there are often challenges with having enough jet fuel in storage tanks to meet minimum storage levels per the Fuel Consortium’s standards / policies. The Fuel Consortium (an airline group) and BP Olympic Pipeline coordinate additional jet fuel deliveries outside the normal schedule as needed.

The Port maintains a diesel and renewable diesel supply contract for vehicles and generators with SeaPort Petroleum, which comes from Targa Sound Terminal in Tacoma. Individual airlines have their own supplies for diesel. However, some of the Port’s diesel supply is used for airline equipment. The total amount used by SEA vehicles and generators in 2022 was 44,257 gallons of fossil diesel, and 29,029 gallons of renewable diesel. The Port estimates that the airlines, caterers, etc. use about 400,000 additional gallons of diesel in their GSE per year. Biodiesel is not used at SEA.

The Port has a gasoline supply contract with SeaPort Petroleum. In 2022, 124,140 gallons of gasoline was delivered for SEA use. The airlines purchase gasoline separately. Volumes used by airlines are difficult to estimate commercially, but it is reasonable to assume that airlines, caterers, and other SEA businesses use about 400,000 additional gallons of gasoline per year.

Water

Seattle Public Utilities provide water for SEA and off-Airport properties are supplied by local water districts, including King County Water Districts 49 and 125, and Highline Water District 75. Off-airport refers to properties north of 518 (King County Water District #125), south of 188th Street (Highline

Water District #75), and the far west portion of the airport (King County Water District #49). **Table 3-19** shows the primary water consumption at SEA from 2016 to 2022.

TABLE 3-19: WATER CONSUMPTION

Year	Water Consumption (CCF[1])	Water Consumption (Gallons)
2016	325,860	243,760,225
2017	328,440	245,690,199
2018	361,551	270,458,106
2019	367,451	274,871,299
2022	516,450[2]	386,304,600

[1] CCF = centrum cubic feet (or 100 cubic feet).
[2.] The increase in consumption in 2022 was due to a water leak that has been corrected.
Source: Data provided by the Port from Seattle Public Utility Account numbers 0982930000, 4789950000, and 5789950000.

Other Natural Resources

Other natural resources used at SEA include dirt for fill material, concrete, asphalt, water, wood, and gravel. These resources are available in the Puget Sound region, and there are multiple providers of such resources in the vicinity of SEA.[29] According to natural resource mapping of the area, no scarce or unusual resources are present within the GSA.[30]

3.3.11 Noise and Noise-Compatible Land Use

Sound is a physical phenomenon consisting of pressure fluctuations that travel through a medium, such as air, and are sensed by the human ear. Noise is considered an unwanted sound that can disturb routine activities (e.g., sleep, conversation, student learning) and can cause annoyance. Aviation noise primarily results from the operation of fixed and rotary-wing aircraft, such as departures, arrivals, overflights, taxiing, and engine run-ups. Refer to **Appendix J, Noise and Noise-Compatible Land Use** for more detailed information on noise and the noise analysis.

3.3.11.1 Regulatory Setting

TABLE 3-20: STATUTES AND REGULATIONS RELATED TO NOISE AND NOISE-COMPATIBLE LAND USE

Statute	US Code Implementing Regulation	Oversight Agency	Summary
Airport and Airway Improvement Act of 1982	49 U.S.C. § 47101 et seq.	FAA	Authorizes funding for noise mitigation and noise compatibility planning and projects, and establishes certain requirements related to noise-compatible land use for federally-funded airport development projects.
Aviation Safety and Noise Abatement Act of 1979	49 U.S.C. § 47501 et seq. 14 CFR part 150	FAA	Directs the FAA to establish, by regulation, a single system for measuring noise and determining the exposure of people to noise; and time of occurrence; and to identify land uses normally compatible with various noise exposures.

[29] WACA (Washington Aggregates and Concrete Association) Member Directory. www.washingtonconcrete.org/member-list-public, accessed August 9, 2023.
[30] WDNR. Coal, metallic, and mineral resources map of Washington. https://www.dnr.wa.gov/programs-and-services/geology/energy-mining-and-minerals/coal-metallic-and-mineral-resources#major-metallic-minerals-in-washington, accessed August 9, 2023.

Potential impacts from airport noise, relative to the land uses surrounding an airport, are determined by modeling and mapping the Day-Night Noise Level (DNL). DNL is a cumulative sound level that provides a measure of the total sound energy during a specified time period. DNL logarithmically averages the sound levels at a location over a 24-hour period, with a 10-decibel (dB) weighted penalty added to noise events occurring during nighttime hours between 10:00 p.m. and 6:59 a.m. The 10-dB penalty represents the added intrusiveness of noise that occurs during sleeping hours, when ambient sound levels are typically lower than during daytime hours.

FAA Order 1050.1F requires the use of the latest version of FAA's AEDT[31]. FAA Order 1050.1F also identifies 65 DNL as the required metric to determine if there is a significant impact. The FAA uses the 14 CFR Part 150, *Airport Noise Compatibility Planning*, land use compatibility guidelines, and standards set out in Appendix A to Part 150. Below 65 DNL, all land uses are determined to be compatible with airport noise.

3.3.11.2 Existing Conditions

Aircraft Noise Modeling Methodology and Input

To calculate DNL noise exposure levels for SEA, several categories of information were collected for input into AEDT. These inputs included the number of operations by aircraft type, the number of operations by time of day, runway layout, runway end use, flight track location, flight track use, engine run-up (testing) locations, engine run-up activity, and departure trip length. The noise analysis conducted considered the area where the predominant arrival and departure flight tracks occur, as well as less routinely flown flight tracks.

Existing Condition Noise Contour

Exhibit 3-9 graphically depicts the average-annual noise contour for the Existing (2022) Condition. The 65 DNL noise contour of the Existing (2022) Condition encompasses 8.8 total square miles within the cities of Burien, Des Moines, and SeaTac, and unincorporated King County. The 65 DNL contour extends approximately 3.4 miles to the north and 2.8 miles south of SEA. The area within the contour to the north and south is made up of a mix of residential, commercial, and industrial land uses.

Noise-Compatible Land Use

Based on FAA's Land Use Compatibility Guidelines, 65 DNL is the exterior noise level where noise sensitive land uses (residences, places of worship, schools, libraries, and nursing homes) are not compatible with aircraft noise. All land uses with noise levels below 65 DNL are considered compatible with airport noise.

Summaries of the residential population and housing units exposed to noise levels exceeding 65 DNL for the Existing (2022) Condition noise contour are provided in **Table 3-21**. A total of 6,216 housing units are located within the 65+ DNL noise contour. A list of noise sensitive facilities within the 65+ DNL Noise Contour for the Existing (2022) Condition are listed in **Table 3-22**. There are nine schools (five have been sound insulated and one additional school is in the process of being sound insulated), 19 places of worship, three nursing homes, and two libraries within the 65+ DNL noise contour.

[31] FAA, 2023, AEDT, Version 3f (latest version when modeling was completed). https://aedt.faa.gov/3f_information.aspx.

EXHIBIT 3-9: EXISTING (2022) CONDITION NOISE CONTOUR

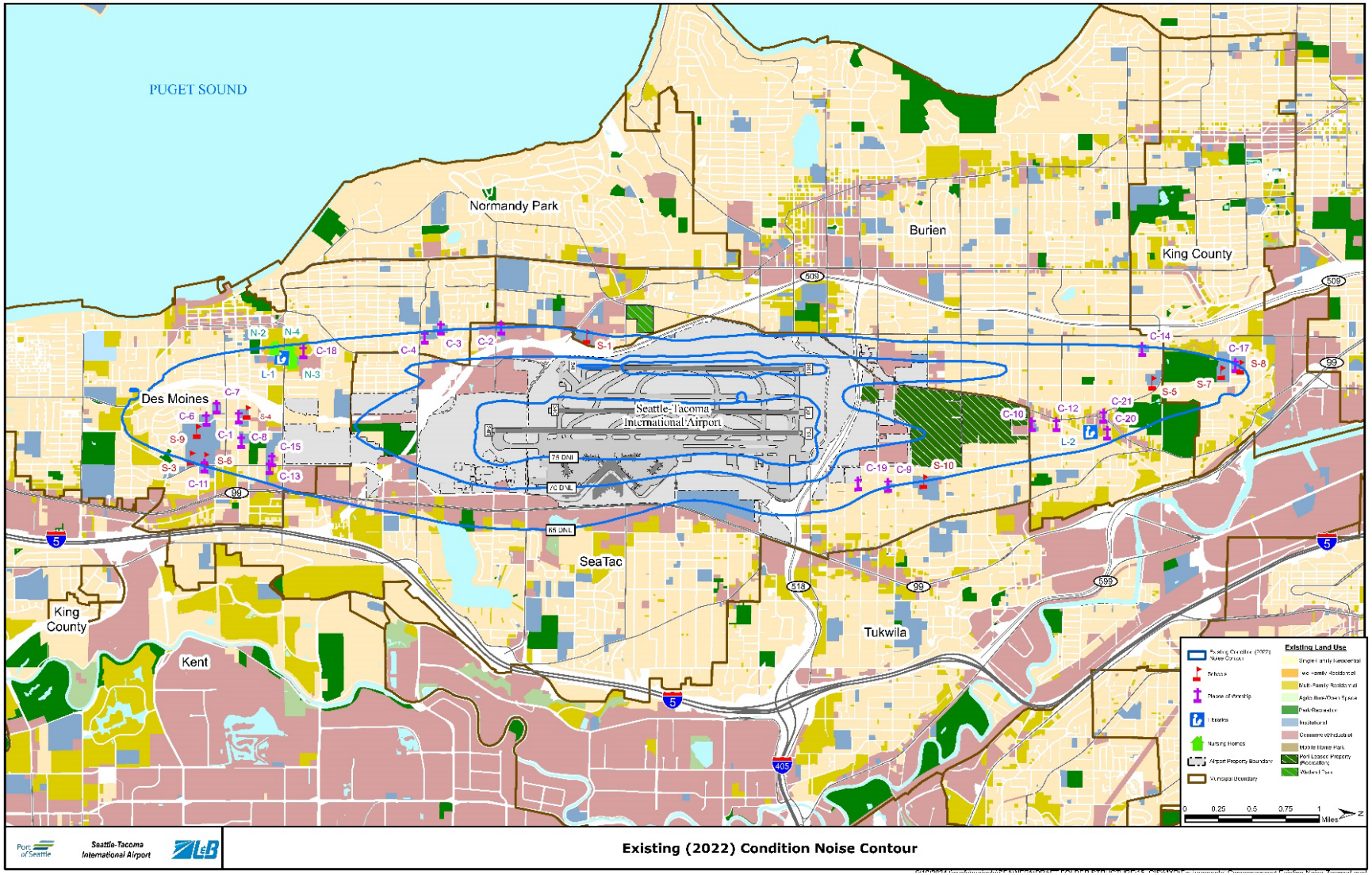

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TABLE 3-21: NON-COMPATIBLE LAND USE HOUSING AND POPULATION BY CONTOUR BAND – EXISTING CONDITION

Mitigation Status / Land Use	DNL 65-70 dB	DNL 70-75 dB	DNL 65+ dB
Sound Insulation Completed			
Single-Family	3,100	93	3,193
Multi-Family	349	0	349
Mobile Home	0	0	0
Subtotal	3,449	93	3,542
Not Sound Insulated			
Single-Family	649	13	662
Multi-Family	1,887	0	1,887
Mobile Home	119	6	125
Subtotal	2,655	19	2,674
Total Housing Units	**6,104**	**112**	**6,216**
Total Estimated Population	**13,754**	**307**	**14,061**

Note: Population numbers are estimates based on the 2020 United States Census average household size per number of housing units.
Source: Port of Seattle, Landrum & Brown, 2024.

