DRAFT Thurston County Habitat Conservation Plan

UPDATED DECEMBER 31, 2019
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We wish to thank the Thurston County Planning Commission and Board of County Commissioners for supporting staff through the development process.

Finally, development of this plan wouldn’t have been possible without the funding provided by U.S. Fish and Wildlife Service Section 6 Habitat Conservation Planning Assistance grants in cooperation with Washington Department of Fish and Wildlife.
List of Acronyms

The following is a list of acronyms used in the Thurston County Habitat Conservation Plan.

BMP – Best Management Practice
BOCC – Board of County Commissioners (Thurston County)
CEPD - Community Planning and Economic Development Department
CFR – Code of Federal Regulations
DOD – Department of Defense
EA – Environmental Assessment
ECY – Department of Ecology, Washington
EIS – Environmental Impact Statement
EPA – Environmental Protection Agency
ESA – Endangered Species Act
GIS – Geographic Information System
GMA – Growth Management Act
HCP – Habitat Conservation Plan
HPA – Hydraulic Project Approval
ITP – Incidental Take Permit
JBLM - Joint Base Lewis-McChord
MBTA – Migratory Bird Treaty Act
MED – Monitoring, Enforcement and Defense
MPG – Mazama Pocket Gopher
NEPA – National Environmental Policy Act
NLCD – National Land Cover Dataset
OPG – Olympia Pocket Gopher (one of three listed subspecies of Mazama Pocket Gopher in Thurston County)
OSF – Oregon Spotted Frog
OVS – Oregon Vesper Sparrow
PHAM – Prairie Habitat Assessment Methodology
ROW – Right-of-Way
RCW – Revised Code of Washington
RPA – Reserve Priority Area
SEPA – State Environmental Policy Act
SHL – Streaked horned lark
SMA – Special Management Areas
SMP - Shoreline Master Program
TCB – Taylor’s Checkerspot Butterfly
TPG – Tenino Pocket Gopher (one of three listed subspecies of Mazama Pocket Gopher in Thurston County)
TRPC – Thurston Regional Planning Council
UGA – Urban Growth Area
USC – United States Code
USFWS – United States Fish and Wildlife Service or U.S. Fish and Wildlife Service
WAC – Washington Administrative Code
WDFW – Washington Department of Fish and Wildlife
WDNR – Washington Department of Natural Resources
WSDOT – Washington Department of Transportation
WSMA – Washington Shoreline Management Act
YPG – Yelm Pocket Gopher (one of three listed subspecies of Mazama Pocket Gopher in Thurston County)
Chapter 1  Introduction and Background

Thurston County is located in western Washington, south of the major metropolitan areas of Seattle and Tacoma (Figure 1.1). The County population has increased substantially in the last 50 years (from 64,400 residents in 1965 to 267,400 residents in 2015), amongst the fastest growth rates in the nation (Thurston Regional Planning Council; TRPC 2012b). The population is expected to climb to 3,838,500 by 2045 (TRPC 2017). Population growth supports an important economy, which is projected to grow 71,200 jobs from 128,500 in 2010 to nearly 200,000 in 2045 (TRPC 2017), which will entail new commercial and industrial development. Thurston County is projected to add 62,000 new homes to support those people and businesses by 2045 (TRPC 2017). Thurston County is a great place to live, work, and play. People value the County’s rural character, its farms, its cities and its open spaces. The county has several programs that encourage property owners to maintain lands in open space, protect habitat on agricultural lands, as well as fund conservation projects over the years that preserve habitat throughout the County. This is in addition to other lands within Thurston County that have been conserved by other entities over time, including but not limited to Washington Department of Fish and Wildlife (WDFW), United States Fish and Wildlife Service (USFWS), Natural Resources Conservation Service (NRCS), Washington State Department of Natural Resources (WA DNR), and land trusts. These strategies have contributed over 60,000 acres toward conservation of fish and wildlife habitat.

Although Thurston County’s growth has brought many benefits to the area, it has also fragmented the natural mosaic of wetland and riparian habitat, prairies, oak savannas, woodlands, and conifer forests. As people built homes and businesses, and communities built schools, water and sewer lines, and roads, prairie habitat that once covered more than 180,380 acres (ac) (73,000 hectares (ha)) before Euro-American settlement declined to less than 17,300 ac (7,000 ha) (Crawford and Hall 1997). Those declines in prairie habitat occurred commensurate with reductions in associated oak and wetland/riparian habitats.

As the quantity of prairie habitat has declined, the quality of remaining prairie habitat has also decreased. Of the remaining prairie habitat in western Washington, estimates suggest that only 2-3% of prairies are dominated by native prairie species (Dunwiddie and Bakker 2011). Part of this decline in prairie habitat quality is due to the cessation of regular burning of prairie ecosystems and encroachment from nonnative invasive plant species, but development has also played a significant role (Crawford and Hall 1997). Invasive species (e.g., reed canary grass, *Phalaris arundinacea*) have also impacted wetland and riparian habitat quality and function, and have altered hydrology across the landscape of Thurston County.

Multiple prairie dependent species have declined to the extent that they have been listed as threatened or endangered under the Endangered Species Act of 1973, as amended (16 USC 1531 et seq., ESA). Others are identified as endangered, threatened, or sensitive by WDFW. Many species persist on a limited number of protected natural areas managed by state and federal resource agencies or conservation organizations (e.g., Capital Land Trust, the Center for Natural Lands Management), which
may not be sufficient to support functioning and sustainable populations of these species into the future.

