

Appendix I

Biological Resources Studies

Appendix I-1

USFWS Biological Assessment

BIOLOGICAL ASSESSMENT

For United States Fish and Wildlife Service

Nisqually Indian Tribe Quiemuth Village Mixed-Use Project City of Lacey, Thurston County, Washington



Lead Agency: Bureau of Indian Affairs

September 6, 2023



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Section 1 | Introduction

The purpose of this Biological Assessment (BA) is to address the effect of the Nisqually Indian Tribe (Tribe) 174-acre Fee-to-Trust and Quiemuth Village Mixed Use Project (Proposed Project) on species listed as endangered or threatened under the Endangered Species Act (ESA). The Proposed Project involves the acquisition of a 174-acre site in the City of Lacey, Washington (Project Site; **Figures 1 and 2**) into federal trust status (Proposed Action) and the subsequent development of the site with mixed-use development and related facilities. The Tribe has proposed two alternative site plans for the Proposed Project, a Commercial-Heavy Alternative (**Figure 3**) that would develop the entire Project Site and a Recreation-Heavy Alternative (**Figure 4**) that would develop most of the Project Site except for approximately 19.03 acres of the mixed conifer-hardwood forest in the northern portion of the Project Site. To be conservative, this BA bases the analysis on the Commercial-Heavy Alternative as it has the biggest development footprint.

An Environmental Assessment (EA) is anticipated to be prepared by the BIA pursuant to the National Environmental Policy Act (NEPA) to assess potential environmental effects of the Proposed Action. This BA serves as the environmental support document for the future determinations made by the EA and corresponding avoidance and minimization measures regarding federally listed species and addresses the Proposed Action's compliance with Section 7 of the ESA. A separate BA/Essential Fish Habitat Assessment (EFHA) has been prepared for the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the ESA and the Magnuson-Stevens Fishery Conservation and Management Act.

1.1 PURPOSE AND NEED

The purpose of the Proposed Action is to facilitate tribal self-sufficiency, self-determination, and economic development, thus satisfying both the Department of the Interior's (Department) land acquisition policy as articulated in the Department's trust land regulations at 25 CFR Part 151. The need for the Department to act on the Tribe's application is established by the Department's regulations at 25 CFR § 151.10(h).

1.2 ACTION AREA

The Action Area consists of the approximately 174-acre Project Site, as well as off-site areas proposed for access improvements (**Figure 5**), located in the City of Lacey, Thurston County, Washington. The Action Area is located directly north of Interstate 5 (I-5), and west of the Marvin Road / I-5 interchange. The Action Area is adjacent to a 1-acre parcel currently in federal trust for the Tribe, which is developed with the Nisqually Markets Tobacco Outlet store. The Project Site consists of 8 parcels with the assigned APNs 118-11-210200, 118-10-101101, 118-10-101103, 118-10-101000, 118-11-201000, 118-11-2010402, 118-11-210400, and 118-11-20404 and are located within Section 10 and 11, Township 18 North, Range 1 West, Willamette Principal Meridian, Lacey, WA United States Geological Survey 7.5-minute topographic quadrangle (USGS, 2022). An aerial photograph of the Action Area is shown in **Figure 6**. Regional access to the Action Area is provided by I-5, which runs in an east-west direction immediately south of the Action Area, from the existing I-5/State Route (SR) 510/Marvin Road interchange. Local access to the Action Area is currently provided through Marvin Road Northeast (NE) via Main Street NE in the eastern portion of the Action Area, and Britton Parkway NE via Gateway Boulevard NE in the western portion of the Action Area.

Right-in-right-out ramps for southbound traffic on I-5 have been constructed south of the Action Area, however, the ramps are not currently open to traffic.

1.3 PROPOSED ACTION COMPONENTS

The Proposed Action includes the transfer of the approximately 174-acre proposed trust property into federal trust status. Following the acquisition of the Project Site into trust, the Tribe proposes to develop the following components within the Action Area under the Commercial-Heavy Alternative (**Figure 3**):

- Approximately 929,500 square feet (sf) of commercial retail, including grocers, retail and dining;
- Approximately 7.4 acres of recreational facilities, including a golf entertainment facility, bowling center, and movie theater;
- A 4-story, 200 room hotel;
- 320 units of housing, including high density multi-family apartments and onsite live/work housing;
- A 28-acre travel center, to include 26 diesel and gasoline fuel pumps;
- Approximately 4,655 parking spaces provided by several surface parking areas; and
- Infrastructure, including electrical, natural gas, water supply, wastewater treatment and/or collection facilities, and stormwater drainage, treatment, and infiltration facilities (note that off-site infrastructure is described and analyzed in **Section 4.5**).

Section 2 | Methodology

The following information was obtained and reviewed in support of this analysis contained in this BA:

- United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) Official Species List, dated March 9, 2023, of special-status species with the potential to occur on or be affected by the Proposed Action (USFWS, 2023a; **Attachment A**);
- Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species viewer (PHS), dated March 13, 2023, of special-status species with the potential to occur on or be affected by the Proposed Action (WDFW, 2023a; **Attachment A**);
- Washington Natural Heritage Program 2021 Washington Vascular Plant Species of Conservation;
- Burke Herbarium Plants of Washington Identification Key (Giblin and Legler, 2003);
- USFWS National Wetlands Inventory (NWI) map of wetland features on the Action Area (USFWS, 2022b; **Attachment B**);
- A map of the nearest critical habitat identified by USFWS and NOAA Fisheries (USFWS, 2022c; NOAA, 2022; **Figure 7, Attachment C**).
- A custom soils report from the Natural Resources Conservation Service (NRCS) (NRCS, 2022; **Attachment D**); and

2.1 BIOLOGICAL SURVEYS

Biological resource surveys of the Action Area were conducted April 12 to 14 and June 16 to 18, 2021. Surveys assessed habitat types, federally listed species, suitable habitat for federally listed species, and wetlands and other Waters of the U.S. Species and habitat types were classified using the WDFW Priority Habitat and Species List (WDFW, 2022a) and The Jepson Manual (Baldwin, 2012).

2.2 ANALYSIS

An analysis to determine federally listed species that have the potential to occur within the Action Area was conducted. Habitat requirements for each species were assessed and compared to the type and quality of habitats observed during surveys. Species with no potential to occur within the Action Area were ruled out based on lack of suitable habitat, elevation range, substrate/soils, and/or geographic distribution. The results of this analysis are summarized below.

Section 3 | Environmental Setting

3.1 TOPOGRAPHY, CLIMATE, AND SOIL TYPES

The Action Area is located within Section 10 and 11 of Willamette Principal Meridian in Township 18 North, Range 1 West as depicted on the “Lacey” United States Geological Survey (USGS) 7.5’ quadrangle maps. The region has an annual mean high temperature of 60.4 degrees Fahrenheit (° F) and an annual mean low temperature of 40.6° F; the average annual rainfall is approximately 50.00 inches (NOAA, 2021). The Action Area is comprised of four soil types (NRCS, 2022) as shown in **Figure 8** and listed below:

- Alderwood gravelly sandy loam, 8 to 15 percent slopes;
- Everett very gravelly sandy loam, 8 to 15 percent slopes;
- Indianola loamy sand, 0 to 5 percent slopes; and
- Spanaway gravelly sandy loam, 0 to 3 percent slopes.

3.2 HABITAT TYPES

3.2.1 Terrestrial Habitat Types

Two terrestrial habitat types were identified within the Action Area (**Figure 9**): ruderal/disturbed and mixed conifer – hardwood forest. The majority of the Action Area is heavily disturbed as a result of historical logging, and thinning, and grading activities on adjacent properties. The Action Area is largely open land with some forested areas near the I-5 corridor and along the northern perimeter of the site.

Ruderal/Disturbed

Ruderal/disturbed areas are a mixture of barren gravelly soils, shrubs, and weedy herbaceous cover, usually in areas heavily impacted by human habitation, industry, and commerce. The Action Area consists of approximately 82.11 acres of this habitat type. Common species found within this habitat included Scotch broom (*Cytisus scoparius*), oxeye daisy (*Leucanthemum vulgare*), foxglove (*Digitalis purpurea*), blackberry (*Rubus spp.*), and common St. John’s wort (*Hypericum perforatum*).

Mixed Conifer- Hardwood Forest

Mixed conifer – hardwood stands are interspersed throughout the Action Area, with the northern area the densest. The mixed conifer – hardwood stands habitat make up approximately 92.09 acres. This habitat is comprised of Douglas fir (*Pseudotsuga menziesii*) and Oregon white oak (*Quercus garryana*). The understory is comprised of a mix of native and non-native weedy/grass species including oceanspray (*Holodiscus discolor*), blackberry, hardhack (*Spiraea douglasii*), Bermuda grass (*Cynodon dactylon*), and salal (*Gaultheria shallon*).

3.3 WETLANDS AND WATERS OF THE UNITED STATES

Background review of the NWI database did not indicate the presence of any wetlands, waters of the U.S., or other aquatic features (**Attachment B**). Previous surveys conducted in November 2012 mapped eleven wetlands in the north section of the Action Area (Chad Armour LLC, 2013). The U.S. Army Corps of Engineers (USACE) determination of this previous delineation concluded that the wetlands were not jurisdictional but may still be under the purview of the Washington State Department of Ecology. This jurisdictional determination was valid for five years and has since lapsed (Chad Armour LLC, 2013). The previously mapped wetlands were assessed during the 2021 site visit. Eight of the eleven previously mapped wetlands were able to be identified. Three wetland sites were not present and there were no indicators to suggest previous presence of these wetlands. The eight identifiable wetland sites were disturbed with most occurring in obvious excavation pits, cuts, or similar features that were disturbed by heavy machinery. None of the previously mapped wetlands met the required parameters to be considered a wetland (i.e., hydrophytic vegetation, hydrology, and hydric soils) [USACE, 2008].

3.4 CRITICAL HABITAT

There is no designated critical habitat for federally listed species within the Action Area, nor are there any surface waters or aquatic habitats within the Action Area. The Action Area is located within the Woodland Creek Drainage Basin. The nearest flowing water features to the Action Area are an unnamed stream system approximately 0.13 miles northwest, Woodland Creek approximately 3,500 feet west and McAllister Creek approximately 1.7 miles east of the Action Area. McAllister Creek flows into the nearby Nisqually Flats that are part of the Billy Frank Jr. Nisqually National Wildlife Refuge. In addition, the Nisqually River is approximately 2.08 miles east of the Project Site and terminates into the Nisqually Flats that eventually drains into the Puget Sound.

There are no surface water features in the Action Area itself. Using the NOAA Fisheries Protected Resources App Critical Habitat Mapper, critical habitat was identified in Woodland Creek for the threatened Steelhead (*Oncorhynchus mykiss*). The Nisqually Reach, within Puget Sound is designated critical habitat for bull trout (*Salvelinus confluentus*) (**Figure 7**). McAllister Creek, which leads to the Nisqually Reach contains critical habitat for the following species, the threatened Chinook Salmon (*Oncorhynchus tshawytscha*) and threatened steelhead (*Oncorhynchus mykiss*); however, the Action Area is not within the drainage watershed of McAllister Creek.

A separate BA/EFHA has been prepared for NMFS pursuant to Section 7 of the ESA.

3.5 OBSERVED WILDLIFE

Wildlife species observed in the Action Area during surveys included red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), American robin (*Turdus migratorius*), great-horned owl (*Bubo virginianus*), American kestrel (*Falco sparverius*), common raven (*Corvus corax*), chesnut-backed chickadee (*Poecile rufescens*), dark-eyed junco (*Junco hyemalis*), white-crowned sparrow (*Zonotrichia leucophrys*), and house finch (*Haemorhous mexicanus*).