TABLE 3-22: NOISE SENSITIVE FACILITIES IN THE EXISTING (2022) CONDITION 65+ DNL NOISE CONTOUR

Map ID	Type of Facility	Name
S-1	School	Puget Sound Skills Center
S-3	School	Midway Elementary School
S-4	School	Mount Rainier High School
S-5	School	Southern Heights Elementary School (Closed)
S-6	School	Pacific Middle School
S-7	School	Beverly Park Elementary School
S-8	School	Our Lady of Lourdes School
S-9	School	St. Philomena Catholic School
S-10	School	Glacier Middle School
C-1	Place of Worship	Saint Philomena Catholic Church
C-2	Place of Worship	Prince of Peace Lutheran Church
C-3	Place of Worship	Samoan Christian Fellowship
C-4	Place of Worship	Normandy Christian Church
C-6	Place of Worship	Hope Church
C-7	Place of Worship	Gospel Russian Baptist Church
C-8	Place of Worship	The Mountain Church
C-9	Place of Worship	Riverton Heights Baptist Church
C-10	Place of Worship	Boulevard Park Presbyterian
C-11	Place of Worship	Midway Community Covenant Church
C-12	Place of Worship	Apostolic Bible Church of Jesus Christ
C-13	Place of Worship	Highline 7th Day Adventist Church
C-14	Place of Worship	Glen Acres Church of Christ
C-15	Place of Worship	Kingdom Hall of Jehovah's Witnesses
C-17	Place of Worship	Our Lady of Lourdes Church
C-18	Place of Worship	Pacific Northwest United Methodist
C-19	Place of Worship	Wat Buddharam Buddhist Temple
C-20	Place of Worship	Hanuman Nagri Temple
C-21	Place of Worship	Way of Salvation Church
L-1	Library	Des Moines Library
L-2	Library	Boulevard Park Library
N-2	Nursing Home	Wesley Homes Terrace
N-3	Nursing Home	Wesley Homes Health Center
N-4	Nursing Home	Wesley Homes Gardens and Bungalows

Source: Port of Seattle, Landrum & Brown analysis, 2024.

3.3.12 Socioeconomic, Environmental Justice, and Children's Health and Safety Risks

3.3.12.1 Socioeconomic

A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the Proposed Action and alternatives.

Regulatory Setting

TABLE 3-23: STATUTE AND REGULATION RELATED TO SOCIOECONOMIC IMPACTS

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970	42 U.S.C. § 61 et seq. 49 CFR part 24	FHWA	The Act contains provisions that must be followed if acquisition of real property or displacement of people would occur as a result of implementing the selected alternative.

Note: FHWA = Federal Highway Administration.

Existing Conditions

This analysis relies on data from the 21 census block groups that are wholly or partially within the GSA (see **Exhibit 3-10**) or the 135 census blocks that are wholly or partially within the GSA (see **Exhibit 3-11**) depending on the availability of data being analyzed. This EA relies on the smallest geographic area for which current demographic and economic data was available for each category of data. However, it is important to note that portions of these census block groups and blocks fall outside of the GSA. The following sections describe population, employment, income, housing, and access to public transportation and services within the entire census block group and / or block.

Economic Activity and Income

SEA is an important driver for the economy near the Airport, in King County, and in Washington State. In 2017,[32] SEA's on-site activities directly supported 19,100 jobs and $1.4 billion in total compensation. Offsite, the economic benefit of SEA includes businesses serving passengers (such as restaurants and hotels), companies supplying goods and services to SEA, and employee income being spent outside of SEA. In total, the regional economic impact of SEA resulted in approximately $22.5 billion in business revenue, 151,400 jobs (representing over $3.6 billion in direct earnings), and more than $442 million in state and local taxes (**Table 3-24)**.[33]

[32] The most recent year for which full economic statistics were available.
[33] Sea-Tac International Airport Economic Impacts, 2018.

TABLE 3-24: ECONOMIC EFFECT OF THE AIRPORT (2017)

Economic Indicator	Total
Direct Jobs	87,300
Indirect Jobs	22,700
Induced Jobs	41,400
Total Jobs	151,400
Direct Total Compensation (in millions)	$3,650.8
Indirect Total Compensation (in millions)	$1,251.4
Induced Total Compensation (in millions)	$2,197.3
Total Compensation (in millions)	$7,099.5
Direct Business Revenue (in millions)	$11,481.3
Indirect Business Revenue (in millions)	$4,451.8
Induced Business Revenue (in millions)	$6,544.9
Total Business Revenue (in millions)	$22,477.0

Notes: Direct impacts are activities directly on-Airport property. Indirect impacts are business-to-business transactions tied to on-site activities. Induced impacts are worker income expenditures across other parts of the economy.
Source: Sea-Tac International Airport Economic Impacts, 2018.

Overall, per capita income and Median Household Income (MHI) for the GSA were below levels reported for King County and the State of Washington in 2021 (**Table 3-25**).[34]

TABLE 3-25: INCOME DATA IN 2021

	GSA	King County	State of Washington
Per Capita Income	$32,199	$63,930	$46,177
MHI	$73,957	$110,586	$82,247

Source: United States Census American Community Survey, 1-Year Estimates, Tables B17021, B19013, and B19301 (2021).

Employment

Overall, the unemployment trends for the GSA and King County are similar to those of the state as a whole (**Table 3-26)**.

TABLE 3-26: UNEMPLOYMENT RATES

Year	GSA	King County	State of Washington
2019	5.7%	3.5%	4.6%
2020	5.5%	4.3%	4.9%
2021	6.2%	5.7%	5.9%
2022	5.3%	3.6%	4.1%

Note: Rate represents unemployment rate in civilian labor force, over 16 years of age.
Source: United States Census American Community Survey 1 and 5-Year Estimates, Table B23025 (2017-2021).

[34] The most recent year for which GSA income was available.