Figure 1.1 Location of Thurston County in Washington, USA.

The ESA makes it illegal to negatively impact listed animal species (known as “take”) without an incidental take permit (ITP). Negative impacts result from activities that cause death, harm, or harassment to such an extent the impacted species are unable to breed, feed, or seek shelter. Significant impacts to the species’ habitat can also result in violation of the ESA.

The County is proactively addressing the need comply with the ESA on behalf of its citizens, and anticipates another 30 years of growth in the County. That growth will have unavoidable impacts for prairie and wetland/riparian habitat and the species dependent on them. The County has developed this Plan describing efforts to proactively provide a Conservation Program that will benefit its citizens by providing long-term economic and ecological benefits. This Habitat Conservation Plan (HCP) was developed as a component of an application to the USFWS for an ITP for activities conducted and/or approved by Thurston County. The ITP will limit liability under the ESA, provide long-term regulatory certainty for the County and landowners, and increase predictability and local control, while also
providing for the establishment of a network of open space and habitat lands intended to conserve functioning healthy native ecosystems and their associated inhabitants into perpetuity.

### 1.1 HCP Vision, Goals, Purpose, and Need

This HCP is designed to provide predictability for the next 30 years of development in Thurston County, through conservation measures that contribute to the conservation of rare, threatened and endangered species. These conservation measures will promote avoidance and minimization impacts, and establish and manage a system of Conservation Lands that will assist in the recovery of these species to such an extent that federal or state listing status is no longer necessary. These actions are necessary for issuance of an incidental take permit from the USFWS. The HCP aims for a balance—providing for the viability of rare species and thriving economies and communities that make Thurston County a great place to live.

The overarching goals\(^1\) of this HCP are to:

- Achieve compliance with ESA protections and regulations to provide long-term certainty for growth and economic development in Thurston County;
- Protect, enhance and maintain a network of new conservation reserves to support listed and rare species; and
- Protect and maintain working lands reserves that retain value as habitat for listed and rare species while also supporting agriculture and the County’s rural character.

The purpose of this HCP is to fulfill the requirements necessary to obtain an ITP. The HCP also establishes and describes the Conservation Program. Thurston County commits to implement for the protection and enhancement of rare species habitat, and to offset any impacts to species (called *incidental take*\(^2\)) resulting from the activities covered by the HCP (called *Covered Activities*, see Chapter 3: Proposed Action). Implementation of the HCP will benefit from partnerships among the County, its local citizens, local entities, and USFWS.

Thurston County developed this HCP as part of an application for an ITP that will provide for a limited amount of impacts to the Covered Species, if the following criteria are satisfied: (i) the taking will be incidental; (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; (iii) the applicant will ensure that adequate funding for the plan will be provided; (iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and (v) the measures, if any, required under subparagraph (A)(iv) will be met (ESA, Section 10(a)(1)(B)).

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\(^1\) The specific Biological Goals and objectives of this HCP, per USFWS 5 Point Policy, are included in Chapter 5: Conservation Program.

\(^2\) Defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species. Harm may include significant habitat modification where it actually kills or injures a listed species through impairment of essential behavior (e.g., nesting or reproduction).
The County is voluntarily seeking an ITP from USFWS to cover activities it takes, permits, or funds which have the potential to incidentally impact listed species (for more information on coverage and limitations of coverage, see Chapter 3: Proposed Action and Section 4: Analysis of Impacts Likely to Result from the Taking). The County is not required to obtain an ITP but must comply with the ESA. Participation in the County’s HCP is also voluntary. County permittees, departments, and partners may choose to pursue consultation directly with the USFWS and development of an HCP as part of their own, independent application for an ITP. The County HCP is intended to provide predictability to applicants by establishing more certain development timelines and requirements.

Thurston County will implement the Conservation Program spelled out in this HCP upon issuance of the requested ITP. The HCP identifies how the County intends to avoid, or minimize and mitigate to the maximum extent practicable, impacts to the Covered Species from the Covered Activities identified in the ITP.

The County’s HCP proposes to cover five species/subspecies listed as threatened or endangered under the ESA and one unlisted species considered rare and sensitive by the State of Washington (see Table 1.1 and Section 1.2.2). By including listed species and currently unlisted but sensitive species in the HCP, the County is taking proactive steps to provide 30 years of development certainty and conservation action at a programmatic and landscape scale. In the event that the currently unlisted but sensitive species does become listed, incidental take coverage for that species will already be available through the County’s ITP. The Conservation Program of this HCP may also decrease the likelihood of this species ever being listed.

1.2 Proposed Action

1.2.1 Geographic Scope- HCP Plan and Permit Area

The HCP plan area includes the entirety of Thurston County, and includes all areas that may be influenced by HCP implementation regardless of ownership, political boundaries, or whether impacts to the Covered Species are likely to occur. The plan area also includes sites where mitigation may occur, downstream or down-slope areas where erosion or sedimentation effects could result from Covered Activities, or where benefits resulting from HCP implementation are expected.