3.6 FEDERALLY LISTED SPECIES

Regionally occurring federally listed species were determined by doing a query using the USFWS IPaC tool and WDFW PHS viewer of special-status species with the potential to occur on or be affected by the Proposed Action. The query generated a USFWS Official Species List for the Action Area and a list from WDFW (**Attachment A**). The WDFW results yielded three bat species which are not federally listed or candidate species and thus are not discussed further. The IPaC results yielded eight federally species that may regionally occur, these included:

- One mammal species, Yelm Pocket Gopher (*Thomomys mazama yelmensis*);
- Three bird species, Marbled Murrelet (*Brachyramphus marmoratus*), Streaked Horned Lark (*Eremophila alpestris strigata*), and Yellow-billed cuckoo (*Coccyzus americanus*);
- One fish, Bull Trout (*Salvelinus confluentus*);
- Two insects, Monarch Butterfly (*Danaus plexippus*) and Taylor's (=whulge) Checkerspot (*Euphydryas Editha taylori*); and
- One flowering plant, Golden Paintbrush (*Castilleja levisecta*).

Of these species only three may occur in the Action Area based on habitat requirements. The fish species was dismissed due to no aquatic habitat in the Action Area (however, it should be noted that indirect effects to fish species from water quality impacts are addressed in a separate BA/EFHA prepared for consultation with NMFS). Yellow-billed cuckoo were dismissed due to no riparian habitat in the Action Area. Insects were dismissed due to lack of required plant species (milkweed and nectar sources) on the site and habitat preferences. Monarch butterflies often concentrate along large river courses of the Columbia and Snake Rivers (WDFW, 2023a). Taylor's checkerspot butterflies prefer prairie and grassland habitats with certain host plant species, all of which are not found within the Action Area (WDFW, 2023b). Special-status plant surveys were conducted during the appropriate bloom period for each potentially occurring species. No federally listed plant or animal species were observed.

This BA addresses the Yelm pocket gopher (*Thomomys mazama yelmensis*), marbled murrelet (*Brachyramphus marmoratus*), and streaked horned lark (*Eremophila alpestris strigata*) which are federally listed as threatened. These species may occur in the project region. Pertinent data and information such as habitat preference and distribution of each species in the project and Action Areas are briefly summarized below.

3.6.1 Yelm pocket gopher (*Thomomys mazama yelmensis*)

FEDERAL STATUS: Threatened

STATE STATUS: Threatened

The Yelm pocket gopher is one of four federally listed subspecies of Mazama pocket gopher in the State of Washington. It was listed on April 9, 2014. This species is only found in Thurston County, west of the cascades. These animals live the majority of their lives underground, are active all year long, and prefer grassland and prairie type ecosystems. They are small mammals, only eight to nine inches in length, with short tubular bodies and blackish brown fur. Their fur can change depending on soil types. They live one to two years with sexual maturity reached at one year of age. This territorial species lives alone, except during mating season. Pups are with their mothers for spring and summer months, but then disperse on

their own. They forage from below-ground, feeding on roots or pulling entire plants into foraging tunnels (USFWS, 2022a and 2022c).

Their habitat preference is well-drained and easily crumbled soil types in prairie-like habitats that are relatively open, with few woody plants and small vegetation. They prefer succulent, nutrient-rich roots, bulbs, tubers, and shoots, and will eat both native and non-native plant species.

The current range of all subspecies is east of the Black River and south of I-5 on soils that support the burrowing of the Mazama pocket gopher (Thurston County, 2022). These soils are listed in **Table 1**. The Yelm pocket gopher are known to occur on federal, State, and private lands, with a population located on Joint Base Lewis-McChord (USFWS, 2022a).

Table 1: Prairie soils with documented use by Mazama Pocket Gopher subspecies in Thurston County

More Preferred Soils		Less Preferred Soils	
Nisqually loamy fine sand	0 to 3% slopes and 3 to 15% slopes	Alderwood gravelly sandy loam	0 to 3% slopes and 3 to 15% slopes
Spanaway-Nisqually complex	2 to 10% slopes	Everett very gravelly sandy loam	0 to 3% slopes and 3 to 15% slopes
Cagey loamy sand	-	Indianola loamy sand	3 to 15% slopes
Indianola loamy sand	0 to 3% slopes	Kapowsin silt loam	3 to 15% slopes
Spanaway gravelly sandy loam	0 to 3% slopes and 3 to 15% slopes	McKenna gravelly silt loam	0 to 5% slopes
-	-	Norma silt loam	-
-	-	Norma fine sandy loam	-
-	-	Spana gravelly loam	-
-	-	Spanaway stony sandy loam	0 to 3% slopes and 3 to 15% slopes
-	-	Yelm fine sandy loam	0 to 3% slopes and 3 to 15% slopes

Thurston County has a Habitat Conservation Plan (HCP) as a response to the federal ESA listing of several species in the County. It was federally approved in 2022 and will be implemented in 2023. The HCP states there are no known soils that support the Mazama pocket gopher in the region of the County north of I-5, including the Action Area. While some gopher soils are present in this region of the County, and mound surveys have occurred, there have not been documented gopher detections in this area as of the time of the HCP development. Future natural recolonization of the area of the Mazama pocket gopher subspecies is unlikely due to the barrier presented by I-5 (Thurston County, 2022). The nearest and most recent occurrences of this species are documented approximately 1.25 miles south of I-5 in 2016 (WDFW, 2022d).

3.6.2 Marbled murrelet (*Brachyramphus marmoratus*)

FEDERAL STATUS: Threatened

STATE STATUS: Endangered

The marbled murrelet is a seabird that forages in marine waters but nests in forests. The populations in Washington are low and declining, due to their need for old, mature, forest habitats. They prefer to nest in mature old-growth trees. This species is small, about 10 inches in length, with an overall brownish “marbled” look plumage during breeding. Non-breeding plumage is mostly black with white patches, underside, and scapulars on the wings.

Their habitat preferences is in old-growth conifer forests, and sometimes younger forests with residual old-growth trees. They forage in marine waters usually located within 1.2 to three miles from shore, in waters less than 100 feet deep.

Marbled murrelets are most abundant in northern Puget Sound and the Strait of Juan de Fuca. Surveys show the highest nesting presence of this species is on the Olympia Peninsula, the northern Cascades and in limited habitats in southwest Washington. A 2015 population estimate for Washington is about 7,500 birds (WDFW, 2023d).

3.6.3 Streaked horned lark (*Eremophila alpestris strigata*)

FEDERAL STATUS: Threatened

STATE STATUS: Endangered

The streaked horned lark is a coastal subspecies only found in southwest Washington and western Oregon and was listed as threatened in 2013. They have a known range from Oregon to Washington and have been locally extinct in British Columbia (USFWS, 2022b). This species is a slender, long-winged passerine about 7 inches long. Adults are marked with a dark facial mask and breast band that contrasts with a pale face and throat. These features are especially clear and distinctive in adult males, which have a yellow throat. The “horns” for which the species is named are tiny, black feather tufts on the sides of the head in adult males. Adult females are similar to males, but duller, smaller, and lack horns. Streaked horned larks nest on the ground, usually next to a tuft of vegetation or other small object. They may rear two to three broods per season, clutching three to five eggs at a time. Nest building in southern Puget Sound generally begins in mid-April to early May, and concludes by mid-August (WDFW, 2022b).

Their habitat preference is large, bare, and sparsely vegetated land, like fields and prairies and similar areas with low/sparse grassy vegetation (WDFW, 2022b). They forage in areas containing a large percentage of bare ground.

Streaked horned lark can be found in prairies and grasslands south of Puget Sound, coastal beaches, dredge spoil islands, and sparsely vegetated shorelines on the lower Columbia River. The streaked horned lark is known to occupy the Joint Base Lewis-McChord, and a multiple other isolated sites throughout their range. They are known to breed at up to 17 locations in Washington, 8 in the southern Puget Sound region, 6 on the outer coast, and 4 on islands and shore sites along the lower Columbia River. The range wide population is estimated at 1,170 to 1,610 individuals, including fewer than 150 pairs in Washington (Stinson, 2016).

Section 4 | Effects of the Action

4.1 DETERMINATION OF EFFECT

Based on guidance provided by the ESA Section 7 Effects Determination Guidance, possible effects determinations for the Proposed Action include:

No effect: The proposed action will not affect the listed species or critical habitat.

May affect but is not likely to adversely affect: The proposed action will affect a listed species in a way that is discountable, insignificant, or completely beneficial. Discountable effects are extremely unlikely to occur; insignificant effects are impacts small enough that they never reach the scale where a take occurs, and completely beneficial effects are positive effects without any adverse effects to the species.

May affect and is likely to adversely affect: The proposed action will either directly or indirectly, or through its interrelated and interdependent actions, adversely affect a listed species.

These guidelines were used in determining conclusions of this BA and are discussed for the listed species and migratory birds below.

4.2 CRITICAL HABITAT

There are no aquatic features within the Action Area. The nearest critical habitat to the Action Area are described in **Section 3.4**. Indirect effects to critical habitat are discussed below.

Ground disturbing activities during construction could lead to erosion which could increase sediment discharges to surface waters during storm events. As a mitigation/conservation measure and in accordance with the Clean Water Act, the Tribe would obtain coverage under the National Pollution Discharge Elimination System General Construction Permit, requiring the implementation of a Stormwater Pollution Prevention Plan and best management practices (BMPs) during construction to prevent contaminated run-off from entering any off-site waters.

Currently, all stormwater within the Action Area infiltrates into the ground and no stormwater currently leaves the Action Area. The Proposed Action will result in an increase of impervious surfaces which would result in increased peak flows and increased total discharge from the Action Area during precipitation events. If not properly managed, this could increase stormwater flows to area drainage systems and cause localized flooding. However, the Proposed Action includes a stormwater system that will be installed to collect, treat, detain, and convey runoff throughout the Action Area that would also prevent flooding and other adverse effects related with runoff.

The Action Area is located within the Woodland Creek Watershed. Groundwater-fed springs maintain year-round base flow in Woodard Creek and Woodland Creek, therefore, groundwater pumping in the Action Area could impact Woodland Creek. Avoidance and minimization would ensure that the development of a groundwater well in the Action Area would not adversely impact the flow of Woodland Creek.

With the implementation of avoidance and minimization measures and bioretention and infiltration facilities incorporated into project design, the Proposed Action may affect and is not likely to adversely affect critical habitat. More details regarding critical habitat are discussed in the separate BA/EFHA prepared for NMFS.

4.3 FEDERALLY LISTED SPECIES

No suitable habitat for federally listed plant species occurs within the Action Area. Based on biological desktop review and survey results, three federally listed wildlife species have the potential to occur within the Action Area: Yelm pocket gopher, marbled murrelet, and streaked horned lark. The Action Area contains marginal habitat to support these species.

4.3.1 Yelm pocket gopher (*Thomomys mazama yelmensis*)

There are no recent documented occurrences of *Mazama* pocket gophers within one mile of the Action Area. The nearest and most recent occurrences of this species are documented approximately 1.25 miles south of I-5 in 2016 (WDFW, 2022c). No mounds or burrows indicating the presence of pocket gophers were observed and no pocket gophers were observed at the time of survey of the Action Area.