EXHIBIT 3-10: CENSUS BLOCK GROUPS USED IN DEMOGRAPHIC ANALYSIS

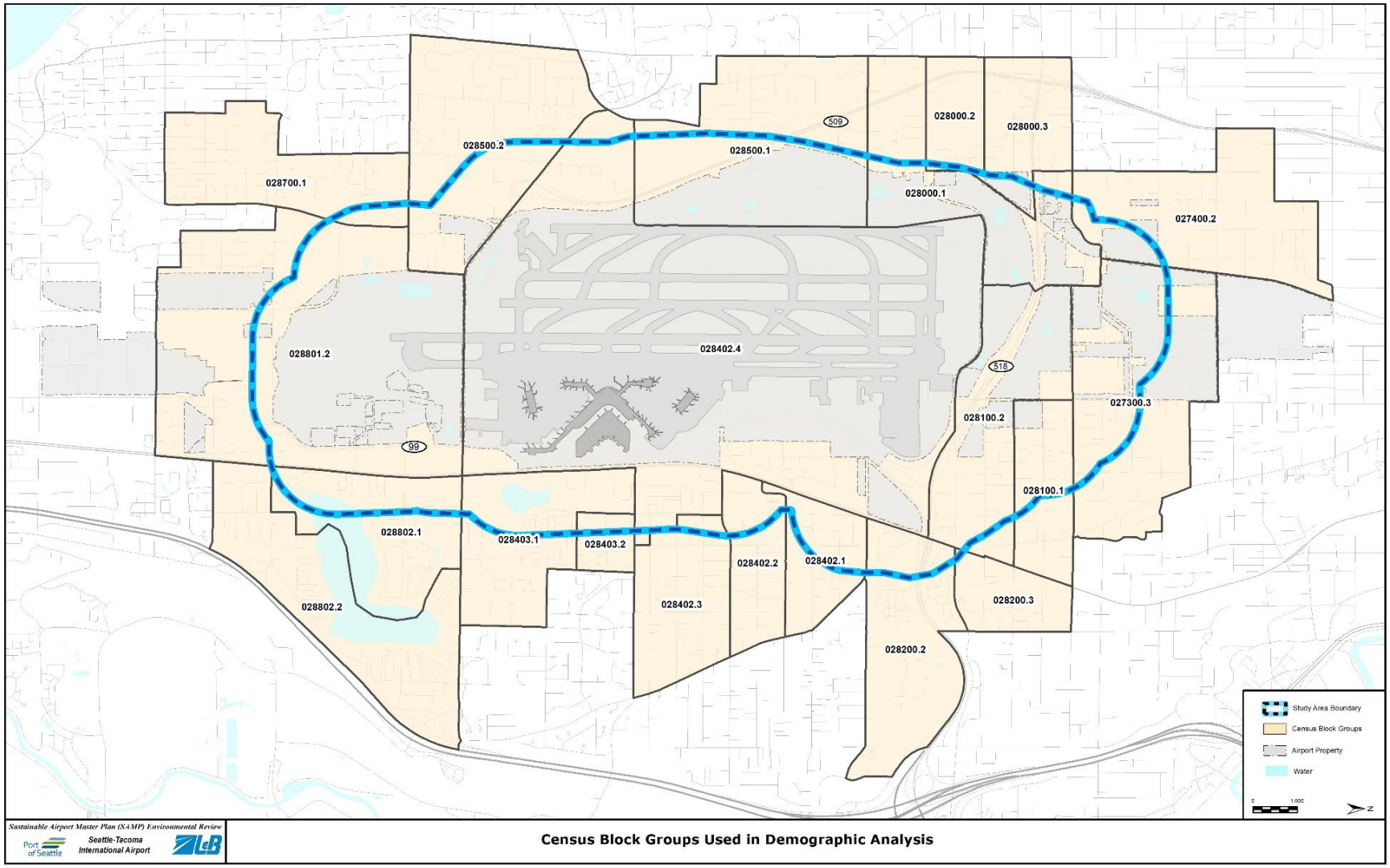

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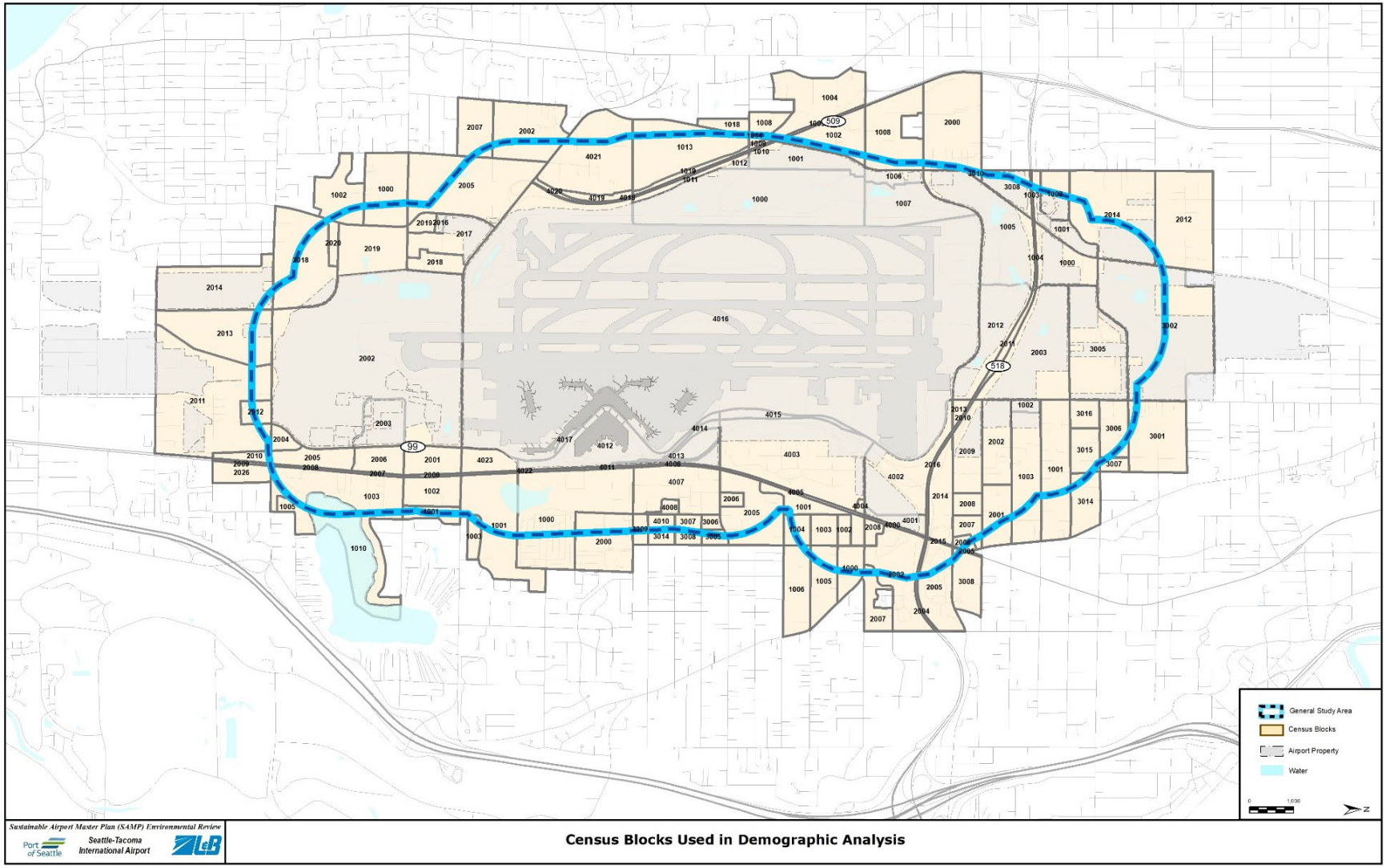
EXHIBIT 3-11: CENSUS BLOCKS USED IN DEMOGRAPHIC ANALYSIS



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Population and Housing

The populations of the GSA, King County, and the State of Washington are shown in **Table 3-27**. In general, the GSA contains higher levels of children and lower levels of elderly populations than King County or the State of Washington. Because the census blocks extend beyond the actual GSA, the census estimates of population totals for the GSA are higher than the actual number of people that reside within the GSA.

TABLE 3-27: POPULATION DATA IN 2021

	GSA[35]	King County	State of Washington
Population	14,843	2,252,305	7,738,692
Children (under 18 years of age)	23.3%	19.8%	21.7%
Elderly Population (over 65 years)	12.8%	13.7%	16.2%

Note: 2021 represents the most recent year that a full data set was available for socioeconomic data within the GSA.
Source: United States Census Bureau American Community Survey, 1-year estimates, Tables B01001 and B03002 (2021).

Based on population forecasts prepared by the PSRC, the population of King County is expected to continue to grow, as indicated in **Table 3-28**.

TABLE 3-28: POPULATION FORECASTS

Area	2025	2030	2035	2040
King County	2,397,486	2,526,407	2,654,692	2,782,579

Source: PSRC Land Use Vision - Implemented Targets County Summaries 2023.

Housing data for King County, and the State of Washington is provided in **Table 3-29**. Similar data was not available for the GSA.

TABLE 3-29: HOUSING DATA

Area	Total Housing Units (2021)	Vacancy Rate (2021)	Median Home Value (2021)
King County	985,324	6.1%	$750,100
State of Washington	3,257,140	7.2%	$485,700

Source: United States Census Bureau American Community Survey, 1-year estimates, Table CP04 (2021).

Public Services

Residents of communities in the GSA have access to a wide range of public services. Public services include such facilities as educational institutions (public and private), medical services, emergency response services, and ground transportation / transit.

Educational Facilities

King County is divided into 12 school districts. Only the Highline School District is within the GSA (**Table 3-30)**. The locations of these facilities are depicted on **Exhibit 3-12**.

[35] This column refers to the Census block groups that are touched by the GSA.

TABLE 3-30: EDUCATIONAL FACILITIES LOCATED WITHIN GSA

Map ID	School / Facility	School District
S-1	Puget Sound Skills Center	Highline
S-2	Choice Academy	Highline

Sources: King County GIS data; Landrum & Brown analysis.

Emergency Services

Various state, county, regional, and local emergency services are provided within the GSA (**Table 3-31)**. The locations of these facilities are depicted on **Exhibit 3-13**.

TABLE 3-31: EMERGENCY SERVICES WITHIN THE GSA

Map ID	Public Service / Facility	Authority
PD-1	Port of Seattle Police	Port of Seattle
PD-2	Washington State Police, District 2 – Seattle South Detachment	State of Washington
F-1	Port of Seattle – Airport Rescue and Fire Fighting	Port of Seattle
F-2	Port of Seattle – Interim Fire Station	Port of Seattle

Note: There are no medical facilities within the GSA.
Sources: King County GIS data; Landrum & Brown, 2023.