The permit area for this HCP includes lands over which Thurston County has permitting authority and where the Covered Activities and resulting take will occur—approximately 412,228 ac (166,823 ha) (Figure 1.2). Thurston County has no jurisdiction over the activities covered under the requested ITP and described in this HCP within the limits of incorporated cities, on tribal lands, or on lands under federal control including national wildlife refuges, national forests, or under the control of the Department of Defense (such as Joint Base Lewis-McChord (JBLM)) where such lands may fall within the boundaries of the County. Federal wildlife refuges, national forests, and the DOD and JBLM consult directly with USFWS for actions under their control which may affect listed species or their habitats in accordance with their obligations under Section 7 of the ESA.
Figure 1.2 Thurston County HCP Permit Area.
1.2.2 Species to be Covered by the Permit

Thurston County proposes coverage for a total of 6 species/subspecies (hereafter ‘Covered Species’; Table 1.1) that rely on prairie habitats throughout the County or on wetland/riparian habitat in the Black River watershed. These species include three mammal subspecies, one bird species, one amphibian, and one butterfly.

Table 1.1 Covered species of the Thurston County HCP.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status Federal</th>
<th>Status State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olympia Pocket Gopher</td>
<td>Thomomys mazama spp. pugetensis</td>
<td>Threatened</td>
<td>Threatened</td>
</tr>
<tr>
<td>Tenino Pocket Gopher</td>
<td>Thomomys mazama spp. tumuli</td>
<td>Threatened</td>
<td>Threatened</td>
</tr>
<tr>
<td>Yelm Pocket Gopher</td>
<td>Thomomys mazama spp. yelmensis</td>
<td>Threatened</td>
<td>Threatened</td>
</tr>
<tr>
<td>Taylor’s Checkerspot Butterfly</td>
<td>Euphydryas editha taylori</td>
<td>Endangered</td>
<td>Endangered</td>
</tr>
<tr>
<td>Oregon Vesper Sparrow</td>
<td>Poecetes gramineus</td>
<td>n/a</td>
<td>Candidate</td>
</tr>
<tr>
<td>Oregon Spotted Frog</td>
<td>Rana pretiosa</td>
<td>Threatened</td>
<td>Endangered</td>
</tr>
</tbody>
</table>

1.2.3 Conservation Lands System

Thurston County has developed a Conservation Program to offset the impacts to the Covered Species by the Covered Activities of the HCP. Central to the Conservation Program are mitigation measures to build the Thurston County Conservation Lands System (Conservation Lands System), expanding on the existing network of protected lands managed for Covered Species and their habitats. The Conservation Lands System identifies the priority places, tools, and processes to protect the habitats important to the Covered Species.

1.2.4 Reducing Disincentives for Conservation on Private Lands

Habitat loss is the primary threat to at-risk prairie species in Thurston County and, with the majority of remaining prairie habitat in Thurston County occurring on private lands, encouraging habitat conservation by private landowners is vital to protecting at-risk prairie species. Due to federal Endangered Species Act restrictions on certain activities occurring in areas with listed animal species, some private landowners may decline to manage their properties to promote prairie habitat and Covered Species, or may oppose restoration out of fear for future land use restrictions on their property. Such concerns could limit the potential for persistence and recovery of Covered Species in the region. One of the Conservation Measures of this HCP is to implement outreach to alleviate fears of regulation by clearly explaining the regulations that may impact landowners, increasing community appreciation of
prairie habitats, enhancing positive community engagement, and demonstrating the success of voluntary actions and programs to promote prairie conservation. The County hopes to involve more landowners in prairie conservation through efforts in order to reduce regulatory disincentives from managing for prairie habitats on private lands. This will be achieved through programs such as the County’s Voluntary Stewardship, Noxious Weeds, Open Space, Transfer/Purchase of Development Rights Programs, and other local, state and federal incentive programs.

This HCP identifies the permanent impacts resulting from activities under Thurston County’s regulatory oversight (e.g., residential development) that will occur on private lands in the habitat for the HCP Covered Species and sets forth the mitigation requirements to be fulfilled for these impacts. However, many activities that may impact Covered Species habitat are outside the County’s regulatory oversight. Some of these activities may have short term impacts to the species, yet may result in long term positive effects for the species and their habitat. This HCP strives to reduce the regulatory disincentives for landowners to conduct activities which will help maintain disturbance-dependent prairie habitats. Mechanisms to achieve this reduction, both inside and outside the current known distribution of these species, are described below.

**Activities Inside Currently Known Covered Species Habitats**

The USFWS has identified a suite of habitat and property management activities that are outside Thurston County’s regulatory oversight, and have the potential for short term or negligible impacts but long term benefit to prairie habitat. Neither Thurston County nor USFWS intends to regulate these activities with regard the Covered Species. Such activities include:

- mowing a field, pasture, or vineyard row middle or margin that has been regularly mowed up to the time of HCP enactment;
- grazing the same type of livestock at a similar timing and intensity as has occurred in the same area in the past;
- spot-spraying or manual removal of noxious weeds;
- planting native prairie species; and
- installing, maintaining or replacing a fence that existed prior to HCP enactment.

Many of these activities would aid in maintaining prairie habitats and thereby benefit the Covered Species. If a landowner wishes, they may receive assistance and guidance in completing these activities by enrolling in an existing program that assists private landowners interested in conservation on their lands. These programs, including the USFWS Partners for Fish and Wildlife program and the Safe Harbor Agreement with Assurances, are described in Chapter 6: Conservation Program. While enrollment in such programs is strictly voluntary, the monitoring and assessment that occurs through these programs would contribute information about prairie management, benefit prairie conservation, and demonstrate the success of voluntary actions.