Soils that support the burrowing of the *Mazama* pocket gopher are listed in **Table 1**. Soil types found within the Action Area contain Indianola loamy sand 0-5% which is a “more preferred” soil type but at a 0-3%, and three “less preferred” soil types (Alderwood gravelly sandy loam, Everett very gravelly sandy loam, and Spanaway gravelly sandy loam), 2 of which have a lower slope percentage.

The Thurston County HCP states there are no known soils that support the *Mazama* pocket gopher in the region of the County north of I-5, which includes the Project Site. While some gopher soils are present in this region of the County, and mound surveys have occurred, there have not been documented gopher detections in this area as of the time of the HCP development. Future natural recolonization of the area of the *Mazama* pocket gopher subspecies is unlikely due to the barrier presented by I-5 (Thurston County, 2022).

Although the Action Area has the correct habitat and soil types for pocket gopher species, the I-5 roadway creates a barrier that separates both sides of the roadway and inhibits gophers from passing. Therefore, the likelihood of gophers being in the project area is very low as discussed in **Section 3.6.1**.

Although unlikely, if the Yelm pocket gophers were to be present at the time of construction of the Proposed Action, construction-related activities have the potential to cause mortality. Potential adverse effects would be avoided or minimized to less-than-significant levels with the implementation of the avoidance and minimization measures discussed below. With implementation of these measures, the Proposed Action **may affect, but is not likely to adversely affect** the Yelm pocket gophers.

4.3.2 Marbled murrelet (*Brachyramphus marmoratus*)

Marbled murrelets may occur in the mixed conifer-hardwood forest habitat areas of the Action Area. Overall, habitat quality is marginal due to site disturbance, limited native vegetation, and ongoing human activity.

Migratory birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code [USC] §§ 703 712). The MBTA makes it unlawful to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, buy, sell, purchase, or barter any migratory bird listed under 50 Code of Federal Regulations (CFR) §10. This includes feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR § 21). Trees and shrubs within 500 feet of the Action Area may provide habitat for migratory birds during the general nesting season (February 15 – September 15).

Although unlikely, if the marbled murrelet or any migratory bird were to be present in the area of impact at the time of construction of the Proposed Action, construction-related activities have the potential to cause mortality or nest abandonment. Potential adverse effects would be avoided or minimized to less-than-significant levels with the implementation of avoidance and minimization measures discussed below. With the implementation of these measures, the Proposed Action **may affect but is not likely to adversely affect** migratory birds protected under the MBTA. There would be **no effect** for the marbled murrelet, as the forest in the Action Area is even-aged young forest that was previously harvested old growth.

4.3.3 Streaked horned lark (*Eremophila alpestris strigata*)

Streak horned lark may occur in the open grassy areas of the Action Area, primarily in ruderal habitat. Grasses are short and there are areas of bare and sparsely vegetated ground suitable for nesting. Overall, habitat quality is marginal due to site disturbance, limited native vegetation, and ongoing human activity.

Although unlikely, if the streaked horned lark or any migratory bird were to be present in the area of impact at the time of construction of the Proposed Action, construction-related activities have the potential to cause mortality or nest abandonment. Potential adverse effects would be avoided or minimized to less-than-significant levels with the implementation of avoidance and minimization measures discussed below. With the implementation of these measures, the Proposed Action **may affect but is not likely to adversely affect** the streaked horned lark or any migratory birds protected under the MBTA.

4.4 CONSERVATION MEASURES

The following conservation measures will be implemented during construction activities to avoid or minimize potential adverse impacts to federally protected species, and other migratory nesting birds.

- Prior to construction, the Tribe shall retain a qualified biologist to conduct an informational meeting to educate all construction staff on the pocket gophers, marbled murrelet, streaked horned lark, and nesting migratory birds. This will include a description of habitat needs, status of the species, and the following measures below.
- Preconstruction mound surveys for Yelm pocket gophers shall be conducted between June and October by a qualified biologist who has received training from WDFW or USFWS in Mazama pocket gopher survey protocols. List of qualified biologists can be found on the WDFW website. If no occupied pocket gopher habitat is identified, then no further action is necessary.
- In the highly unlikely event that a survey shows occupied pocket gopher habitat within the Action Area, as determined by WDFW or USFWS training protocols, then a habitat protection area shall be established according to consultation with USFWS. Width to length ratio of the habitat protection area shall be maximized so that large, contiguous patches are protected. Long, narrow corridors shall be avoided as habitat protection areas. Multiple habitat protection areas may be

appropriate or necessary to allow development. Access to the habitat protection area shall be restricted. No construction shall occur in habitat protection areas. A detailed list of species management recommendations from the WDFW for Mazama Pocket Gophers is found in **Attachment E**, these will be followed in the unlikely event pocket gophers are found on site.

- If construction activities (e.g., building, grading, ground disturbance, removal of vegetation) are scheduled to occur during the general nesting season (February 15 – September 15), a preconstruction nesting bird survey shall be conducted by a qualified biologist throughout accessible areas of suitable habitat within 500 feet of proposed construction activity. The survey shall occur no more than 7 days prior to the scheduled onset of construction. If construction is delayed or halted for more than 7 days, another preconstruction survey for nesting bird species shall be conducted. If no nesting birds are detected during the preconstruction survey, no additional surveys or mitigation measures are required.
- If nesting bird species are observed within 500 feet of construction areas during the survey, appropriate “no construction” buffers shall be established. The size and scale of nesting bird buffers shall be determined by a qualified biologist and shall be dependent upon the species observed and the location of the nest. Buffers shall be established around active nest locations. The nesting bird buffers shall be completely avoided during construction activities. The buffers may be removed when the qualified wildlife biologist confirms that the nest is no longer occupied, and all birds have fledged.
- A qualified biologist shall monitor the work area at project appropriate intervals to assure avoidance, BMPs, and conservation measures are being implemented.

With the implementation of the avoidance and minimization measures listed above, the Proposed Action **may affect but is not likely to adversely affect** Federally listed species, migratory birds, and associated habitats.

4.5 INTERRELATED AND INTERDEPENDENT EFFECTS

Interrelated and interdependent effects are direct or indirect effects that occur as a result of activities that are closely affiliated with a project in areas outside the Action Area. Such actions include road or utility improvements off-site that would not be constructed but for implementation of the Proposed Action.

Implementation of the Proposed Action would involve the construction of off-site access improvements, and traffic mitigation, and may involve off-site improvements for the extension of water supply, wastewater collection and/or electrical/natural gas utilities to the Project Site.

Off-site Improvements

Access Improvements

Off-site access improvement areas are shown in **Figure 5**, and generally include 1) an extension of Main Street NE from its current termination point in the east to join a new onsite roadway that eventually connects to the existing Gateway Boulevard NE and Main Street NE in the west. Part of this new roadway connection would go through the adjacent Nisqually Owned Property and 2) a new intersection on Maine Street NE in the eastern part of the Action Area that would join a proposed onsite roadway to connect to Access 3. Access 3 is an existing limited access right-in/right-out entrance located at the intersection of Marvin Rd NE and Nisqually Markets Tobacco Outlet on the southeastern corner of the Action Area. All

access improvements would take place within land owned by the Tribe, or dedicated rights-of-way held by the City.

Traffic Mitigation

There are two off-site traffic mitigation measures that would occur:

- Installation of a roundabout in place of the two-way stop-controlled existing traffic control at Eastern Parkway NE/Britton Parkway NE with the northbound approach serving as the Project Site access.
- Restrict the northbound and southbound left movements at the existing two-way stop-controlled intersection at Britton Parkway NE/Western Parkway NE with the northbound approach serving as Project Site access.

All traffic mitigation measures will be installed within previously disturbed dedicated road rights-of-way held by the City. Adherence to federal and state environmental regulations during construction of the improvements would avoid any potentially significant indirect effects from off-site intersection improvements.

Optional Off-site Water, Wastewater, and Energy Infrastructure Improvements

Implementation of the Proposed Action may involve improvements to off-site water supply, wastewater collection, and energy infrastructure. Construction of improvements would take place entirely within previously disturbed areas and roadways devoid of habitat for wildlife, fish, or native plants. Once construction is complete, the pipeline/utility corridors and infrastructure pads will be repaved and restored to pre-existing conditions.

Terrestrial Habitat Effects

Off-site access and utility improvements would occur within land owned by the Tribe or dedicated rights-of-way held by the City and as such, these areas have been subject to recent surveys for biological resources, including special status species and wetlands. The proposed off-site access improvement areas, and anticipated traffic mitigation and utility improvements, would take place entirely within previously disturbed areas, including dirt roadways, paved roadways, and road shoulders. These areas do not contain sensitive habitat, Critical Habitat, EFH, or Waters of the U.S. Once construction is complete, disturbed areas will be paved or revegetated to prevent erosion. A discussion of potential effects associated with water quality and associated impacts to fish is provided below. Transportation improvements and utility improvements will result in no net loss of habitat and will not result in adverse impacts to biological resources. Impacts to sensitive biological resources would be less than significant.

Water Quality and Fish Habitat

The construction of the off-site roadway improvements or utility trenching would require grading and the introduction of fill material to extend the roadbed to provide for the additional facilities. The increase of impervious surfaces and additional cut and fill embankments could result in an increase in surface water runoff and erosion of soils that could affect water quality and soil resources. Additionally, water quality could be impacted as a result of construction and roadway pollutants, such as grease and oil. Stable fill material, engineered embankments, and erosion control features would be used to reduce the potential for slope instability, subsidence and erosion. In accordance with the federal CWA, off-site improvements

would be required to comply with the NPDES General Construction Permit Program. To comply with the program, a SWPPP would be developed that would include soil erosion and sediment control practices to reduce the amount of exposed soil, prevent runoff from flowing across disturbed area, slow runoff from the site, and filter sediment from the runoff. With standard construction practices and specifications required by the NPDES permit program, and local requirements, including the City of Lacey Municipal Code Chapter 14.27, which includes provisions intended to manage stormwater runoff from construction and development sites, and WSDOT *Temporary Erosion and Sediment Control Manual* (WSDOT, 2019b), the off-site roadway improvements or utility trenching would result in less-than-significant effects associated with erosion and water quality during construction.

The effects to runoff volumes resulting from the increase in impervious roadways are expected to be minimal due to the limited extent of the improvements in comparison to the existing roadways. Some existing stormwater drains, and ditches may be relocated along roadways to provide space for improvements. Stormwater collection and detention facilities will be designed and installed in accordance with applicable local requirements, including the City's Municipal Code Chapter 14.27, which includes provisions intended to control stormwater runoff generated by development, redevelopment, construction sites, or modifications to existing stormwater systems, or the WSDOT *Highway Runoff Manual* (WSDOT, 2019a) to accommodate the increase in impervious surfaces resulting from the off-site roadway improvements or utility trenching. With incorporation of these drainage features, effects to water quality and fish habitat would be less than significant.

Summary

Although unlikely, if pocket gophers, marbled murrelets, or streaked horned lark were to be present in the Action Area and/or off-site improvements area at the time of construction of off-site improvements, construction-related activities have the potential to cause mortality. Potential adverse effects to these species could be avoided or minimized with the implementation of the avoidance and minimization measures discussed above. Required construction for access improvements, traffic mitigation and utility connections **may affect but is not likely to adversely affect** federally listed species, as implementation of all avoidance and minimization measures would reduce impacts to protected species.