EXHIBIT 3-12: EDUCATIONAL FACILITIES LOCATED WITHIN THE GSA

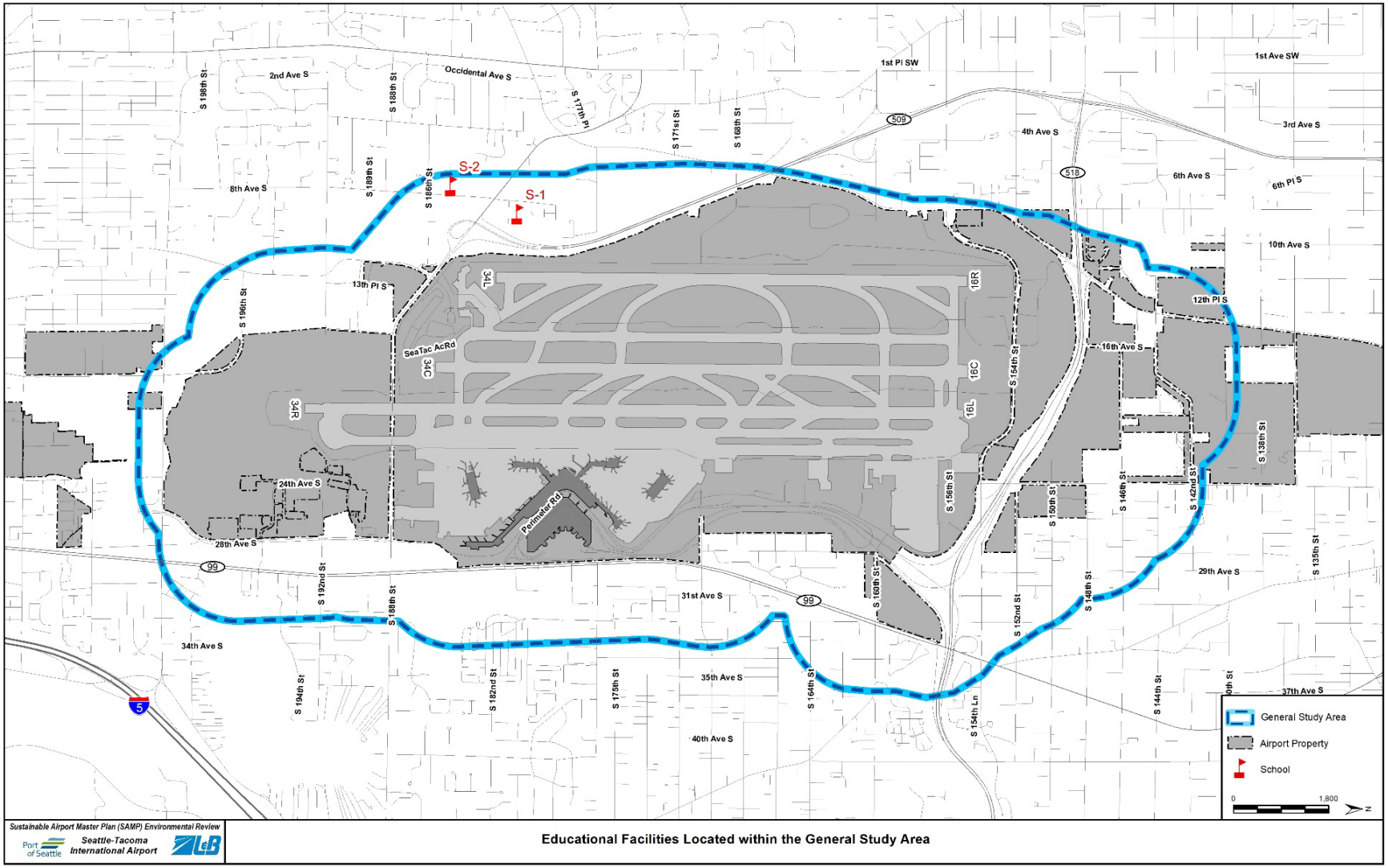

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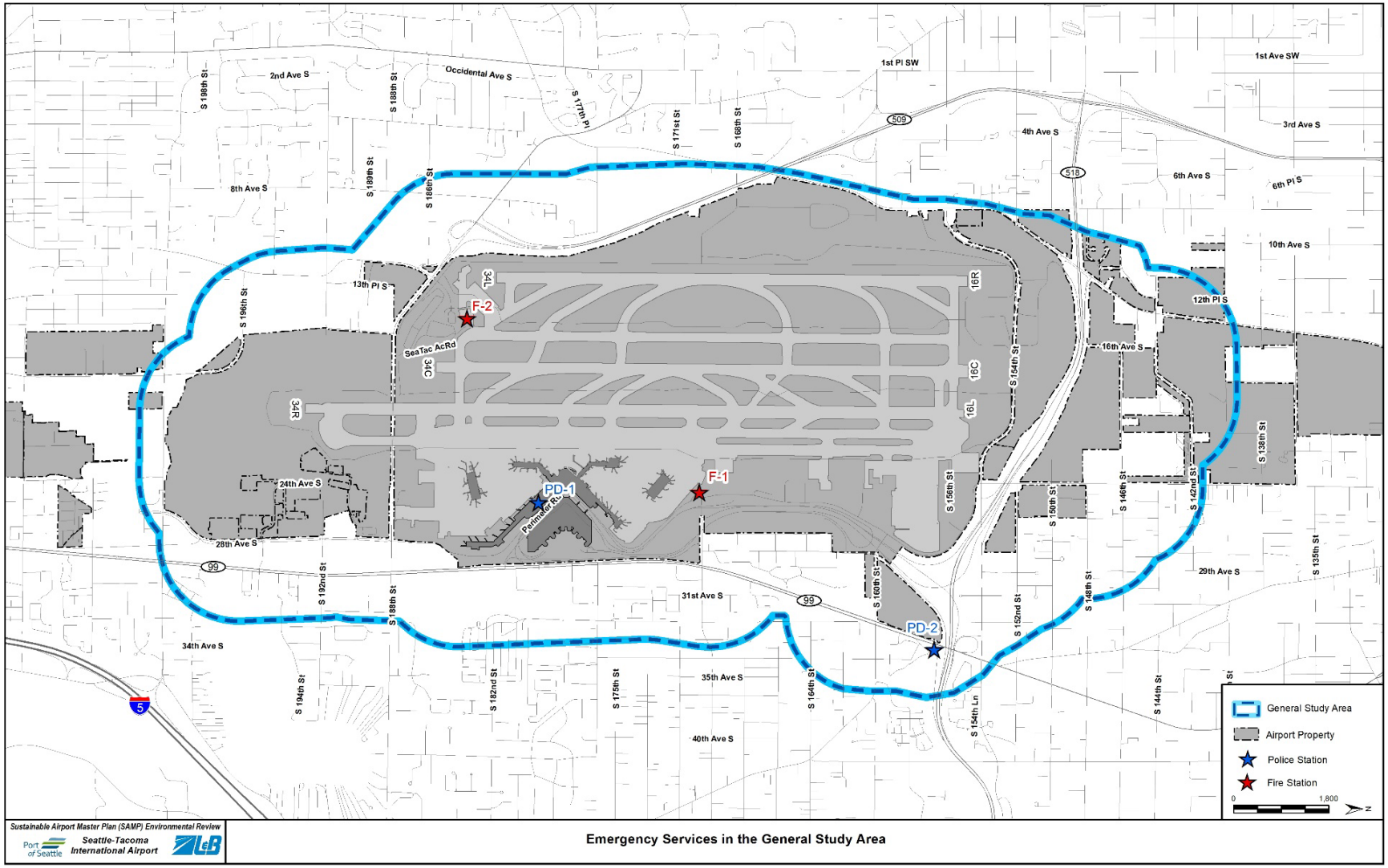
EXHIBIT 3-13: EMERGENCY SERVICES LOCATED WITHIN THE GSA



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3.3.12.2 Environmental Justice

Since the publication of the Draft EA, EOs 12898, 13985, 14091, and 14096 were revoked on January 20, 2025. On January 21, 2025, President Trump issued EO 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity*. In addition, CEQ revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, 42 U.S.C. 4321 *et seq*., as amended, in response to EO 14154. Consequently, it is no longer a legal requirement or the policy of the federal government to conduct environmental justice analyses. As a result, this Final EA has removed the prior discussion of, and data/analysis related to, environmental justice.

3.3.12.3 Children's Environmental Health and Safety Risks

Children's environmental health risks and safety risks include risks to health or to safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.

Regulatory Setting

TABLE 3-32: EXECUTIVE ORDER RELATED TO CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks	62 Federal Register 19885, (April 23, 1997)	No Applicable	Directs federal agencies to analyze their policies, programs, activities, and standards for any environmental health or safety risks that may disproportionately affect children. Included in these categories are risks to health or safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, water, recreational waters, soil, or products they might use or be exposed to.

Existing Condition

The total percentage of the population within the GSA block groups that is under the age of 18 is 23.3 percent, as shown on **Table 3-33**. The percentage of children per block group is shown on **Exhibit 3-14**. As discussed above, the census block groups extend beyond the GSA and therefore include children residing outside the GSA.

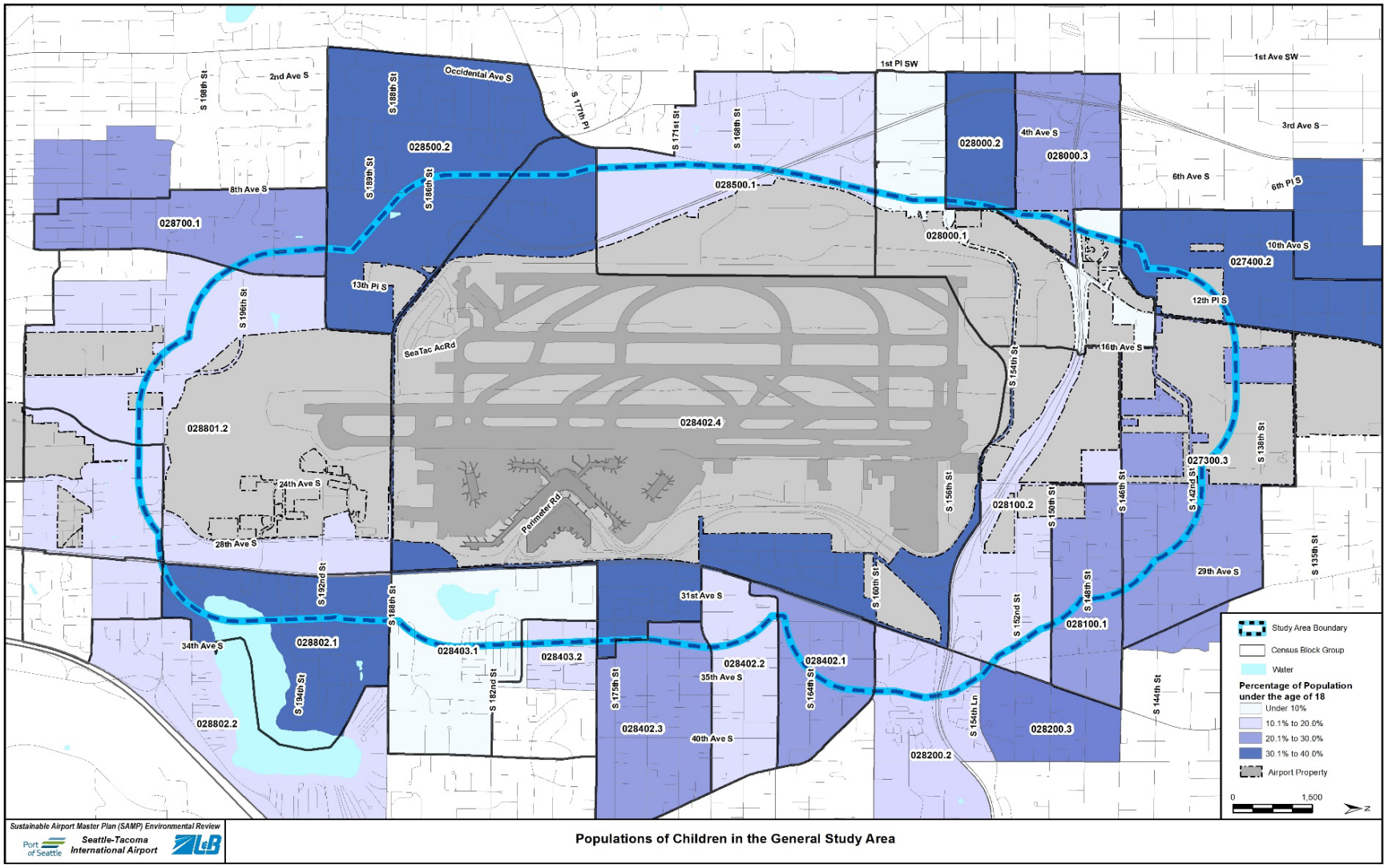
TABLE 3-33: PERCENTAGE OF POPULATION UNDER THE AGE OF 18

Age of Child	GSA	King County	State of Washington
Under 5 years old	7.2%	5.3%	5.6%
5 to 9 years old	6.1%	5.4%	6.0%
10 to 14 years old	6.6%	5.9%	6.4%
15 to 17 years old	3.4%	3.3%	3.7%
Total	**23.3%**	**19.8%**	**21.7%**

Source: United States Census Bureau, 2021 American Community Survey 1 and 5-Year Estimates, Table B01001 (2021).

This analysis focuses on locations where children spend time, outside of their residences, and can be exposed to environmental health risks. This includes schools and child-care centers, public parks, recreation facilities, and medical facilities. Within the GSA there are two schools (Puget Sound Skills Center and Choice Academy, which were shown previously on **Exhibit 3-12**). No licensed child-care facilities are located within the GSA. There are no medical facilities within the GSA. Public parks and recreation facilities within the GSA are shown in **Table 3-11**.

EXHIBIT 3-14: POPULATIONS OF CHILDREN WITHIN THE GSA



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3.3.13 Surface Transportation

Surface transportation refers to the movement of vehicles throughout a roadway and highway network. Primary roads include interstates, highways, and major arterials designed to move traffic but not necessarily to provide access to adjacent areas. Secondary roads include minor arterials and collectors that provide access to residential, commercial, and industrial areas. The capacity of transportation networks and quality of circulation may be described in average daily traffic volumes and / or LOS. **Appendix L, Surface Transportation** provides more detail on transportation, traffic volumes, and transportation options.

3.3.13.1 Regulatory Setting

Traffic analyses are guided by policies and standards set by the Washington State Department of Transportation (WSDOT) and local jurisdictions surrounding the Airport (Burien, Des Moines, SeaTac, Tukwila). The Proposed Action is also subject to the rules and regulations of the Port, which oversees public parking facilities, Airport operations, and commercial vehicle trips at the Airport.

3.3.13.2 Existing Condition

The surface transportation study focused on 108 traffic intersections where direct or indirect traffic impacts may occur as a result of implementing the Action Alternatives. The establishment of the STSA considered the following:

- Major signalized intersections and minor intersections along travel routes to and from the Airport within the GSA.
- Primary and secondary routes of travel between the NTPs and origins / destinations outside the GSA.
- Locations and traffic movements of concern from public and agency feedback received during the scoping process.
- The Traffic Impact Analysis procedures described in the WSDOT Design Manual Chapter 320 – Traffic Analysis.

Each intersection analyzed was assigned a number and is shown on **Exhibit 3-15**. The analysis also considered future planned transportation projects that could affect future traffic conditions at SEA.

Existing Condition Traffic

The Synchro 11® software was used to analyze 108 intersections within the STSA for the PM peak hour to document baseline traffic conditions.[36] Synchro 11® is the industry standard for traffic analyses and is used by most local traffic agencies. The analysis measured average vehicle delay (in seconds) and LOS at each intersection. The intersection LOS was ranked from A to F, with A representing a free flow condition, and F representing a high level of congestion and breakdown in traffic flow.

[36] The PM peak scenario captures the commuter peak which is typically the highest total volume hour of the day at SEA. The Airport may have different peak hours than the commuter peak hour, but the commuter peak hour was modeled to best capture potential impacts.