**Activities Outside Currently Known Covered Species Habitats**
Habitat restoration (including species introductions) in areas where Covered Species are currently absent are conservation measures that this HCP promotes and facilitates. Successful restoration will result in the establishment of a population of a Covered Species at a new site, for example Taylor’s Checkerspot or Oregon Vesper Sparrow. If this new population is successful, individuals could disperse from the restoration site onto adjacent properties (within Thurston County and outside the currently mapped extent for these species; see Chapter 2). Where these adjacent properties are currently unoccupied by Covered Species, such dispersal could put the landowners at risk of regulation under the Endangered Species Act. This may create a disincentive for public and private land owners and managers to conduct habitat restoration out of concern for their neighbors. In addition, neighbors may decline to manage their properties to promote Covered Species or may oppose restoration out of fear for their property rights. Taken together, these concerns could severely limit the potential for recovery of Covered Species in the region.

Thurston County seeks to follow the precedent set by two counties in Oregon, Benton and Yamhill, which have worked closely with the USFWS to address these concerns expressed by the public through a integrating a Good Neighbor Principle into their regional (county-wide) HCPs. Under this principle, private landowners whose properties outside the mapped extent for endangered species are colonized by endangered species as a result of habitat restoration or species introductions are held harmless for take resulting from their actions on their property during the HCP permit term. Neighboring land owners of public properties will be notified of restoration/introduction activities by the public landowner. If neighboring landowners intend to subsequently change their property management in a manner that results in decline of habitat for the Covered Species, they will be encouraged, but not required, to notify and work with USFWS to transplant or capture and move individuals or habitat elements from the property to a secure location.

This principle applies only to Covered Species outside of their mapped habitat areas (see Chapter 2), which is the area in which the species has the potential to occur given its current distribution in the wild.

### 1.2.5 Term of Incidental Take Permit

Thurston County is seeking a 30-year incidental take permit.

### 1.3 Plan Development

Thurston County began developing the proposed Conservation Program in 2010 and obtained funding through a HCP Assistance grant under the Cooperative Endangered Species Conservation Fund administered by WDFW with funds from USFWS. A broad overview of the major steps in the HCP plan development process is illustrated in Figure 1.3.
Figure 1.3 Steps in the HCP planning, development, and review process.
The Thurston Board of County Commissioners\textsuperscript{3} designated the Thurston County Community Planning and Economic Development Department to lead the HCP development process. The County relied on (or incorporated) input from technical advisors, consultants, stakeholders, and interested members of the public to identify covered lands, activities, and quantification tools of the HCP. Thurston County worked closely with the Thurston Regional Planning Council (TRPC) and multiple Thurston County departments to ensure that the final product would address the County’s forecasted population growth, development, and land use needs within the requested term of the ITP.

The County and consultants also worked with USFWS and WDFW to provide technical assistance and advice.

1.3.1 Public Outreach

Thurston County provided public outreach opportunities through workshops and presentations throughout the development of the HCP. Such opportunities are listed in Appendix A: HCP Outreach Summary.

1.3.2 Public Meetings

Public meetings were held to encourage public comment during the HCP development process. Meetings held are listed in Appendix A: HCP Outreach Summary.

1.4 Regulatory Framework

The HCP is designed primarily to comply with the ESA as described below. The HCP is consistent with all other federal and state wildlife and related laws and regulations.

1.4.1 Federal Laws

\textit{Endangered Species Act}

The U.S. Congress enacted the ESA to protect plants and animals in danger of, or threatened with, extinction. The U.S. Fish and Wildlife Service (USFWS) is responsible for implementing the ESA for those species under its jurisdiction. The ESA and its implementing regulations in Title 50 of the Code of Federal Regulations (CFR) Section 17 prohibit the take of any fish or wildlife species that is federally listed as threatened or endangered without prior approval pursuant to either Section 7 or Section 10 of the ESA. Section 3 of the ESA defines “take” as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in any such conduct” (16 United States Code [USC] § 1532 (19)). The term “harm” is defined to include any act “which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering” (50 C.F.R. § 17.3). The term “harass” is defined as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal

\textsuperscript{3} The Board of County Commissioners is the County’s legislative authority and is made up of three commissioners elected to four-year terms. The Board is expected to formally adopt the HCP and incorporate its components into the County’s Comprehensive Plan, local ordinances, and processes.
behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering” (50 C.F.R. § 17.3).

Section 7(a)(2) of the ESA requires each Federal agency to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat (16 USC § 1536 (a)(2)). If the actions of a Federal agency are not likely to jeopardize the continued existence of any endangered or threatened species, but could adversely affect the species or result in a take, the action must be addressed under Section 7 of the ESA (16 USC § 1536 (a)(2)).

Section 9 of the ESA prohibits the “take” of threatened and endangered species, including the attempt or action to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect” such species (16 U.S.C. § 1532).

Section 10 of the ESA allows non-Federal applicants, under certain terms and conditions, to incidentally take ESA-listed species that would otherwise be prohibited under Section 9 of the ESA. When a non-Federal landowner or other non-Federal entity wishes to proceed with an activity that is legal in all other respects, but that may result in the incidental taking of a listed species, an incidental take permit, as defined under Section 10 of the ESA, is required. Incidental take is defined as take that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity” (50 CFR § 17.3). Under Section 10 of the ESA, an HCP that meets USFWS statutory and regulatory requirements is required to accompany an application for an incidental take permit to demonstrate that all reasonable and prudent efforts have been made to avoid, minimize, and mitigate for the effects of the potential incidental take.

The USFWS is required to respond to all applicants seeking permits, which would allow incidental take of listed species if approved. It is necessary for the USFWS to assure that the HCP comply with the incidental take provisions of the ESA [50 CFR 17.22 (b) and 17.32(b)] prior to issuance of a take permit for federally listed threatened or endangered fish and wildlife species.