Section 5 | Conclusions

The Action Area is comprised of ruderal/disturbed and mixed conifer-hardwood forest habitat. Habitats within the Action Area have the potential to support three federally listed species in addition to migratory birds protected under the MTBA. These species are Yelm pocket gopher, marbled murrelet, and streaked horned lark. The forest in the Action Area is even-aged young forest that was previously harvested old growth, therefore the Proposed Action will have no effect on the marbled murrelet. With implementation of avoidance and minimization measures outlined in this BA, the Proposed Action **may affect but is not likely to adversely affect** the Yelm pocket gopher and streaked horned lark.

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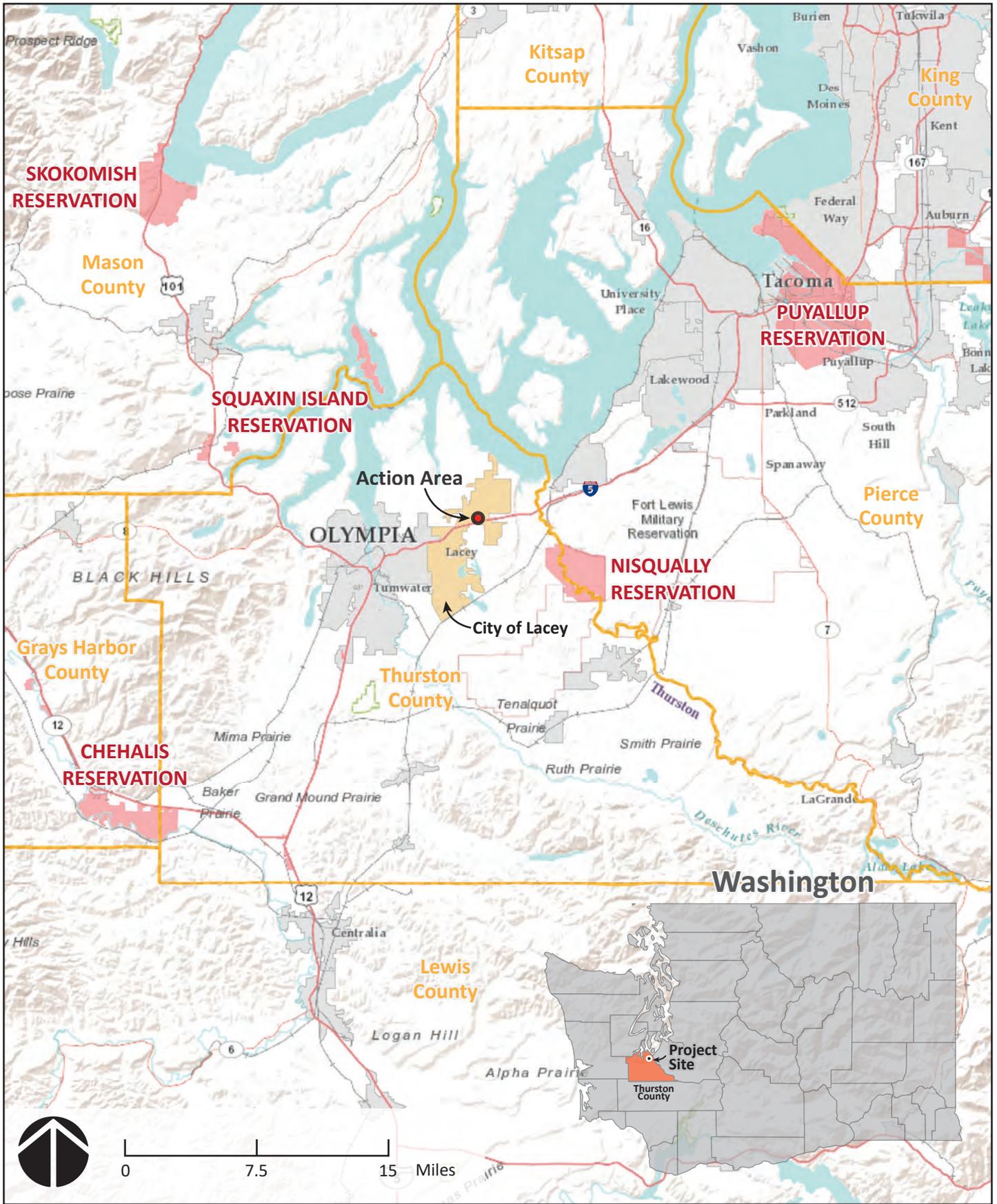
Section 7 | Preparers

This section lists the preparers of this BA as shown in **Table 2**.

Table 2: List of Preparers

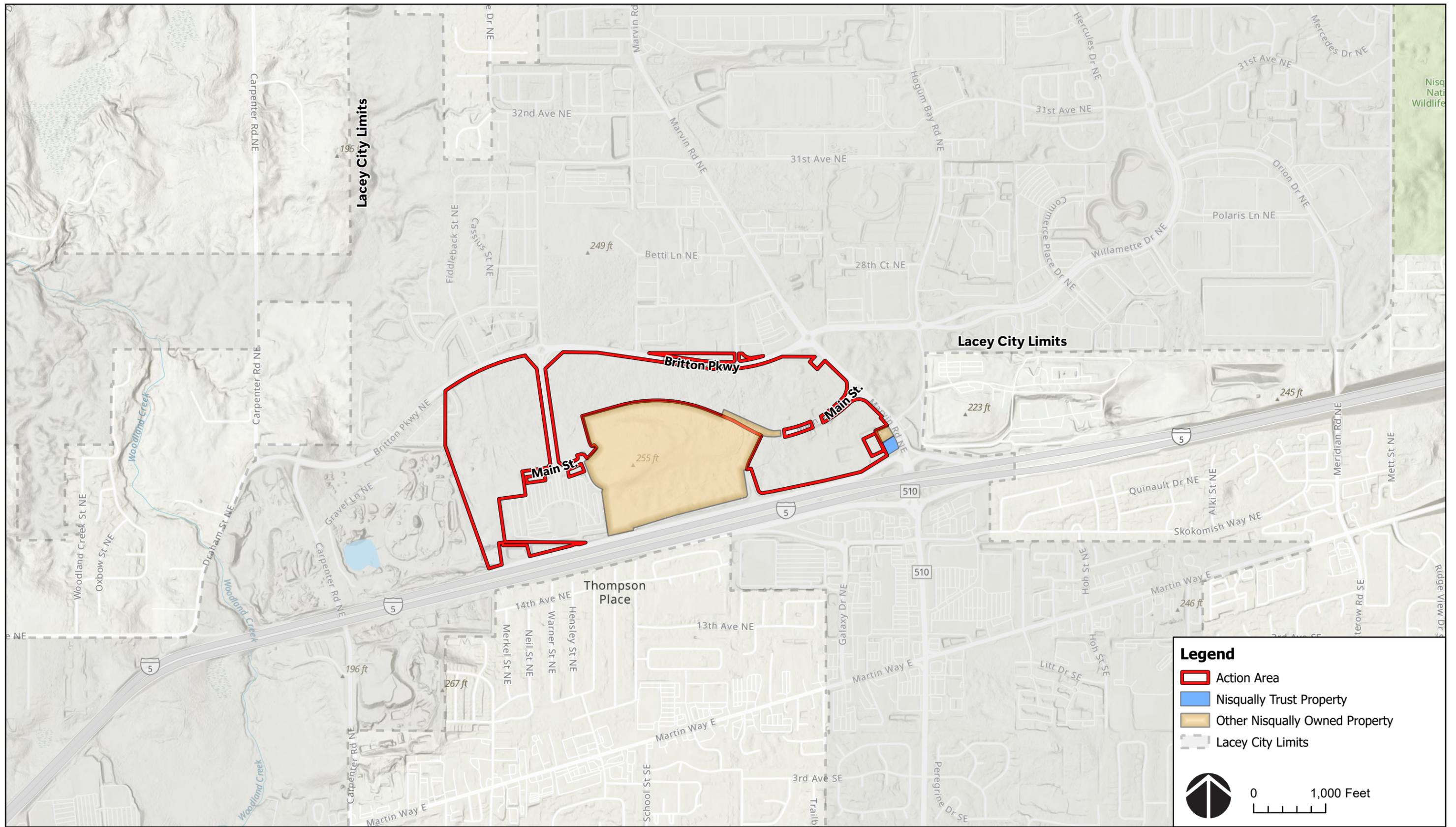
Name	Qualifications	Participation
Acorn Environmental		
Ryan Sawyer, AICP	BA; 17 years of experience; certified environmental planner by the American Institute of Certified Planners	Project Director
Jennifer Wade	BA; 17 years of experience	Senior Environmental Analyst
Kimberly Fuchs	BS; 18 years of experience	Senior Environmental Analyst
Oakum Solutions LLC		
Jeremy Huey	MS; 10+ years of experience	GIS Principal/Owner
Montrose Environmental Solutions		
Kathleen Sholty	BS, MS; 8 years of experience	Senior Biologist
Amy Gondran	BS, MS; 5+ years of experience	Biologist

Figures



Source: ESRI, USGS, NOAA

FIGURE 1
REGIONAL LOCATION



SOURCE: Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Esri Community

FIGURE 02
SITE AND VICINITY



01. GENERAL COMMERCIAL RETAIL
 02. GOLF ENTERTAINMENT FACILITY
 03. CAR DEALERSHIP
 04. PARKING
 05. WELL SITE

06. HOTEL (LIMITED SERVICE)
 07. FAMILY ENTERTAINMENT
 08. MULTI-FAMILY RESIDENTIAL
 09. MULTI-FAMILY RESIDENTIAL
 10. CULTURAL VILLAGE

11. UPSCALE GROCERY
 12. NEIGHBORHOOD RETAIL
 13. NEIGHBORHOOD RETAIL
 14. TRAVEL CENTER
 15. EXISTING CABELA'S N.I.S.

■ NISQUALLY TRUST PROPERTY
 ■ OTHER NISQUALLY OWNED PROPERTY
 - - - EXISTING ROAD
 □ ACTION AREA



0 500 Feet

FIGURE 3
 COMMERCIAL-HEAVY MIXED USE DEVELOPMENT PROJECT SITE PLAN



- | | | | |
|---------------------------------|-----------------------------|--------------------------|-------------------------------|
| 01. SCHOOL | 06. PARKING | 11. MULTI-FAMILY | 16. UNDEVELOPED / PARK |
| 02. BALL FIELDS | 07. INDOOR RECREATION | 12. UPSCALE GROCERY | 17. EXISTING CABELLA'S N.I.S. |
| 03. BALL FIELDS | 08. HOTEL (LIMITED SERVICE) | 13. FAMILY ENTERTAINMENT | |
| 04. GOLF ENTERTAINMENT FACILITY | 09. CULTURAL VILLAGE | 14. NEIGHBORHOOD RETAIL | |
| 05. CAR DEALERSHIP | 10. MULTI-FAMILY | 15. CONVENIENCE STORE | |

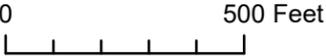
 ACTION AREA	 
 NISQUALLY TRUST PROPERTY	
 OTHER NISQUALLY OWNED PROPERTY	
 EXISTING ROAD	

FIGURE 4
RECREATION-HEAVY MIXED-USE DEVELOPMENT PROJECT SITE PLAN



01. GENERAL COMMERCIAL RETAIL
 02. TOP GOLF
 03. CARVANA
 04. PARKING
 05. WELL SITE

06. HOTEL (LIMITED SERVICE)
 07. FAMILY ENTERTAINMENT
 08. MULTI-FAMILY RESIDENTIAL
 09. MULTI-FAMILY RESIDENTIAL
 10. CULTURAL VILLAGE