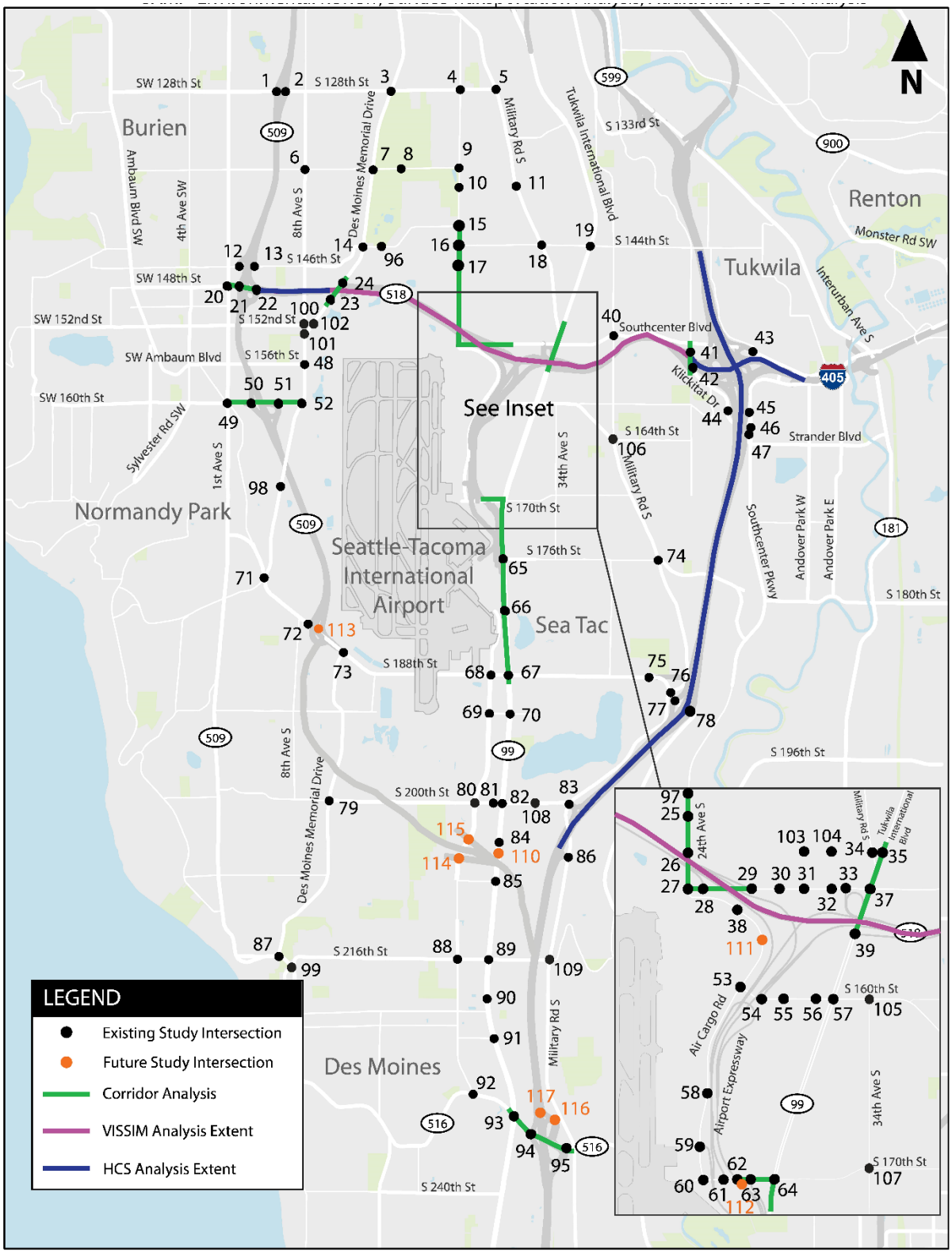
Data for the Existing Condition analysis was primarily collected from turning movement counts collected in Fall 2022 and Spring 2023 as well as WSDOT permanent counter data. Analysis models from the WSDOT led SR 518 Corridor Planning Study were utilized as well as base models that were then updated with current channelization, intersection control, and signal timings. Supplemental information such as signal timings and traffic counts were also collected from the Port of Seattle, King County, WSDOT, and the cities of Tukwila and SeaTac.

The study compared intersection LOS results to mobility standards adopted by local jurisdictions and agencies to identify intersections that do not meet current mobility standards. Of the 108 existing study intersections analyzed, 102 meet jurisdictional mobility standards (LOS). The six existing intersections that do not meet current mobility standards are:

- #23 – SR 518 East Bound Ramps / Des Moines Memorial Drive (LOS F)
- #33 – SR 518 West Bound Off-Ramp Loop / S.154th Street (LOS E)
- #50 – SR 509 South Bound Ramps / SW 160th Street (LOS F)
- #83 – Military Rd. S. / SB I-5 Ramps / S. 200th Street (LOS E)
- #93 – Pacific Hwy S. / SR 516/Kent-Des Moines Road S. (LOS F, Critical v / c 1.24)
- #101 – 8th Ave S. / Des Moines Memorial Drive (LOS F)

A corridor and freeway analysis were performed at the request of WSDOT for information purposes. This information is included in **Appendix L**.

EXHIBIT 3-15: ROADWAY INTERSECTIONS ANALYZED



Note: Intersection labels are not sequential because they are a subset of the larger group of intersections used in the traffic study.

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3.3.14 Visual Effects

Visual effects deal broadly with the extent to which the Proposed Action, or alternative(s) would either:

1. Produce light emissions that create annoyance or interfere with activities; or
2. Contrast with, or detract from, the visual resources and / or the visual character of the existing environment.

For clarity and uniformity, visual effects are broken into two categories:

1. Visual Resources and Visual Character and
2. Light Emission Effects.

3.3.14.1 Regulatory Setting

Although there are no special purpose laws or requirements for visual effects or light emissions, the analysis must consider other special purpose laws and requirements that may be relevant, such as Section 106 of the NHPA for impacts to historic resources, Section 4(f) of the USDOT Act for impacts to parks, wildlife and waterfowl refuges, the ESA for impacts to light sensitive species, and applicable state and local regulations, policies, and zoning.

3.3.14.2 Existing Conditions

The visual effects analysis conducted focused on the areas within the GSA that would offer views of one or more elements of the Proposed Action or alternatives, including light emissions. Much of the southern and western portions of the GSA sit below the elevation of SEA, limiting direct line of sight to runways, taxiways, terminals, and other facilities. The terrain of the eastern portion of the GSA increases above the level of SEA, providing limited views of the existing passenger terminal, parking garage, and airfield. The northern portion of the GSA includes Port-owned properties such as the North Employee Parking Lot (NEPL) and several vacant parcels of land. There are residential areas northeast of the Airport, but existing vegetation and roads (including SR 518 and 24th Avenue South) largely block the line of sight to existing SEA facilities. Representative photos from different vantage points surrounding SEA are provided in **Exhibit 3-16**.

Visual Resources / Visual Character

The facilities at SEA are in an urban setting. SEA's three parallel north-south runways occupy an area that is over one-half-mile wide and two miles long. SEA's support facilities (which include a control tower, the Main Terminal, satellite terminals, multistory parking garage, cargo warehouses, aircraft maintenance structures, and a dedicated freeway providing access to the terminal) occupy an area located on the east side of the runways measuring approximately 0.4 mile wide by 2.5 miles long.

The area around SEA has the highly developed character of a mature suburban community. The most intense development occurs in the corridor along SR 99, which lies immediately to the east of SEA property. The east side of this major arterial is lined with commercial uses, including several multi-story hotels. The one anomaly in this corridor is Washington Memorial Park, an approximately 60-acre cemetery located north of the Main Terminal, between SEA and SR 99. Immediately to the east of the commercial corridor along SR 99, there are multi-family dwellings that transition to neighborhoods of single-family homes further to the east. At the northern and southern ends of the runways, in areas that had once been developed with single-family homes, many residences have been removed, creating open areas with a partially developed character, which in some places (North SeaTac Park in the north and Des Moines Creek Park in the south), are currently available for recreational use. The area to the south of SEA includes a former golf course that is currently undeveloped.

Light Emissions

SEA has various types of lighting on the airfield and landside facilities. Lighting that emanates from the airfield includes runway, apron, and navigational lighting such as, hold position lights, stop-bar lights, and runway and taxiway signage. Airfield lighting is located along taxiways and ramps for guidance during periods of low visibility to assist aircraft movement on the airfield. Aircraft lighting sources, such as landing lights, position and navigation lights, beacon lights, and vehicle lighting are other types of light sources on the airfield. Lights for landside facilities include fixtures associated with buildings, roadways, and parking facilities. SEA is in a highly developed area comprised of other light sources that contribute to the overall light emissions in the area, including hotels, off-Airport parking facilities, and commercial uses.

Residential neighborhoods, which are sensitive to light emissions, are present in all directions of SEA. However, the closest residential area to the Proposed Action is north of SR 518, along S. 150th Street and S. 152nd Street. This area is immediately adjacent to proposed cargo development. There are also residential areas east of International Boulevard / SR 99 in an area of rising terrain from SEA's Main Terminal area.

EXHIBIT 3-16: ADJACENT VIEWSHEDS

S. 176th Street at 32nd Avenue looking west towards the Terminal

State Route 518 looking west towards the approach lights for Runway 34C

S. 156th Way looking southwest towards the airfield

S. 188th Street looking north towards the airfield

Sustainable Airport Master Plan (SAMP) Environmental Review
Port of Seattle — Seattle-Tacoma International Airport

Adjacent Viewsheds

Source: Google Earth Street View Imagery, accessed February 2023 (images from 8/2022 to 11/2022).

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3.3.15 Water Resources

Water resources are surface waters and groundwater that are vital to society; they are important in providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. Surface water, groundwater, floodplains, and wetlands do not function as separate and isolated components of the watershed, but rather as a single, integrated natural system. Disruption of any one part of this system can have consequences to the functioning of the entire system. Wild and Scenic Rivers are included because impacts to these rivers can result from obstructing or altering the free-flowing characteristics of a designated river, an impact more closely resembling an impact to a water resource. See **Appendix M, Water Resources** for details on water resources including surveys and analysis.

3.3.15.1 Regulatory Setting

TABLE 3-34: STATUTES, REGULATIONS, EXECUTIVE ORDERS, AND OTHER REQUIREMENTS RELATED TO THE PROTECTION OF WETLANDS, SURFACE WATER, GROUNDWATER, AND FLOODPLAINS

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Clean Water Act (CWA)	33 U.S.C. §§ 1251-1387 33 CFR parts 320-332 40 CFR parts 230-233	USACE; USEPA	The CWA establishes the basic structure for regulating the discharge of pollutants into waters of the US, which include wetlands. The two primary sections of the CWA relating to wetland impacts and permitting are Section 404 and Section 401. Section 404 establishes a program to regulate the discharge of dredged or fill material into waters of the US, including wetlands. Section 401 requires a Water Quality Certificate for a project to ensure it does not violate state or Tribal water quality standards. Section 401 certifications are generally issued by the state or tribe with jurisdictional authority. Also, Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit program.
USDOT Order 5660.1A, Preservation of the Nation's Wetlands	Not Applicable	USDOT	Implements guidelines set forth in Executive Order 11990. Transportation facilities should be planned, constructed, and operated to assure the protection and enhancement of wetlands to fullest extent practicable.
USDOT Order 5650.2, Floodplain Management Protection	Not Applicable	USDOT	Implements the guidelines set forth in Executive Order 11988, Floodplain Management. USDOT agencies should ensure proper consideration is given to avoid and mitigate adverse floodplain impacts in agency actions, planning programs, and budget requests.