- The impact that will likely result from the taking;
- Steps the Applicants will take to minimize and mitigate such impacts; the funding available to implement such steps; and the procedures to be used to deal with unforeseen circumstances;
- Alternative actions to such taking considered by the Applicants and the reasons why such alternatives are not proposed to be used; and
- Other measures that may be required as necessary or appropriate for the purposes of the plan.

To issue an incidental take permit, the USFWS must find that [ESA § 10(a)(2)(B)]:

- The taking will be incidental;
• The Applicants will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
• The Applicants will ensure that adequate funding will be provided;
• The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild; and
• The Applicants will ensure that other measures as may be required by USFWS as necessary or appropriate for the purposes of the HCP will be implemented.

The HCP Handbook Addendum (USFWS and National Marine Fisheries Service [NMFS] 2000), referred to as the "5-point policy," provides additional guidance and recommendations for the development of HCPs (65 FR 250-256). The five points are as follows:

1. Defined conservation goals and objectives;
2. An adaptive management strategy;
3. Compliance and effectiveness monitoring;
4. An established permit duration; and
5. Opportunities for public participation.

The Thurston County HCP addresses each of these five points.

National Environmental Policy Act
The National Environmental Policy Act (NEPA) (42 U.S.C. §4321 et seq.) requires that federal agencies analyze and publicly disclose the social, economic and environmental effects associated with major federal actions (§4332). This analysis can take the form of an Environmental Assessment (EA) and/or Environmental Impact Statement (EIS). The issuance of an ITP is a federal action subject to NEPA compliance. Before it can decide whether to approve an ITP under Section 10(a)(1)(B), the USFWS will prepare and distribute an EA or EIS that addresses the direct, indirect, and cumulative effects of the incidental take authorized by permit issuance, and the direct, indirect, and cumulative effects associated with the implementation of mitigation and minimization measures described in the HCP.

National Historic Preservation Act
Section 106 of the National Historic Preservation Act of 1966, as amended (16 USC § 40 et seq.), requires Federal agencies to take into account the effects of their proposed actions on properties eligible for inclusion in the National Register of Historic Places. “Properties” are defined as “cultural resources,” which includes prehistoric and historic sites, buildings, and structures that are listed or eligible for listing in the National Register of Historic Places. An undertaking is defined as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency; including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a Federal agency. The issuance of an ITP is an undertaking subject to compliance with Section 106 of the National Historic Preservation Act.
**Clean Water Act**

The Clean Water Act protects the physical, chemical, and biological integrity of the nation’s waters, including lakes, rivers, wetlands, and coastal waters. Programs conducted under the Clean Water Act are directed at both point source pollution (e.g., waste discharged from outfalls and filling of waters) and nonpoint source pollution (e.g., runoff from parking lots). Under the Clean Water Act, the U.S. Environmental Protection Agency (EPA) and Washington Department of Ecology set effluent limitations and issue permits under Clean Water Act Section 402 governing point-source discharges of wastes to waters. The U.S. Army Corps of Engineers (Corps), applying its regulations under EPA guidelines and oversight, issues permits under Clean Water Act Section 404 governing under what circumstances dredged or fill material may be discharged to waters. These Section 402 and 404 permits are the primary regulatory tools of the Clean Water Act.

Under Clean Water Act Section 401, Washington Department of Ecology (ECY) has the authority to certify federal permits for discharges to waters under state jurisdiction. Washington ECY may review proposed federal permits (e.g., Section 404 permits) for compliance with state water quality standards. The permit cannot be issued if the state denies certification. Compliance with the conditions on Covered Activities described in this Plan are consistent with the requirements of the Clean Water Act.

**Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA) prohibits taking, killing, or possessing migratory birds or any parts, nests, or eggs of such birds (16 U.S. Government Code [USC] 703). Take under the MBTA includes only the death or injury of individuals of a migratory bird species or their eggs, and guidance is provided in Appendix 5 in the HCP Handbook (USFWS and National Marine Fisheries Service 1996). According to these guidelines, an incidental take permit can function as a Special Purpose Permit under the MBTA (50 CFR 21.27) for the take of all ESA-listed Covered Species in the amount and/or number and subject to the terms and conditions specified in an HCP. Any such take will not be in violation of the MBTA (16 USC 703-12). The streaked horned lark and Oregon Vesper Sparrow are protected by the MBTA.

The HCP’s incidental take permit will automatically function as a Special Purpose Permit under the MBTA, as specified under 50 CFR Sec. 21.27. Should any other of the covered birds become listed under ESA during the permit term, the ESA permit would also constitute a Special Purpose Permit under the MBTA for that species as specified under 50 CFR 21.27. The implementation of the Conservation Program and subsequent enhancement and management will also be a significant “benefit to the migratory bird resource” as required by the Special Purpose Permit. Compliance with the conditions on Covered Activities described in this Plan are consistent with the requirements of the MBTA for the covered migratory birds.

The creation of the Conservation Lands System and subsequent enhancement and management will also be a significant “benefit to the migratory bird resource” as required by the Special Purpose Permit. Compliance with the conditions on Covered Activities described in this Plan are consistent with the requirements of the MBTA for the covered migratory birds.
1.4.2 State and Local Laws

**Washington State Listing Regulations**

Fish, wildlife, and shellfish in Washington State are managed by WDFW, which operates under Title 77 of the Revised Code of Washington and Chapter 232 of the Washington Administrative Code. The department is charged with conserving wildlife and food fish, game fish, and shellfish resources. The Fish and Wildlife Commission, made up of nine members appointed by the Governor and confirmed by the Senate, sets policy and direction for WDFW and has authorized the taking of wildlife resources in manners and quantity that will not impair the supply of these resources (Chapter 77.04 RCW). The Director of the Department may also recommend species to be protected from hunting, and may also determine that a species is threatened with extinction in the state of Washington and request that the Commission designate the species as endangered (Chapter 77.12 RCW).