11. UPSCALE GROCERY
 12. NEIGHBORHOOD RETAIL
 13. NEIGHBORHOOD RETAIL
 14. TRUCK STOP
 15. EXISTING CABELA'S N.I.S.

■ NISQUALLY TRUST PROPERTY
 ■ OTHER NISQUALLY OWNED PROPERTY
 - - - EXISTING ROAD
 ■ ACTION AREA

■ EXISTING ROADWAY
 ■ ONSITE IMPROVEMENTS
 ■ OFFSITE IMPROVEMENTS
 ● ACCESS LOCATIONS



0 500 Feet

FIGURE 5
 PROPOSED ACCESS IMPROVEMENTS

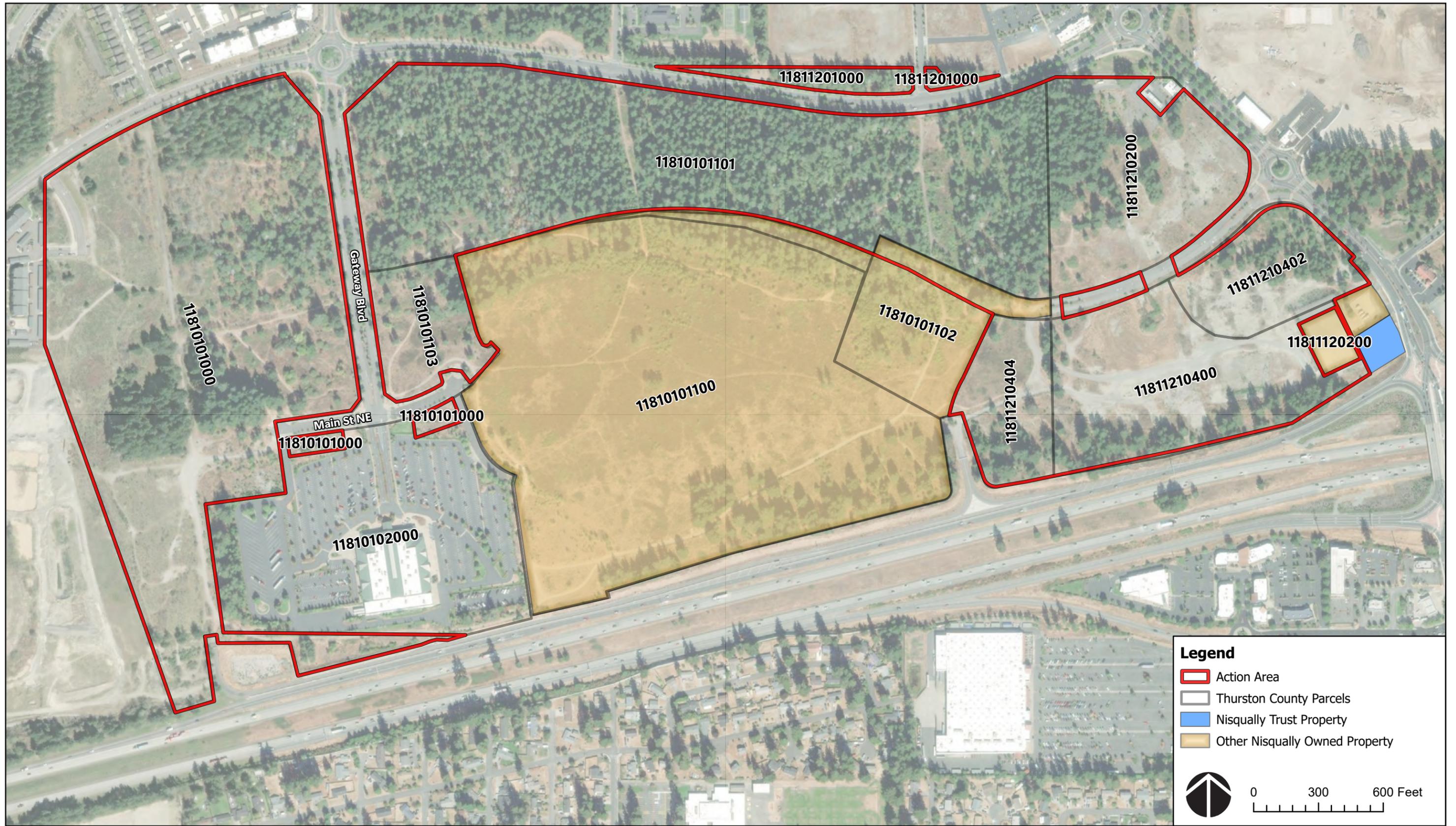


FIGURE 6
AERIAL PHOTOGRAPH

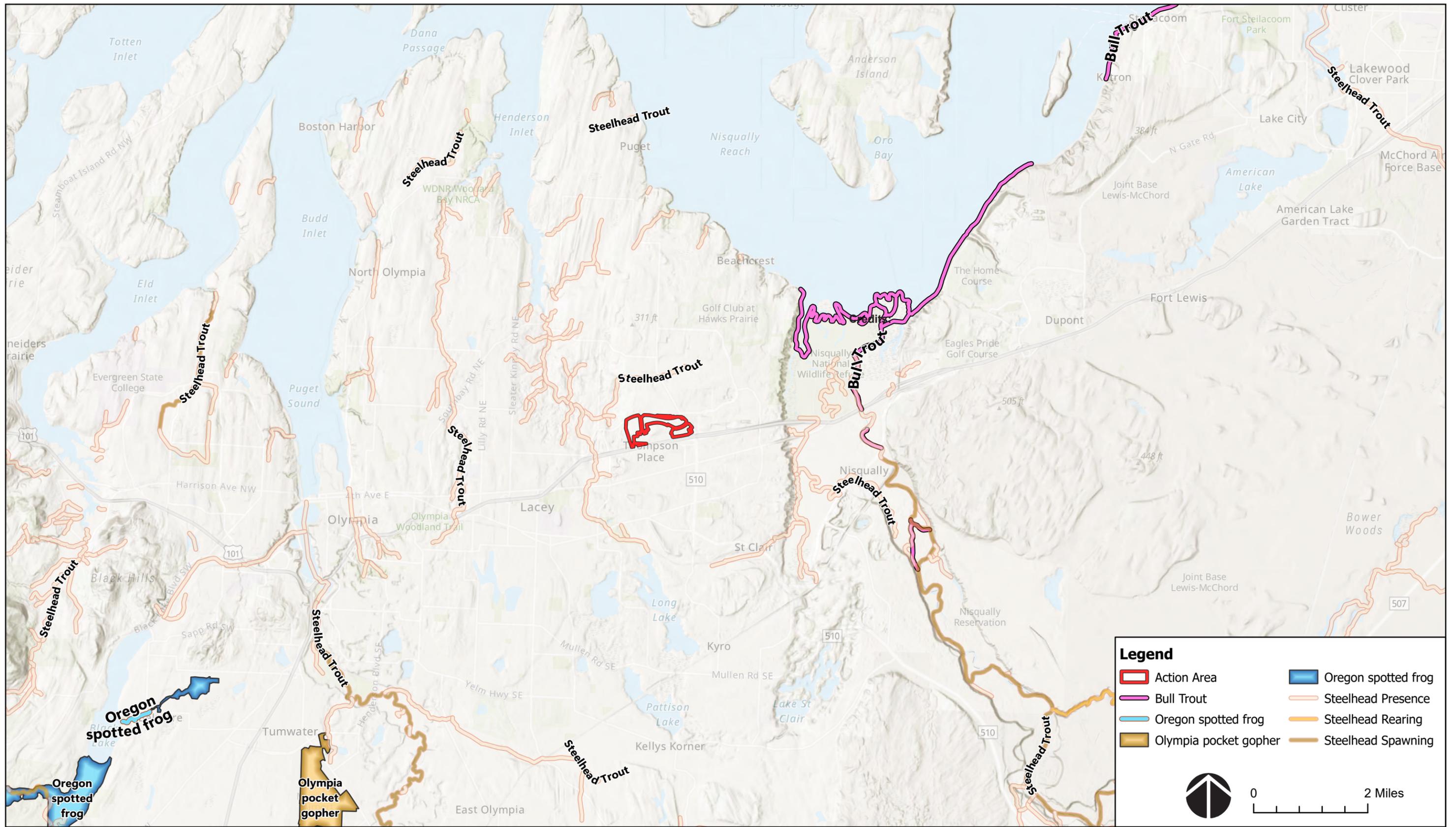


FIGURE 7
CRITICAL HABITAT



Source: ESRI World Imagery

FIGURE 8
USDA SOILS



Source: ESRI World Imagery

FIGURE 9
HABITAT TYPES

Attachment A
USFWS IPaC Report/WDFW Priority
Habitats and Species



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405

In Reply Refer To:
Project Code: 2023-0054110
Project Name: Nisqually Mixed Use

March 09, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Washington Fish And Wildlife Office

510 Desmond Drive Se, Suite 102

Lacey, WA 98503-1263

(360) 753-9440

PROJECT SUMMARY

Project Code: 2023-0054110
Project Name: Nisqually Mixed Use
Project Type: Mixed-Use Construction
Project Description: Thurston County, City of Lacey Washington
Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@47.064129199999996,-122.7883459838829,14z>



Counties: Thurston County, Washington

ENDANGERED SPECIES ACT SPECIES

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Yelm Pocket Gopher <i>Thomomys mazama yelmensis</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7257	Threatened

BIRDS

NAME	STATUS
Marbled Murrelet <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Streaked Horned Lark <i>Eremophila alpestris strigata</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7268	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

FISHES

NAME	STATUS
Bull Trout <i>Salvelinus confluentus</i> Population: U.S.A., conterminous, lower 48 states There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Taylor's (=whulge) Checkerspot <i>Euphydryas editha taylori</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5907	Endangered

FLOWERING PLANTS

NAME	STATUS
Golden Paintbrush <i>Castilleja levisecta</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7706	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Nisqually Indian Tribe
Name: Kimberly Fuchs
Address: 5170 Golden Foothill Parkway
City: El Dorado Hills
State: CA
Zip: 95762
Email: kfuchs@acorn-env.com
Phone: 3022229102

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Bureau of Indian Affairs



Priority Habitats and Species on the \



Buffer radius: 100 Feet

Report Date: 03/13/2023

PHS Species/Habitats Overview:

Occurrence Name	Federal Status	State Status	Sensitive Location
Big brown bat	undefined	undefined	Yes
Little Brown Bat	undefined	undefined	Yes
Yuma myotis	undefined	undefined	Yes

PHS Species/Habitats Details:

Big brown bat	
Scientific Name	Eptesicus fuscus
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00605