TABLE 3-34: STATUTES, REGULATIONS, EXECUTIVE ORDERS, AND OTHER REQUIREMENTS RELATED TO THE PROTECTION OF WETLANDS, SURFACE WATER, GROUNDWATER, AND FLOODPLAINS (CONTINUED)

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Fish and Wildlife Coordination Act	16 U.S.C. §§ 661-667d	USFWS	Requires federal agencies to consult with the USFWS, NMFS (in some instances), and appropriate state fish and wildlife agencies regarding the conservation of wildlife resources when proposed federal or applicant projects may result in control or modification of the water of any stream or other water body (including wetlands).
Executive Order 11990, Protection of Wetlands	42 Federal Register 26961 (May 24, 1977)	USDOT	Requires federal agencies to "avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." The stated purpose of this Executive Order is to "minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands."
Executive Order 11988, Floodplain Management	42 Federal Register 26951 (May 25, 1977)	USDOT	Requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of 100-year floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.
Safe Drinking Water Act	42 U.S.C. §§ 300(f)-300j-26 40 CFR parts 141-149	USEPA	Prohibits federal agencies from funding actions that would contaminate an USEPA-designated sole source aquifer or its recharge area.

3.3.15.2 Existing Conditions

Water resources inventories and delineations were conducted for the portions of the GSA where direct impacts associated with the alternatives may occur, while also considering the tributary streams draining these areas and receiving waters potentially affected by stormwater runoff.

Wetlands

Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are among the most productive ecosystems in the world and provide important functions such as fish and wildlife habitat, floodwater storage, and water filtration.

Wetland delineations in the study area occurred between September 25, 2019 and December 6, 2019. Biologists revisited the study area in March 13 and 25, 2020, to investigate wetland hydrology. A wetland and waters verification to confirm boundaries, wetland quality, and function occurred in January 2024. Thirty-one wetlands were identified in the GSA, totaling approximately 68 acres (**Exhibits 3-18** through **3-21)**. Additional wetlands surrounding SEA are under restrictive covenants and therefore cannot be impacted. These restrictive covenants apply to previous wetland mitigation areas and include the Miller Creek Buffer Mitigation Area, Des Moines Nursery Mitigation Area, and the Des Moines Regional Detention Facility Mitigation Area.

Surface Waters

Streams and Ditches

There are five streams and seven ditches (tributaries) considered potentially jurisdictional by the USACE within the GSA (shown on **Exhibits 3-17** through **3-21**).

Drainage Basins

The GSA is in King County, within the nearshore sub-watershed of Washington's Water Resource Inventory Area 9. It contains portions of the Miller Creek / Walker Creek, Gilliam Creek / Lower Green River, and Des Moines Creek drainage basins. The drainage basins and other prominent water features are depicted on **Exhibit 3-17**.

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EXHIBIT 3-17: SURFACE WATERS AND BASINS

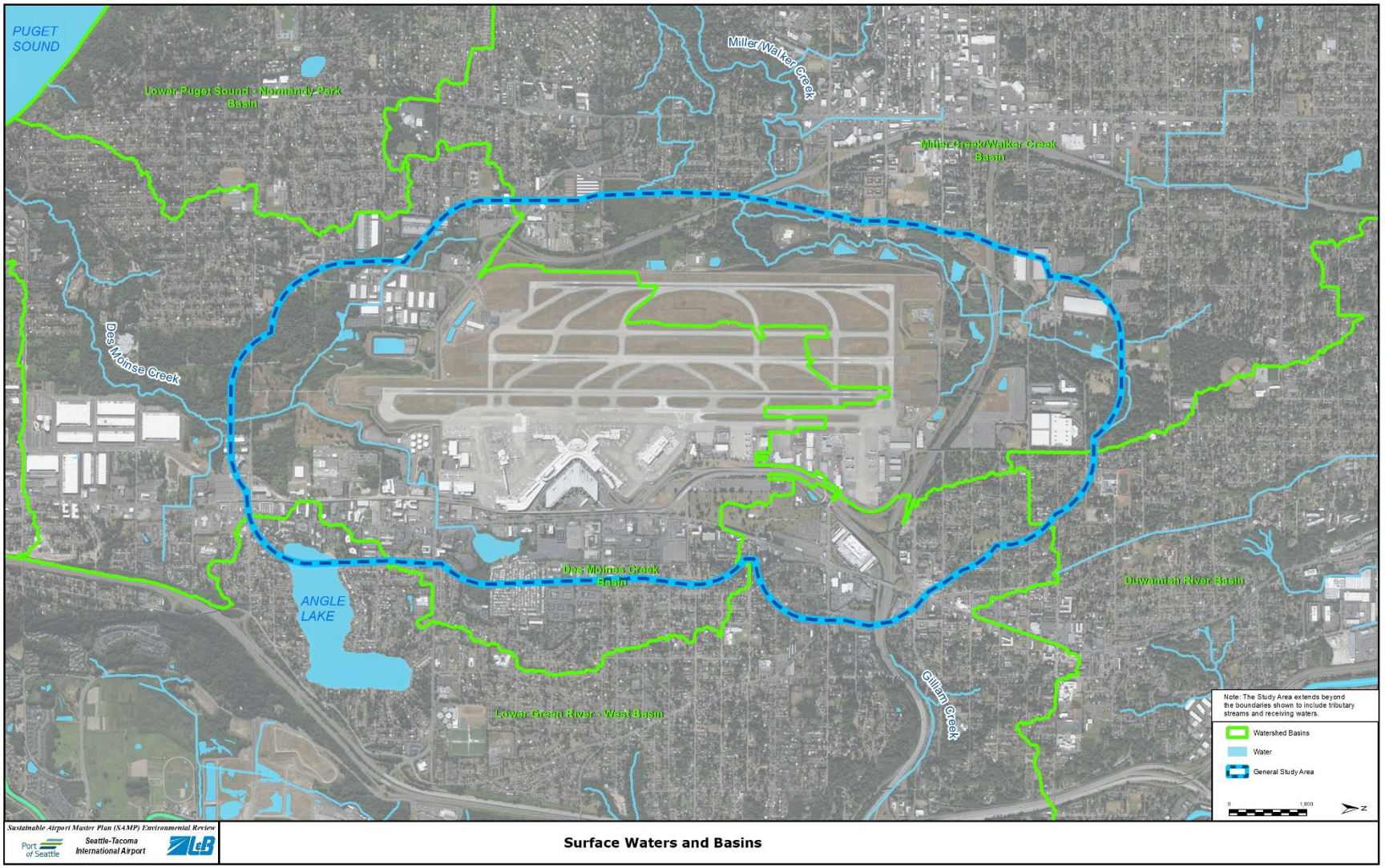

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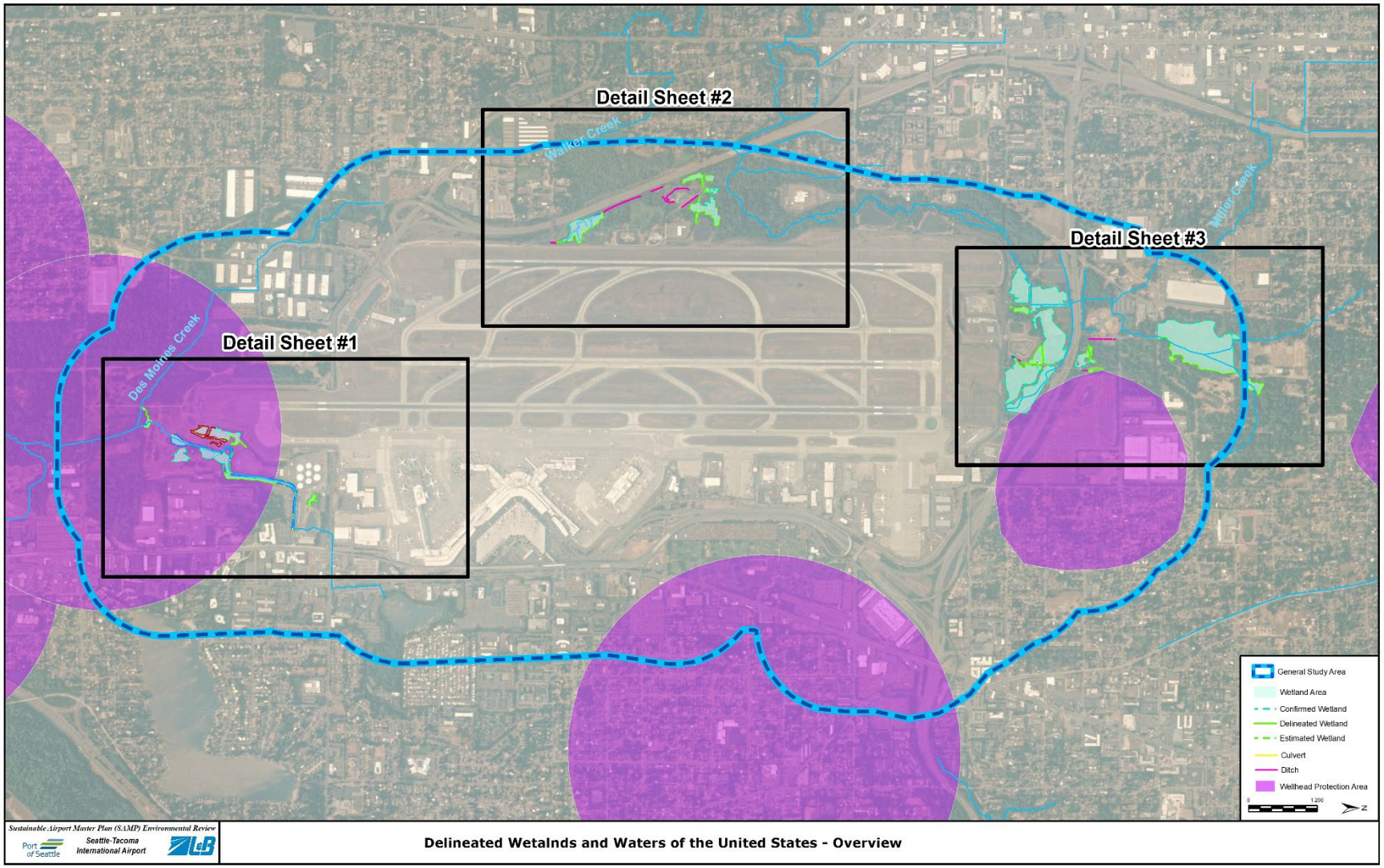
EXHIBIT 3-18: DELINEATED WETLANDS AND WATERS OF THE UNITED STATES – OVERVIEW



Note: Formal delineation of wetland boundaries was completed only in areas where impacts would occur. Estimated boundaries were identified for certain stream and wetland features outside the study area that are not anticipated to be impacted or subject to regulatory compliance. Previously delineated wetland boundaries were confirmed or revised as appropriate.