State endangered species are listed in WAC 232-12-014. Classification of wildlife as endangered, threatened, or sensitive is addressed in WAC 232-12-297. The intent of this rule is to ensure survival of these species as free-ranging populations in Washington and to define the process by which listing, management, recovery, and delisting is implemented (WAC 232-12-297). WDFW writes recovery plans for species listed as endangered or threatened.

**Washington State Growth Management Act**

The Washington State Growth Management Act (GMA) was adopted by the state Legislature in 1990. In the findings of the GMA, it is stated:

“The legislature finds that uncoordinated and unplanned growth, together with a lack of common goals expressing the public's interest in the conservation and the wise use of our lands, pose a threat to the environment, sustainable economic development, and the health, safety, and high quality of life enjoyed by residents of this state. It is in the public interest that citizens, communities, local governments, and the private sector cooperate and coordinate with one another in comprehensive land use planning. Further, the legislature finds that it is in the public interest that economic development programs be shared with communities experiencing insufficient economic growth.” (RCW 36.70A.010)

The Act outlines fourteen goals that must be balanced during development of state-mandated comprehensive plans and development regulations. The goals are not prioritized. Of particular relevance to the HCP are the following goals:

“(8) Natural resource industries. Maintain and enhance natural resource-based industries, including productive timber, agricultural, and fisheries industries. Encourage the conservation of productive forest lands and productive agricultural lands, and discourage incompatible uses.

(9) Open space and recreation. Retain open space, enhance recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks and recreation facilities.

(10) Environment. Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.
The Growth Management Act requires all cities and counties in Washington State to identify and protect five types of environmentally sensitive areas, known as critical areas, using best available science. These include wetlands, geologically hazardous areas, frequently flooded areas, critical aquifer recharge areas; and fish and wildlife habitat conservation areas. In Thurston County, protections for these areas are created at the county level and integrated into County Development Code in a set of development regulations known as a Critical Areas Ordinance (CAO). The most recent update to the Thurston County CAO was adopted in July 2012.

In Thurston County’s CAO, prairie, oak savanna, oak woodland and wetland/riparian habitats receive protection through provisions for fish and wildlife habitat conservation areas (Thurston County CAO Chapter 24.25), and wetland habitat, through wetland protections (Thurston County CAO Chapter 24.30). During land use application review, the County uses screening tools such as GIS mapping to indicate the potential presence of prairie, oak, or wetland/riparian habitat or species. If screening tools indicate that these habitats or sensitive fish and wildlife species may be present, staff perform site visits to determine the nature and extent of habitat and/or species presence. If fish and wildlife habitat conservation areas are detected on site, applicants must hire a qualified professional to complete a habitat survey. When impacts to fish and wildlife habitat conservation areas cannot be avoided, a habitat management plan is required as well as on-site mitigation. The CAO will be revised to be consistent with the HCP, and defer to the HCP for Covered Species.

**State Environmental Policy Act (SEPA)**

Land use activity and development are also subject to the State Environmental Policy Act (SEPA), which provides a way to identify possible environmental impacts that may result from state and local government decisions. The elements of the environment that are evaluated during the SEPA review process include earth, air, water, plants, animals, energy, environmental health, land use, transportation, cultural resources, public services, agriculture, and utilities. A lead agency determines if completion of an environmental checklist may result in a change to a proposal to reduce likely impacts, or to condition or deny a proposal when adverse environmental impacts are identified that cannot be appropriately mitigated (WA Department of Ecology 2004).

The HCP will undergo the SEPA review process concurrently with the NEPA review process discussed earlier. Initial scoping by the SEPA lead agency (Thurston County) and the NEPA lead agency (USFWS) determined the HCP will require an environmental impact statement (EIS). A joint EIS will be prepared for the lead agencies and published for comment in accordance with applicable authorities and regulations. After the close of the draft EIS comment period, the lead agencies will determine and incorporate necessary modifications into the final EIS based on input received during the public review and comment period. The joint EIS is intended to comply with all provisions of NEPA and SEPA.

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4 The minimum guidelines for classifying and designating critical areas can be found in WAC 365-195. Counties and cities must include the "best available science" when developing policies and development regulations to protect the functions and values of critical areas as specified under WAC 365-190.
however, each lead agency is ultimately responsible for ensuring compliance with its governing authorities and regulations.

**State Historic Preservation**

Chapter 10 of the Thurston County Comprehensive Plan contains the goals and policies that guide the regulatory framework for identifying and protecting archaeological and historic resources in Thurston County. A 12-member Historic Commission provides review and comment on proposals that affect properties or districts on the County register, land use actions considered under SEPA, and applications for special property tax valuation.

Chapter 2.106 of the Thurston County Code outlines development standards pertaining to the preservation of historic resources. A comprehensive survey of historic resources located in Thurston County was prepared in the 1980s and is updated and maintained in an accessible database by the County. Identification of sites or resources or sites adjacent to these resources on the database serve as the initial basis for review and comment on land use permits submitted to the County.