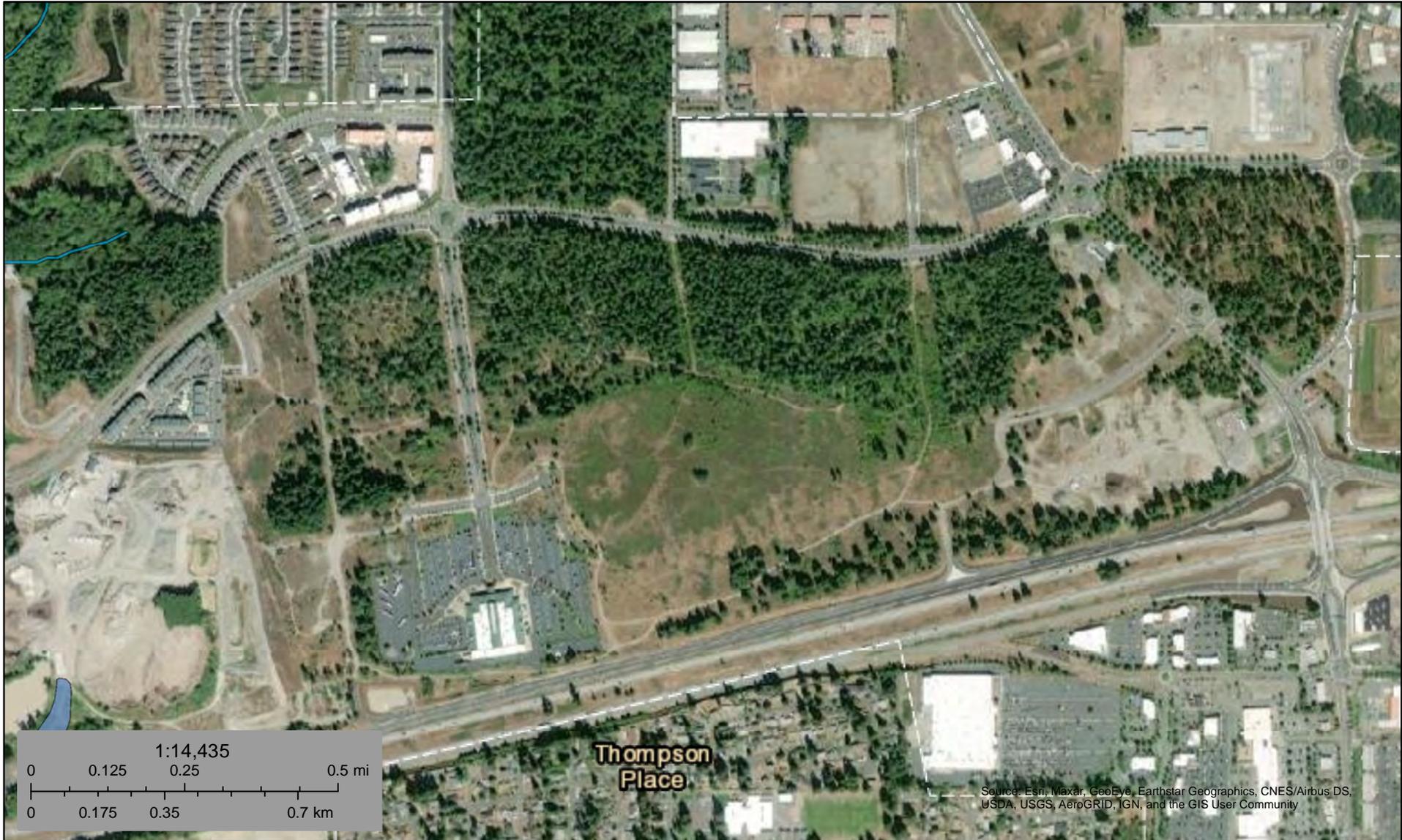
Little Brown Bat	
Scientific Name	Myotis lucifugus
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00605

Yuma myotis	
Scientific Name	Myotis yumanensis
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00605

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the

presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

Attachment B
National Wetlands Inventory Map



August 9, 2021

Wetlands

- | | | | | | |
|---|--------------------------------|---|-----------------------------------|---|----------|
|  | Estuarine and Marine Deepwater |  | Freshwater Emergent Wetland |  | Lake |
|  | Estuarine and Marine Wetland |  | Freshwater Forested/Shrub Wetland |  | Other |
|  | Freshwater Pond |  | |  | Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Attachment C
USFWS Critical Habitat Map



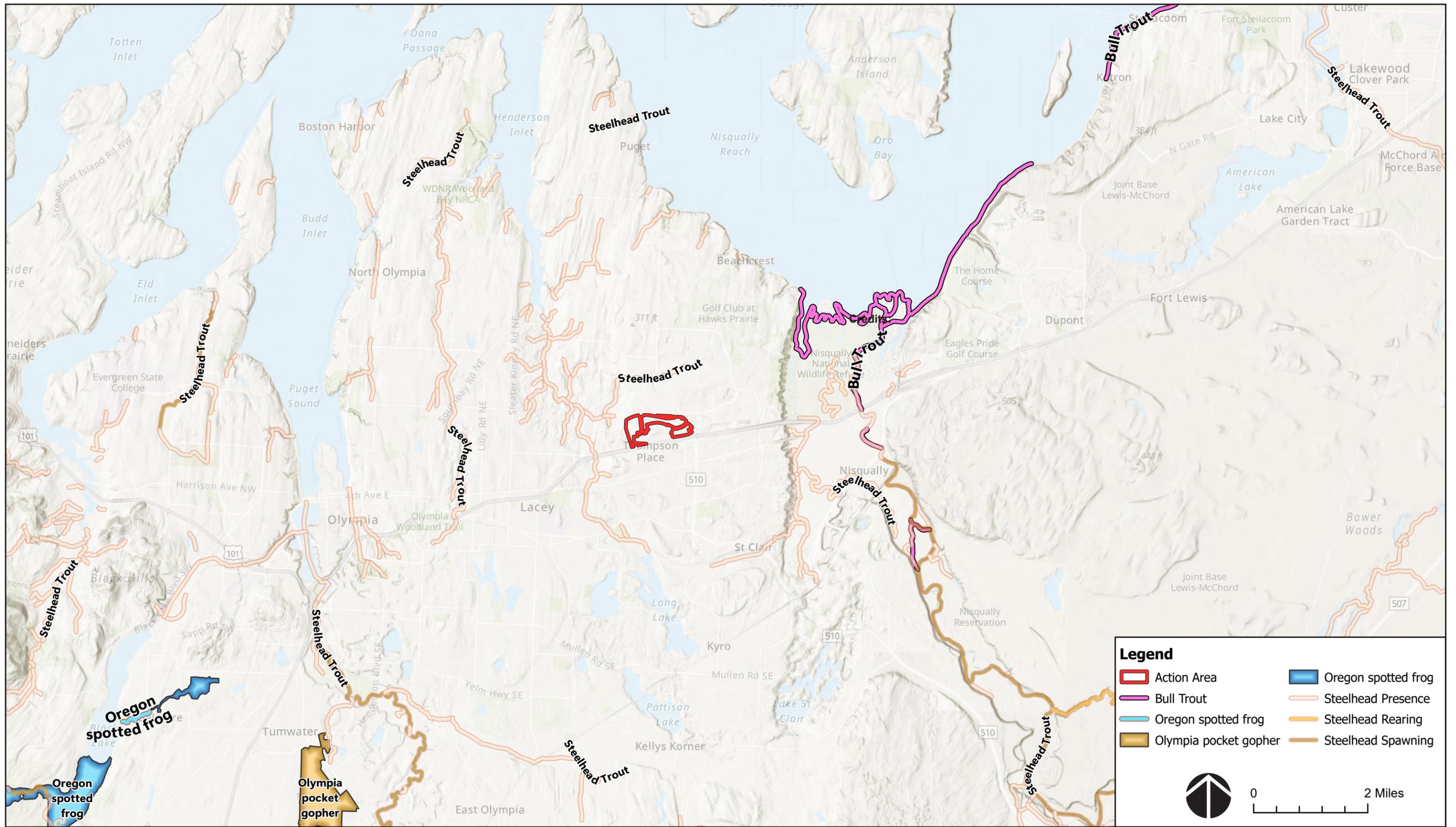


FIGURE 05
CRITICAL HABITAT

Attachment D
NRCS Custom Soils Report



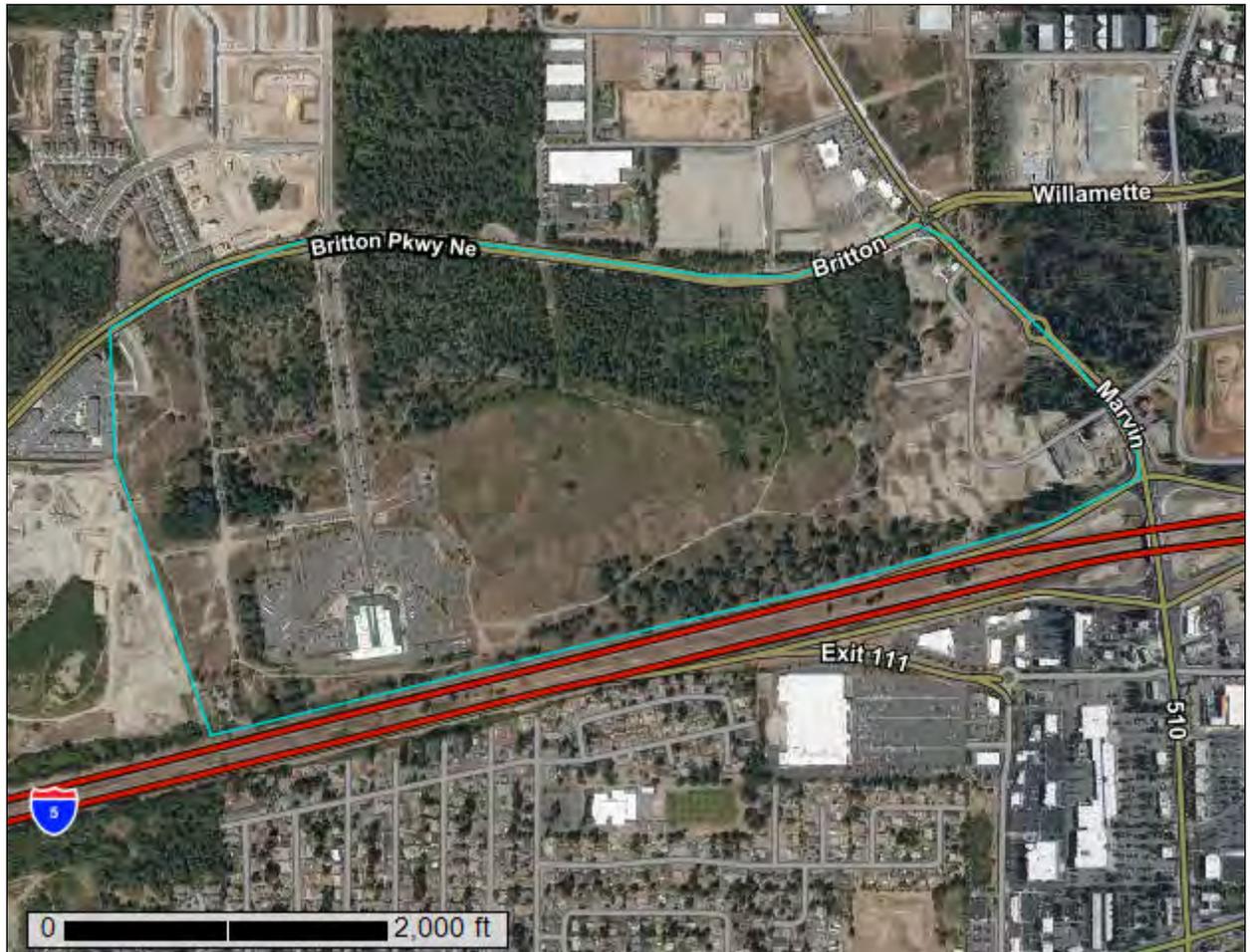
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Thurston County Area, Washington