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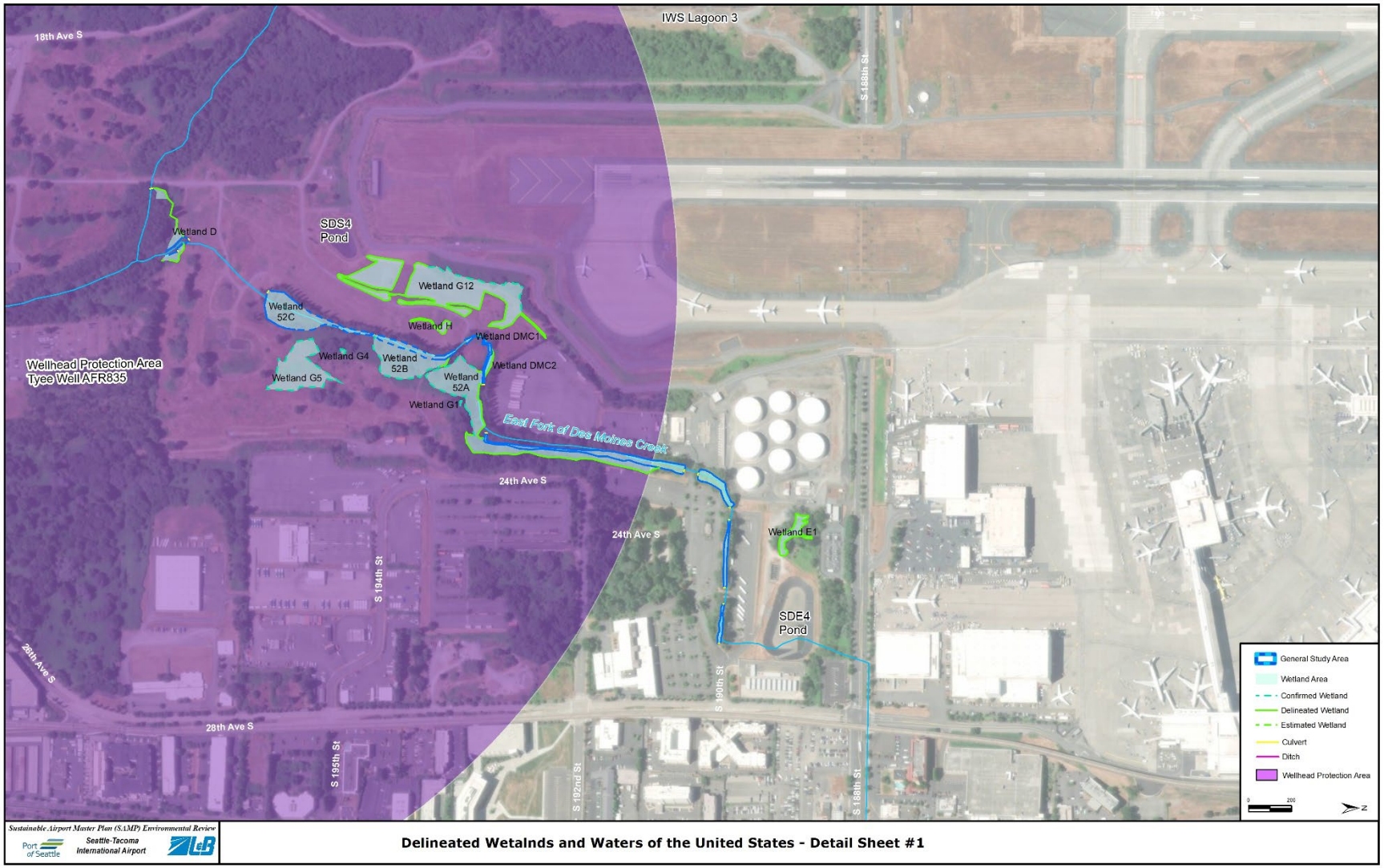
EXHIBIT 3-19: DELINEATED WETLANDS AND WATERS OF THE UNITED STATES – DETAIL SHEET #1



Note: Formal delineation of wetland boundaries was completed only in areas where impacts would occur. Estimated boundaries were identified for certain stream and wetland features outside the study area that are not anticipated to be impacted or subject to regulatory compliance. Previously delineated wetland boundaries were confirmed or revised as appropriate.

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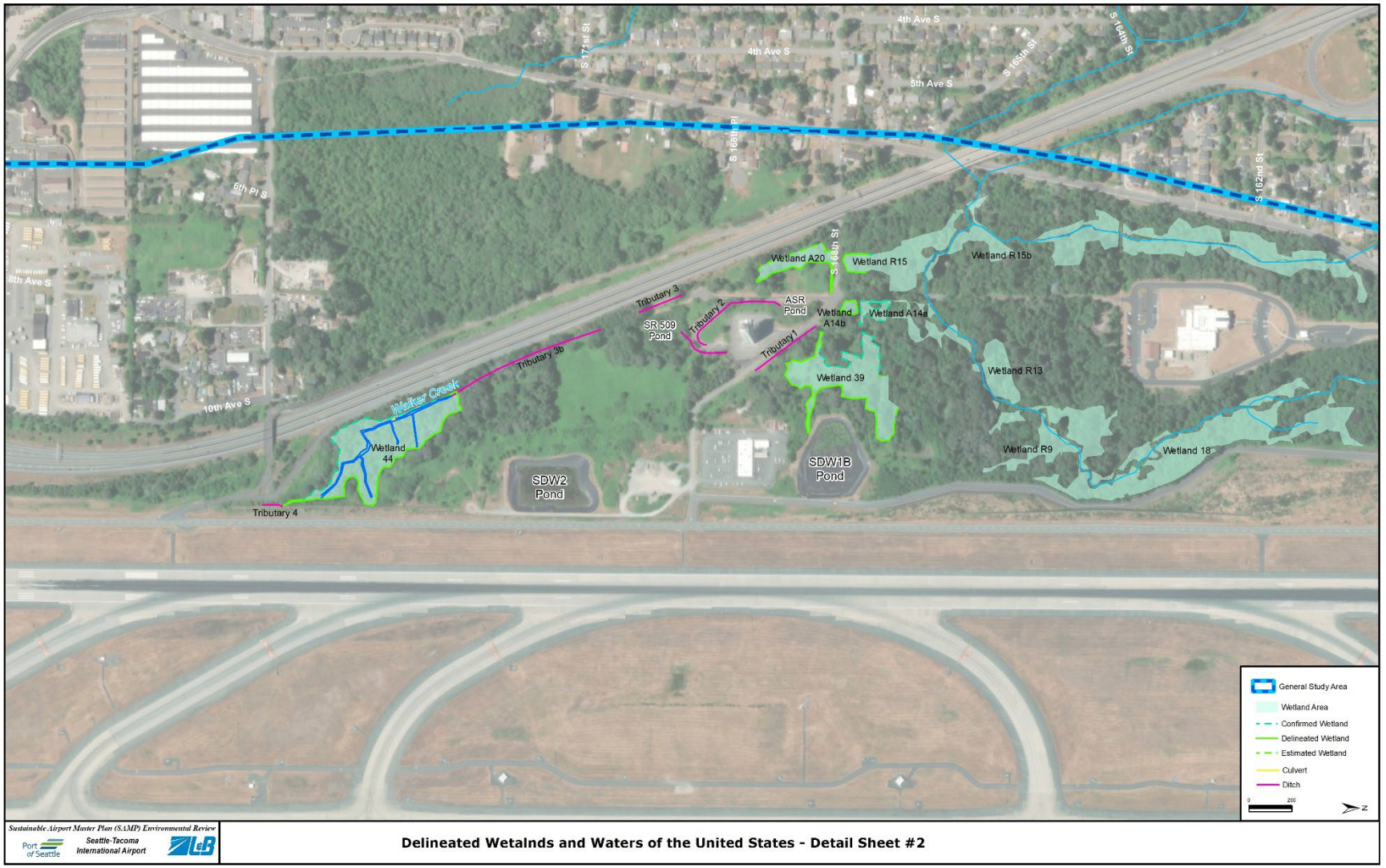
EXHIBIT 3-20: DELINEATED WETLANDS AND WATERS OF THE UNITED STATES – DETAIL SHEET #2



Note: Formal delineation of wetland boundaries was completed only in areas where impacts would occur. Estimated boundaries were identified for certain stream and wetland features outside the study area that are not anticipated to be impacted or subject to regulatory compliance. Previously delineated wetland boundaries were confirmed or revised as appropriate.

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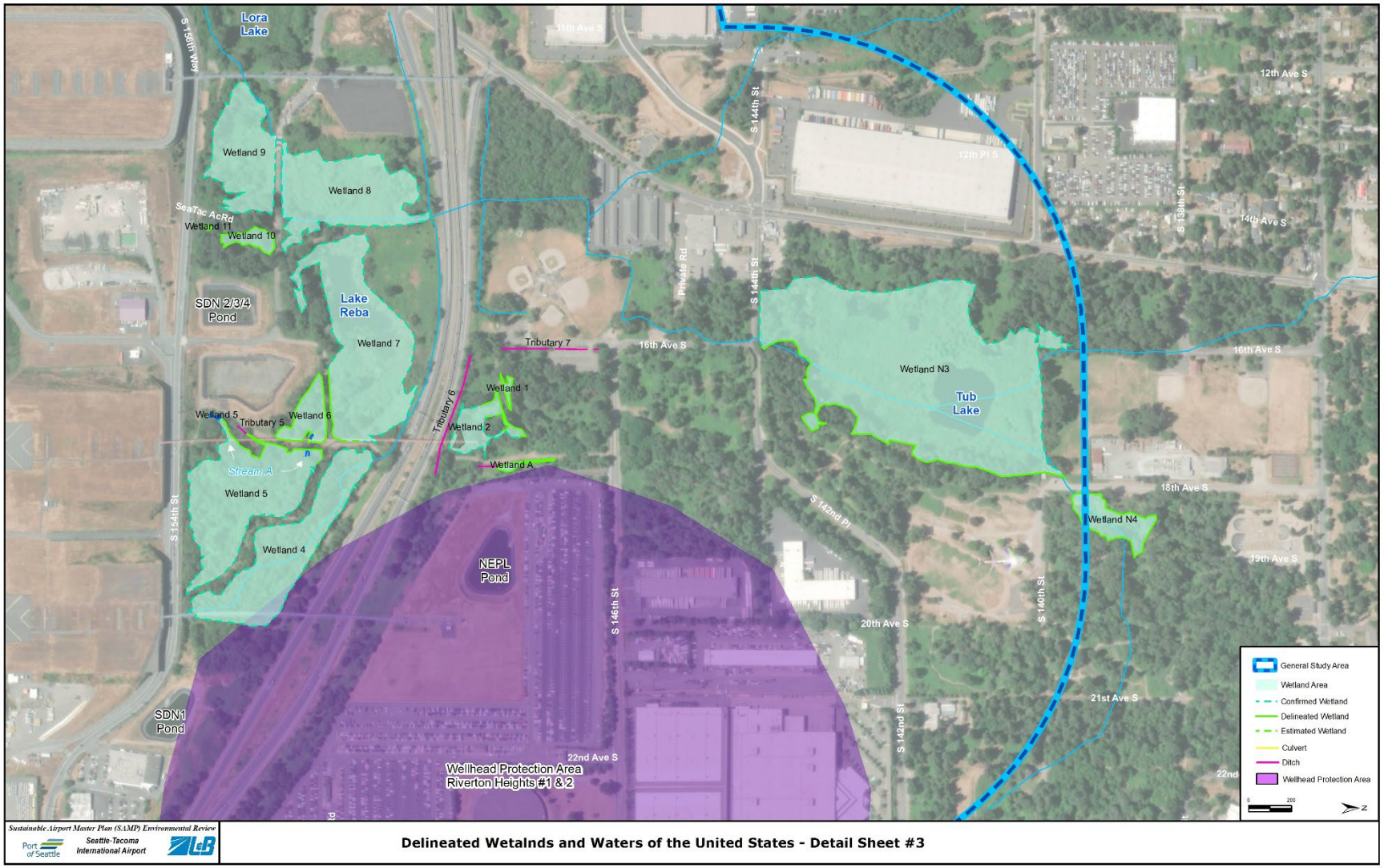
EXHIBIT 3-21: DELINEATED WETLANDS AND WATERS OF THE UNITED STATES – DETAIL SHEET #3



Note: Formal delineation of wetland boundaries was completed only in areas where impacts would occur. Estimated boundaries were identified for certain stream and wetland features outside the study area that are not anticipated to be impacted or subject to regulatory compliance. Previously delineated wetland boundaries were confirmed or revised as appropriate.