**Shoreline Management Act**

The Shoreline Management Act, Chapter 90.58 RCW, is a Washington state law administered by the Department of Ecology. The goal of the Shoreline Management Act is to coordinate and prevent piecemeal development of the state’s shorelines while allowing preferred shoreline uses, protecting the shoreline environment, and providing public access (RCW 90.58.020). The Shoreline Management Act applies to the state’s shorelines which includes all marine waters; streams and rivers with greater than 20 cubic feet per second mean annual flow; lakes 20 acres or larger; upland areas called shorelands that extend 200 feet landward from the edge of these waters; and biological wetlands and river deltas as well as some or all of the 100-year floodplain (including all wetlands within the 100-year floodplain) associated with the state’s shorelines.

Each local government must prepare and adopt a Shoreline Master Program, or SMP, that is essentially a shoreline specific comprehensive plan, zoning ordinance, and development permit system. The SMP must be approved by the Department of Ecology. The Department of Ecology is also required to review certain kinds of permits such as conditional use and variance permits for compliance with state law.

The intersection of the HCP and the SMP will be specific to wetland and riparian habitat for Oregon Spotted Frog, within the 200 foot shoreline jurisdiction and associated riparian areas. Most Oregon Spotted Frog habitat is primarily protected under the county SMP and Critical Areas Ordinance. Oregon Spotted Frog habitat that is not covered under these regulations will require HCP coverage.

**State Hydraulic Code**

Hydraulic Project Approvals, or HPAs, are a state permit authorized by the Hydraulic Code and administered by WDFW. The Hydraulic Code was specifically designed to protect fish life and HPAs are required for some construction projects in waters of the state. A common list of activities requiring an HPA include work on bulkheads, piers, docks, culverts, bridges, dredging, aquatic plant removal and control, water diversions and intakes, mineral prospecting, and pond construction.

Thurston County does not issue HPAs, but does require applicants have all necessary permits before issuing a building permit. In addition, most people who apply for an HPA must submit documentation
with their application showing that they have complied with SEPA; SEPA reviews are usually conducted with the county permit. Typically, road maintenance activities are exempt from the SEPA process under WAC 197-11-800, 468-12-800(1)(u), 173-27-040 9(2)(b), 40 CFR 232.3 and some Nationwide Permits (depending on location and activity)

Thurston County must also have an individual, general or programmatic HPA for any work it performs under the Hydraulic Code Rule WAC 220-660. WDFW has issued 4 general permits to Thurston County public works that covers specific routine maintenance activities, which includes Beaver Management, Non-Fish Bearing Culvert Maintenance, Drift Removal and Bridge Maintenance. The general permits streamlines the process, saves time and money by eliminating the need to apply for a new permit each time the work is performed. A general permit is good for five years and includes timing limitations, contributes to conservation of these species by following the Regional Road Maintenance ESA Guidelines that promotes using best management practices. Many of the activities requiring take authorization under this plan are also subject to WDFW approval under the HPA general permits.
Chapter 2  Description of the Area to be Analyzed

2.1 Environmental Setting

Thurston County is located in Western Washington at the terminus of Puget Sound (Figure 2.1). The County has a total land mass of 736 square miles (mi) (1,906 square kilometers (km)), with approximately 14% of the land area incorporated into cities (Thurston Regional Planning Council 2011), and roughly 4% owned and managed by DOD, as part of JBLM. The County is generally bisected by Interstate 5. This section broadly describes the climate, topography, geology, soils, surface water, land use, conserved lands, and ESA listed species occurring in the County, including those to be covered and not covered in the HCP.

Figure 2.1 Land cover in Thurston County as defined by National Land Cover Data (Homer et al 2015).
2.1.1 Climate

Thurston County has a marine type climate with mild temperatures year-round. In summer, the average high temperature ranges between 70 and 77 degrees Fahrenheit (°F) (21-25 degrees Celsius (°C)) and average low temperatures range from 45 to 50°F (7-10°C) (WRCC 2014). Winter average high temperatures range from 44 to 54°F (6-12°C) while winter low temperatures range from 30-34°F (-1-1°C) (WRCC 2014). Generally, the County’s weather is characterized by sunny, mild summers and wet, mild winters (Thurston Regional Planning Council 2011).

At the Port of Olympia Regional Airport, average (records from 1949-2013) annual total precipitation is 51 inches (in) (130 centimeters (cm)) (WRCC 2014). Precipitation occurs throughout the year in Thurston County, but is greatest between November and January, and lowest in July (WRCC 2014). More than a trace of rain falls on almost half of the days of the year (Thurston Regional Planning Council 2011).

The University of Washington’s Climate Impacts Group has documented that all but six years of the period 1980-2014 were above the century’s average temperature in the Puget Sound. By the 2050s, or near the end of the HCP, temperatures are expected to increase 4° to 6°F with more common extreme heat events. Over that same period, climate models predict 22% less rain during summer and increased rain in other seasons (Mauger et al. 2015). There is little data on how climate changes might affect HCP Covered Species and habitat, but the Conservation Program will respond to changed circumstances such as altered hydrology, changes to fire frequency, etc. Climate change is listed explicitly as an adaptive management trigger in Section 5.8.

2.1.2 Topography, Geology, and Soils

The topography of the County ranges from coastal lowlands to prairie flat lands and the foothills of the Cascades. The lowest areas of the County lie at sea level along the shoreline of Puget Sound. Peaks ranging in size from 1,700 - 3,000 feet (ft) (518 - 914 meters (m)) in elevation are found in the northwest and southeast corners of the County (Thurston Regional Planning Council 2011). Generally speaking, the County is bordered on the west, south, and east by mountains, with Puget Sound along the northern boundary of the County.