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

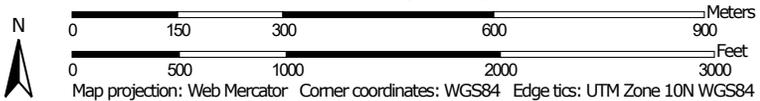
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:10,700 if printed on A landscape (11" x 8.5") sheet.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Thurston County Area, Washington
 Survey Area Data: Version 14, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 22, 2018—Jul 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Alderwood gravelly sandy loam, 8 to 15 percent slopes	64.0	20.7%
33	Everett very gravelly sandy loam, 8 to 15 percent slopes	45.1	14.6%
46	Indianola loamy sand, 0 to 5 percent slopes	15.1	4.9%
110	Spanaway gravelly sandy loam, 0 to 3 percent slopes	185.4	59.9%
Totals for Area of Interest		309.7	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Thurston County Area, Washington

2—Alderwood gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2t626
Elevation: 50 to 800 feet
Mean annual precipitation: 20 to 60 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 160 to 240 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Alderwood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alderwood

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope, talf
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Glacial drift and/or glacial outwash over dense glaciomarine deposits

Typical profile

A - 0 to 7 inches: gravelly sandy loam
Bw1 - 7 to 21 inches: very gravelly sandy loam
Bw2 - 21 to 30 inches: very gravelly sandy loam
Bg - 30 to 35 inches: very gravelly sandy loam
2Cd1 - 35 to 43 inches: very gravelly sandy loam
2Cd2 - 43 to 59 inches: very gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Forage suitability group: Limited Depth Soils (G002XN302WA), Limited Depth Soils (G002XF303WA), Limited Depth Soils (G002XS301WA)
Other vegetative classification: Limited Depth Soils (G002XN302WA), Limited Depth Soils (G002XF303WA), Limited Depth Soils (G002XS301WA)

Hydric soil rating: No

Minor Components

Indianola

Percent of map unit: 5 percent
Landform: Kames, terraces, eskers
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Everett

Percent of map unit: 5 percent
Landform: Kames, eskers, moraines
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Crest, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Shalcar

Percent of map unit: 3 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Norma

Percent of map unit: 2 percent
Landform: Drainageways, depressions
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

33—Everett very gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2t62b
Elevation: 30 to 900 feet
Mean annual precipitation: 35 to 91 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 180 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Everett and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Everett

Setting

Landform: Kames, eskers, moraines
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Crest, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly glacial outwash

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: very gravelly sandy loam
B_w - 3 to 24 inches: very gravelly sandy loam
C₁ - 24 to 35 inches: very gravelly loamy sand
C₂ - 35 to 60 inches: extremely cobbly coarse sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (K_{sat}): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Droughty Soils (G002XN402WA), Droughty Soils (G002XF403WA), Droughty Soils (G002XS401WA)
Other vegetative classification: Droughty Soils (G002XN402WA), Droughty Soils (G002XF403WA), Droughty Soils (G002XS401WA)
Hydric soil rating: No

Minor Components

Alderwood

Percent of map unit: 10 percent
Landform: Ridges, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope, talus
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Indianola

Percent of map unit: 10 percent
Landform: Terraces, eskers, kames
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

46—Indianola loamy sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2t62k
Elevation: 0 to 980 feet
Mean annual precipitation: 30 to 81 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 170 to 210 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Indianola and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Indianola

Setting

Landform: Eskers, kames, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glacial outwash

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 6 inches: loamy sand
Bw1 - 6 to 17 inches: loamy sand
Bw2 - 17 to 27 inches: sand
BC - 27 to 37 inches: sand
C - 37 to 60 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Droughty Soils (G002XN402WA), Droughty Soils (G002XF403WA), Droughty Soils (G002XV402WA), Droughty Soils (G002XS401WA)

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Other vegetative classification: Droughty Soils (G002XN402WA), Droughty Soils (G002XF403WA), Droughty Soils (G002XV402WA), Droughty Soils (G002XS401WA)
Hydric soil rating: No

Minor Components

Alderwood

Percent of map unit: 8 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, talus
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Everett

Percent of map unit: 5 percent
Landform: Kames, eskers, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, interfluvium
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Norma

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

110—Spanaway gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2ndb6
Elevation: 330 to 1,310 feet
Mean annual precipitation: 35 to 65 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Spanaway and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Spanaway

Setting

Landform: Terraces, outwash plains

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Parent material: Volcanic ash over gravelly outwash

Typical profile

H1 - 0 to 15 inches: gravelly sandy loam

H2 - 15 to 20 inches: very gravelly loam

H3 - 20 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): 3s

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: A

Forage suitability group: Droughty Soils (G002XS401WA)

Other vegetative classification: Droughty Soils (G002XS401WA)

Hydric soil rating: No

References

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Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

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Attachment E

WDFW Priority Habitat and Species Management Recommendations



IMPORTANT MESSAGE

May 2016

In April 2014, the U.S. Fish and Wildlife Service (USFWS) listed four subspecies of Mazama pocket gophers in Thurston and Pierce Counties as *Threatened* under the federal Endangered Species Act (16 U.S.C. §1531 et seq.). Activities that may result in impacts to those subspecies should be discussed with the USFWS. For more information, please refer to the USFWS' Mazama pocket gopher website at <http://www.fws.gov/wafwo/articles.cfm?id=149489588>.



PRIORITY HABITATS AND SPECIES MANAGEMENT RECOMMENDATIONS:

MAZAMA POCKET GOPHER

The Washington Department of Fish and Wildlife (WDFW) is providing these management recommendations to inform local government permit reviewers, applicants, consultants, and landowners working on projects with potential impacts to Mazama pocket gopher, a state-listed threatened species. These recommendations are not regulatory, but are based on best available science for avoiding, minimizing, and mitigating impacts to gophers and their habitat, which is primarily located in South Puget Sound. WDFW recommends the following mitigation sequence for reviewing and conditioning proposed development projects with potential impacts to Mazama pocket gophers:

1. **Avoid direct impacts to occupied Mazama pocket gopher habitat.**
 - a. Determine the potential for gopher occupancy. A list of soil types known to be inhabited by Mazama pocket gopher in Mason, Pierce, Thurston and Lewis Counties is attached (Attachment 1). A generalized map of these soil types in Thurston and Pierce Counties is posted online, along with these management recommendations, at http://wdfw.wa.gov/conservation/phs/mgmt_recommendations/. WDFW also maintains information on gopher locations based on survey and research information, which is updated frequently. Applicants can request current data on known locations of Mazama pocket gopher from WDFW's Priority Habitats and Species program (http://wdfw.wa.gov/conservation/phs/maps_data/), or by calling 360-902-2543. WDFW also provides gopher location data directly to local jurisdictions.
 - b. Because mapped gopher data is incomplete, WDFW recommends that the local permit authority require a **Mazama pocket gopher mound survey** for all projects proposed on sites with soils listed in Attachment 1. We recommend that a qualified professional who has received training from WDFW in Mazama pocket gopher survey protocols conduct the mound survey between the months of June and October. Surveys conducted outside that time period may not be accurate as to the presence of gophers, and applicants should be encouraged to plan ahead for their projects in order to complete a survey between June and October. A list of consultants who have received the training is available online at http://wdfw.wa.gov/conservation/phs/mgmt_recommendations/. Information on identifying gopher mounds, including differences from mole mounds, can be found at <http://wdfw.wa.gov/living/gophers.html>.
 - c. If a survey shows occupied gopher habitat on a proposed project site, require the applicant to design/re-design the project to **avoid** impacts to the occupied area. WDFW defines occupied gopher habitat as Mazama pocket gopher mounds found wholly or partially within the boundaries of the parcel(s) to be developed, buffered by a 5.64-m radial buffer, and with overlapping radii dissolved. To account for the estimated location

of the burrow system (based on surface mounds) occupied by the pocket gopher and biological needs for dispersal and reproduction, the occupied area should be multiplied by a factor of three (3) this area is considered the habitat protection area¹. (Consultants trained in the survey protocol are familiar with these mapping criteria.) See Attachment 2. All development should be located outside the gopher habitat protection area or areas. The permit authority may want to include mounds located off site in the assessment of areas that will be directly impacted by infrastructure improvements required by the development (e.g., right-of-way improvements).

- d. If relocating the project completely outside of existing, occupied gopher habitat is *not* possible without impacting reasonable use of the property, go to Step 2- minimize impacts. A determination of reasonable use is at the discretion of the local permit authority, but it is assumed that legal definitions of reasonable use within the context of the property's zoning/land use designation will be followed. WDFW recommends that the full mitigation sequence described here, including a consideration of offsite mitigation opportunities, be employed before issuing a reasonable use exception.
- e. If a survey has been completed for a site, a record of this survey should be maintained by the local permit authority, even if the development project does not move forward and even if no pocket gophers were found on the site. Requiring the survey to be recorded is the best way to notify future landowners that occupied gopher habitat has been found on their site. We recommend that a new survey be required if more than one year has passed between an initial survey and the issuance of preliminary plat approval or site plan approval. If mitigation is not implemented at the preliminary approval stage of the project, a new survey should be required when 5 or more years pass between preliminary approval and beginning of earth-moving work. Depending on available resources, WDFW may provide comment on the survey to the local jurisdiction and/or may be available to work with a consultant who is new to the survey protocol to fulfill survey requirements. WDFW will add the survey results to our mapped gopher data if the permit authority or consultant provides the results as a GIS shapefile or hard copy map, along with basic information including parcel number, surveyor and landowner name, date of survey, and number of mounds found (if any). By receiving this data, WDFW will be able to provide it to future landowners and jurisdictions planning or reviewing projects on the same or adjacent sites. Data should be submitted to WDFW Biological Data Management, Gretchen.Blatz@dfw.wa.gov.

¹ Methodology to determine gopher habitat is based on best available science, including peer-reviewed literature and the best professional judgment of WDFW species experts. WDFW derived the 100 sq m habitat buffer depicted as a circle with a 5.64-m radius from data on home range. Witmer et al (1996) reported a mean home range of 108 sq m for males (range 73-143), and 97 sq m for females (range 47-151). Witmer reports that these figures are somewhat smaller than reported in the literature for other *Thomomys*, perhaps due to the limited duration of his study (Feb-April). Anderson and MacMahon (1981) reported that in the similar Northern pocket gopher, adults typically made only small shifts (10-15 m) in their home range over the course of the year. A multiplication factor (x3) accounts for uncertainty about the exact location of the burrow system relative to surface mounds as well as species reproduction and dispersal needs and buffering from development impacts, and is WDFW's recommendation based on the best professional judgment of our species and habitat experts. See Attachment 4 for literature citations and other resources.