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Stormwater Management

SEA's stormwater drainage system (SDS) and industrial wastewater system (IWS) are separate systems that operate independently of each other. The SDS collects stormwater from approximately 1,200 acres. The stormwater drainage is treated by using stormwater ponds, grass swales, and other passive stormwater treatment methods[37] before being conveyed to Lake Reba to the north, Miller Creek to the north and west, Gilliam Creek[38] to the northeast, the Northwest Ponds and Des Moines Creek to the south, and Walker Creek to the west. Lower Walker Creek, lower Miller Creek, a portion of Gilliam Creek, Des Moines Creek are listed on WSDE's 303d list of impaired waterways.

The IWS collects stormwater from the approximately 375 acres where industrial activities are conducted, primarily in the area surrounding the Main Terminal and cargo complex.[39] As part of the IWS system, the Port operates and maintains an industrial wastewater treatment plant to treat stormwater associated with industrial activities from aircraft fueling and maintenance operations as well as wastewater from other Airport related operations such as deicing. Stormwater runoff with high biochemical oxygen demand (BOD)[40] is discharged to King County South Treatment Plant for secondary treatment under an Industrial Waste Discharge Permit through King County (Permit No. 7810-03).[41] Elevated BOD levels are typically associated with stormwater runoff that contains aircraft deicer fluid. The IWS is also permitted to discharge low-BOD stormwater runoff to the Puget Sound via an outfall shared with the Midway Sewer District.

Airport Stormwater Permits

SEA has operated under a NPDES permit since 1980; the current permit (Permit No. WA-0024651) is valid until August 31, 2026. This permit is reissued every five years. This permit established effluent limits from SEA's SDS and IWS. It requires monitoring and reporting of discharges as well as other provisions to track impacts to water quality and ensure compliance with established limits.

As required by the NPDES permit, SEA maintains a Stormwater Pollution Prevention Plans (SWPPP), which was updated in December 2022.[42] The SWPPP meets the requirements of the WSDE's Storm Water Management Manual for Western Washington.

SEA's individual NPDES permit regulates management of all industrial and construction stormwater within the Airport Operations Area (AOA) as defined by the Port and City of SeaTac ILA. Port-owned property and related industrial activities not covered by the SEA permit are regulated via multiple mechanisms including the WSDE general NPDES permits, Port and City of SeaTac ILA, and respective jurisdiction NPDES permits.

[37] Seattle-Tacoma International Airport Stormwater Management Manual, 2017, page 1-8.
[38] The Port is authorized to discharge stormwater associated with construction activities and construction dewatering to Gilliam Creek as part of their NPDES permit. The Airport does not have non-construction stormwater discharge to Gilliam Creek regulated by the NPDES permit. Construction activities related to the NTPs are not expected to result in discharges to Gilliam Creek. Therefore, Gilliam Creek is not addressed further in this document.
[39] Port of Seattle, Sustainability Planning and Management Strategy, Technical Memorandum No. 8 Final, May 2018. Available for review at: https://www.airportprojects.net/sampenvironmentalreview/tm-no-8-environmental-effects-overview/.
[40] BOD represents the amount of dissolved oxygen needed for bacteria or other microorganism to decompose the organic matter that is present.
[41] https://www.airportprojects.net/sampenvironmentalreview/sea-stormwater-and-drainage/.
[42] https://www.airportprojects.net/sampenvironmentalreview/swppp-2022/

City of SeaTac Stormwater Permits

The City SeaTac maintains a comprehensive Stormwater Management Program (SWMP) to meet requirements associated with their NPDES Phase II Municipal Stormwater Permit. The City's SWMP is updated annually, and includes stormwater planning, public education and outreach, methods to detect and eliminate illicit discharges, standards for controlling stormwater runoff, and operations and maintenance guidelines for these facilities. As part of the ILA the City of SeaTac and the Port have defined an Airport Stormwater Utility Boundary that includes most Airport parcels south of SR 518. Areas inside this boundary are subject to the Port's SWPPP. Development on Port property that is outside this boundary is subject to the requirements of the City's SWMP.

Wild and Scenic Rivers

There are no Wild and Scenic Rivers within the GSA.[43] Therefore, further discussion of Wild and Scenic Rivers will not be included in this EA.

Floodplains

Floodplains are valued for their natural flood and erosion control, enhancement of biological productivity, and socioeconomic benefits and functions. Current 100-year and 500-year floodplain information for the area surrounding SEA was compiled from the most recent Flood Insurance Rate Maps (FIRMs) published by FEMA.

As is shown in **Exhibit 3-22,** 100-year and 500-year floodplains, within the GSA are located west and north of Runway 16R associated with Miller Creek. These floodplains are partially on Port-owned property in the vicinity of the proposed employee parking structure (L07), westside maintenance campus (S07), and CRDC (S10).

Groundwater

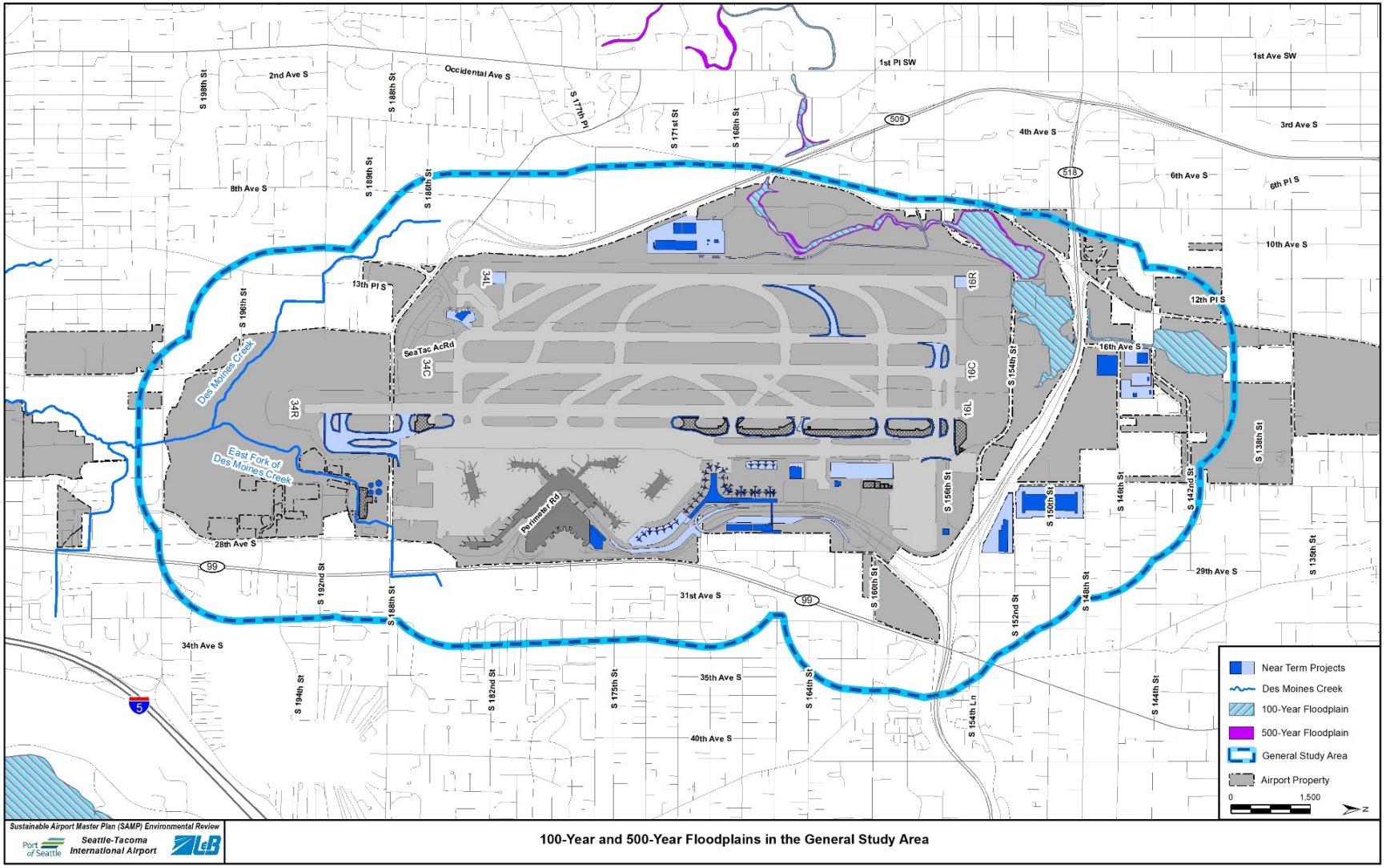
The GSA is located within the South King County Groundwater Management Area (GWMA), which encompasses approximately 260 square miles, mostly within the Green-Duwamish Watershed. Groundwater is the primary source of municipal and potable water used in the South King County GWMA.[44] Several regional aquifers underlie the GSA, the shallowest of which is about 50 to 60 feet beneath ground surface near the SEA terminal.

Portions of three Well Head Protection Areas (WHPA) are located within the GSA (see **Exhibit 3-18**). In Washington State, the Department of Health administers the state Wellhead Protection Program to prevent contamination of groundwater used for drinking water. The Highline Water District has two wells within the GSA. The Tyee well is on Port property approximately one-half-mile south of the airfield; this well is not currently in use. PFAS has been detected in the Tyee Well at levels exceeding the State Action Level, therefore, this well was removed from service. The McMicken Heights well, which came online in 2012, is to the east of the Airport. The well water is filtered, treated, and tested before it is blended with water from Seattle Public Utilities (SPU) and sent to the Water District customers.

SPU has two wells within the GSA. Riverton Heights #1 and #2 are part of a well field in the Highline Aquifer. While nearly all of SPU's raw drinking water comes from its two municipal watersheds, it has access to groundwater from Riverton Heights for seasonal and emergency use. These WHPA are shown on **Exhibit 3-18** through **Exhibit 3-21**.

[43] https://www.nps.gov/orgs/1912/plan-your-visit.htm, accessed 8/9/2023.
[44] South King County Ground Water Management Plan, 2003, page ES-2. https://your.kingcounty.gov/dnrp/library/1997/kcr148.pdf

EXHIBIT 3-22: 100-YEAR AND 500-YEAR FLOODPLAINS WITHIN THE GSA



Source: FIRM panels (all effective 8/19/2020): 53033C0954G, 53033C0955G, 53033C0960G, 53033C0962G, 53033C0966G

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