- f. WDFW can assist landowners with projects that do not require local permits, but whose property is likely to contain Mazama pocket gopher habitat. The permit authority is encouraged to refer such landowners to WDFW for guidance and stewardship advice. Information on living with pocket gophers can also be found at <http://wdfw.wa.gov/living/gophers.html>. Malicious harm to state threatened species is prohibited².
2. If impacts to some active gopher mounds can't be avoided, minimize impacts to occupied Mazama pocket gopher habitat.
 - a. Designate as a habitat protection area onsite the area(s) that contains the highest gopher mound density, plus additional area(s) to make up for occupied habitat that will be destroyed by development. Maximizing width to length ratio such that large, contiguous patch(es) are provided and long, narrow corridors are avoided are most appropriate as habitat protection areas. Multiple habitat protection areas may be appropriate on some parcels or necessary to allow development. Corridors may be appropriate to maintain connectivity with adjacent sites that also have known gopher populations.
 - b. The total habitat protection area should include an area equivalent to the total occupied habitat area multiplied by three (3) (as calculated above). Attachment 2 shows a habitat protection area shaped to incorporate the concentrated population of gopher use onsite while also achieving the amount of buffer or protection area necessary to afford long-term benefits of habitat use. The habitat protection area should include habitat suitable for gophers. Restoration may be needed to achieve suitable habitat. See subsection (f), below.
 - c. Record the location of the habitat protection area on the face of the plat, short plat, or site plan. The habitat protection area may be designated as a separate tract.
 - d. Access to the habitat protection area should be restricted. Perimeter fencing should be installed if necessary to reduce human impacts and pet predation on gophers. Informational signage should be installed at the habitat protection area perimeter stating "Mazama pocket gopher habitat area: No entry" and explaining that the habitat protection area contains habitat sensitive to disturbance of a state-threatened species.
 - e. A habitat management plan (HMP) detailing the location and long-term management of the habitat protection area should be required as a condition of project approval, and recorded to run with the title. A recommended habitat management plan template is

² RCW 77.15.130 defines the unlawful taking of protected fish or wildlife as when a person hunts, fishes, possesses or maliciously kills protected fish and wildlife, or maliciously destroys the eggs or nests of protected fish or wildlife, and the taking has not been authorized by rule of the commission; or the person violates any rule of the commission regarding the taking, harming, harassment, possession or transport of protected fish and wildlife. Unlawful taking of protected fish or wildlife is a misdemeanor. WAC 232-12-297 classifies state threatened and sensitive species as subcategories of protected wildlife.

attached (Attachment 3). We request that the permit authority provide WDFW an opportunity to review the HMP by sending the Department a copy during the project review period (however, WDFW will not maintain HMP records and we may not have resources to provide timely comment on all submitted HMPs).

- f. The HMP should include invasive vegetation control and restoration. WDFW recommends removing all Scotch Broom (*Cytissus scoparius*) using above ground hand techniques (e.g. no significant movement of earth or large machinery). Twice annually, the habitat protection area should be mowed to control Scotch Broom and enhance herbaceous plant growth. (Information on Scotch Broom control may be found at <http://w.southsoundprairies.org/scotchbroom.htm>. Restoration of native plants should occur following invasive/Scotch Broom removal. A planting plan should incorporate herbaceous species and minimizes the number of trees proposed for planting in the tree tracts. Examples of beneficial herbaceous plants include legumes, broadleaf forbs, and grasses such as broadleaf lupine (*Lupinus latifolius*), clover (*Trifolium* sp.) nodding onion (*Allium cernuum*) common yarrow (*Achillea millefolium*), field chickweed (*Cerastium arvense*) showy fleabane (*Erigeron speciosus*) coast strawberry (*Fragaria chiloensis*) and blue wildrye (*Elymus glaucus*). Possible deciduous trees to plant include Oregon white oak (*Quercus garryana*), big leaf maple (*Acer macrophyllum*) or dogwood (*Cornus* sp).
 - g. Avoid using herbicides and pesticides in the habitat protection area(s).
 - h. WDFW encourages the permit authority to require the applicant to submit annual compliance reports to the local jurisdiction for a period of three to five years after the HMP is approved. Such reports should provide basic information on how the conditions of the HMP are being implemented. WDFW recognizes that the ability to track compliance information is dependent on available local resources.
3. **Mitigate unavoidable impacts to Mazama pocket gopher active mounds.**
- a. Only if the avoidance or minimization of impacts through an onsite habitat protection area is not possible, as determined by the permit authority, then offsite mitigation *or* a combination of onsite and offsite mitigation may be used. A *combination* of onsite and offsite mitigation is preferred where there is the potential to retain some onsite habitat protection, even if that habitat protection is less than the amount recommended here.
 - b. The offsite mitigation ratio should be calculated at the rate of three acres of suitable gopher habitat permanently protected for every one acre of occupied gopher habitat (as defined above) that is destroyed. Permanent protection may come in the form of a permanent conservation easement implemented by another property owner with gopher habitat. The offsite habitat protection area should be one contiguous patch in single ownership, and use of the site for permanent habitat mitigation should be an allowable use by the local land use permitting authority. The site should contain suitably drained prairie soils of a type and quality equivalent to the gopher habitat on the development site, and be free of impervious surfaces or structures within the habitat protection area. WDFW biologists may be available to review off site proposals for suitability as gopher habitat.

- c. A habitat management plan as described in Step 2, above, should be implemented for the mitigation site. The HMP should also specify that the site is being used as off site mitigation for a development site, and may not be used as mitigation for other development activities.

WDFW Key Contacts:

Area Habitat Biologists

HMP review, general project assistance

Thurston County: Tel. 360-902-2579

E-mail Amy.Iverson@dfw.wa.gov

Pierce County: Tel. 360-895-3965

E-mail Gina.Piazza@dfw.wa.gov

Mason County: Tel. 360-249-4628 x 249

E-mail Gloria.Rogers@dfw.wa.gov

Lewis County: Tel. 360-785-0472

E-mail Scott.Brummer@dfw.wa.gov

District Wildlife Biologist

Consultant training for surveys

Tel. 253-813-8906

E-mail Michelle.Tirhi@dfw.wa.gov

PHS Data

For applicant data requests

Tel. 360-902-2543

E-mail phsproducts@dfw.wa.gov

http://wdfw.wa.gov/conservation/phs/maps_data/

Biological Data Management

To submit gopher survey results

Tel. 360-902-2484

E-mail Gretchen.Blatz@dfw.wa.gov

Attachments

1. Soils list
2. Mazama pocket habitat protection example
3. Habitat Management Plan template
4. Resource list
5. March 2011 amendments

Attachment 1

Soil types where Mazama pocket gophers are most commonly found

Cagey loamy sand
Everett very gravelly sandy loam, 0-3%
Everett very gravelly sandy loam, 3-15%
Indianola loamy sand, 0-3%
Indianola loamy sand, 3-15%
Nisqually loamy fine sand, 0-3%
Nisqually loamy fine sand, 3-15%
Spana gravelly loam
Spanaway gravelly sandy loam, 0-3%
Spanaway gravelly sandy loam, 3-15%
Spanaway stony sandy loam, 0-3%
Spanaway stony sandy loam, 3-15%
Spanaway-Nisqually complex

Go online to http://wdfw.wa.gov/conservation/phs/mgmt_recommendations/ to see a generalized map of soils associated with pocket gopher habitat in Thurston and Pierce Counties. Local records may be more accurate.

Attachment 2

SAMPLE MAZAMA POCKET GOPHER SET-ASIDE DESIGN, BASED ON SURVEY RESULTS



Attachment 3

HABITAT MANAGEMENT PLAN TEMPLATE: MAZAMA POCKET GOPHER

WDFW Mazama pocket gopher management recommendations can be found online at http://wdfw.wa.gov/conservation/phs/mgmt_recommendations/.

Applicant

NAME AND ADDRESS

Subject Property

PARCEL NUMBER, ADDRESS, JURISDICTION

EXISTING CONDITIONS

1. Parcel size, location, and current use including any improvements.
2. Mazama pocket gopher status and use of subject property. If other wildlife species of concern are also found on or near the property, their status and use should also be described. A single HMP can be used to cover multi-species and habitat management issues.

PROPOSED ACTIVITY

Describe the proposed activity including a discussion of proposed structures, roads, right-of-ways and their location on the subject parcel. Include a timeline for proposal activities and whether or not this proposal is part of a long-term plan for continued development of the property.

HABITAT MANAGEMENT PLAN CONDITIONS

ON-SITE

1. Describe habitat preservation actions that will be taken on site. Include size and shape of any preserved area (set-aside) and how this area relates to the existing pocket gopher mound distribution on the parcel.
2. Describe actions that will be taken to maintain and enhance the habitat preservation area on the parcel. This may include but is not limited to; mowing, invasive species control, reestablishment of native plant species associated with gopher habitat.
3. Describe protection and education actions that will be taken on the preservation site and the property as a whole. This may include fencing, educational signs, etc.

OFF-SITE

1. Describe any mitigation actions that will be taken on parcels other than the parcel where the project is proposed.
2. Include a description of the parcel(s) their location(s).

3. Discuss how these parcels will be acquired and how managed as was done for the ON-SITE parcel.

DURATION OF PLAN and MODIFICATIONS

1. Describe how long the plan will be enforced, how often the plan will be reviewed, and what conditions lead to this review.
2. Describe how the plan will be funded and who or what organization(s) will be responsible for ensuring the plan is carried out and the site maintained.
3. Describe how responsibility for maintaining this plan will be transferred if ownership changes.
4. Describe how the plan will be reviewed and modified should land use on the parcel is proposed to change. This could include changes in how other natural resources on the parcel are managed in addition to additional or change in development.
5. Describe who will notify the local jurisdiction of any new proposed land use activities.

COMPLIANCE

Failure to comply with this Plan is a violation of [JURISDICTION] codes and may be subject to civil or criminal penalty.

 Landowner or Agent Signature (Date)

 Landowner or Agent Names (Print)

 Address

 City, State, Zip

 [JURISDICTION] Representative (Date)

For review and comment purposes, a copy of this plan may be sent to:
 WDFW- Habitat Program
 Attention: Region 6 Area Habitat Biologist
 600 Capitol Way North
 Olympia, WA 98501-1091

Attachment 4

Resources for further information about Mazama pocket gopher species and habitat

Andersen, D.C. and J.A. MacMahon. 1981. Population dynamics and bioenergetics of a fossorial herbivore, *Thomomys talpoides* (Rodentia: Geomyidae), in a spruce-fir sere. *Ecological Monographs* 51:179-202.

Campbell, B. 2004. Restoring Rare Native Habitats in the Willamette Valley. A Landowner's Guide to Restoring Oak Woodlands, Wetlands, Prairies and Bottomland Hardwood and Riparian Forests. See Chapter 5. <http://www.southsoundprairies.org/documents/Landownerguide.pdf>

Stinson, D. W. 2005. Washington State Status Report for the Mazama Pocket Gopher, Streaked Horned Lark, and Taylor's Checkerspot. Washington Department of Fish and Wildlife, Olympia. 129+ xii pp. <http://wdfw.wa.gov/publications/pub.php?id=00390>

WDFW Living with Wildlife Series: Pocket Gophers <http://wdfw.wa.gov/living/gophers.html>

Witmer, G. W., R. D. Sayler, and M. J. Pipas. 1996. Biology and habitat use of the Mazama pocket gopher (*Thomomys mazama*) in the Puget Sound area, Washington. *Northwest Science* 70:93-98.

Attachment 5

Amendments to Mazama Pocket Gopher Habitat Management Recommendations

In March 2011, the Washington Department of Fish and Wildlife revised the July 2009 Mazama Pocket Gopher Habitat Management Recommendations as follows:

1. Section 1c was amended to correct the radial buffer used to depict the 100 sq m gopher mound. The correct radial buffer distance is 5.64 m. The map in Attachment 2 was also replaced to reflect the change.
2. The term “active” was removed to describe gopher mounds from section 1c. Gopher mound activity varies throughout the year and therefore an inactive mound in one season may be occupied in another.
3. Section 2 was amended to replace the term “set-aside” with “habitat protection area.” The habitat protection area is not a true set-aside because it may have other uses consistent with gopher occupancy.
4. Internet links and contact information were updated throughout.