An unusual landform in Thurston County are the Mima mounds: large earthen circular mounds that are typically 8 - 40 feet (ft.) (2.5 - 12 meters (m)) in diameter and 1 - 6 ft. (0.3 - 2 m) in height. Prairie vegetation and the mating and nectaring behavior of rare butterflies is often associated with the Mima mounds. The Mima mounds consist of gravelly sandy loam on top of thick outwash sand and gravel. The exact origins of these mounds are unknown (Nelson 1994).

Another unique area is the McAllister Geologically Sensitive Area. The McAllister basin lies in the Puget Sound Trough, a broad depression created by the final geologic uplift which formed the Cascade mountain range 11 million years ago. It is supposed, based on limited exposed formations, that volcanic bedrock sits at the bottom of the trough, but due to the thick overlying sediments actual observation isn’t possible. Following the uplift, glacial ice scoured the Puget Sound lowlands. The glaciers and ensuing erosion deposited the soils that compromise the existing McAllister basin. Glacial “drift, the finely ground remains of rock pulverized by glaciers, settled on the bottom of the trough. Each time the
Ice Age glaciers advanced, their weight compacted underlying sediments into concrete like material often called “till” or “hardpan”. Melting ice from the glaciers produced huge water flows that deposited “outwash” soils throughout the basin. Drift (clay), till and outwash are all present in the basin in various combinations. They provide the parent material for most of the different soils. Drift soils contain large amounts of fine silt. They are “aquitard” preventing the downward migration of ground water. Till soils consist of unsorted gravel, sand, silt and clay with fine silt predominating. These are moderately well drained to virtually impervious depending on the amount of clay in the soils. Outwash soils consist mainly of unconsolidated sand and gravel which drains rapidly, erodes easily, and has little capacity for holding water. The deepest soils in the basin are well-drained layers of outwash more than 200 feet thick. Repeated glacial and erosion created a complex configuration of till and outwash throughout the basin. Most of the McAllister basin contains at least 6 different soil layers. Each layer varies significantly in depth and lateral extent throughout the basin. The deposits include (from youngest to oldest): Vashon Recessional Outwash, Vashon Till, Vashon Advanced Outwash, Kitsap Formation, Salmon Springs Deposits and Pre-Salmon Spring drift. In addition to the glacial till, outwash and drift soils, muck soils occur frequently throughout the basin. Mostly found in the potholes and depressions and near creeks. Mucks are dark, fine, dense and poorly drained soils with a highly decomposed organic content.

Thurston County contains a variety of soil types. Soils on floodplains make up approximately 5% of the County, and are level, deep, and well-drained. Soils on glacial uplands comprise approximately 60% of the County, ranging from level to steep, moderately to very deep, and moderately to somewhat excessively well-drained. Soils on uplands and mountains make up approximately 26% of the County, ranging from nearly level to very steep, moderately deep to very deep, and moderately well drained and well drained. Soils on sedimentary uplands and glacial drift plains comprise approximately 9% of the County. These soils are nearly level to steep, deep and very deep, and moderately well drained to well drained (Pringle 1990).

Specific soils critical to the Covered Species are described in Section 2.2.

2.1.3 Existing Land Use

Thurston County features a wide array of land uses, ranging from open space and agricultural uses to urban development and military training and base facilities (Table 2.1; Figure 2.2). The northern end of the County is generally the most developed, as the County’s three largest cities of Olympia, Lacey, and Tumwater are located there. Four other cities—Yelm, Rainier, Tenino, and Bucoda, in addition to the Grand Mound area (not an incorporated city)—are found in the middle to southern portions of Thurston County.

An analysis completed by TRPC indicates that between 1991 and 2006, approximately 23,500 ac (9,510 ha) of land were converted from forest stands, agriculture, or open space to urban landscapes. This area represents roughly 5% of the entire County, and approximately equal in size to the current acreage of the Urban Growth Areas in the County (Thurston Regional Planning Council 2011).
### Table 2.1 Land use by zoning in Thurston County as of May 2018.

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Acres</th>
<th>Hectares</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities</td>
<td>40,416</td>
<td>16,356</td>
<td>9%</td>
</tr>
<tr>
<td>Urban Growth Areas</td>
<td>20,541</td>
<td>8,313</td>
<td>4%</td>
</tr>
<tr>
<td>Military Reservation (Joint Base Lewis-McChord)</td>
<td>18,635</td>
<td>7,541</td>
<td>4%</td>
</tr>
<tr>
<td>Long term Agriculture</td>
<td>14,894</td>
<td>6,027</td>
<td>3%</td>
</tr>
<tr>
<td>Long Term Forestry</td>
<td>144,023</td>
<td>58,284</td>
<td>31%</td>
</tr>
<tr>
<td>Public Parks, Trails, Preserves</td>
<td>7,889</td>
<td>3,193</td>
<td>2%</td>
</tr>
<tr>
<td>McAllister Geologically Sensitive Area*</td>
<td>9,313</td>
<td>3,769</td>
<td>2%</td>
</tr>
<tr>
<td>Rural, Commercial, Industrial and Developable Land</td>
<td>215,593</td>
<td>87,247</td>
<td>46%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>471,304</td>
<td>190,730</td>
<td>100</td>
</tr>
</tbody>
</table>

*The Urban Growth Area for Lacey includes an additional 1616 ac of this use.*
Figure 2.2 Land use zoning in Thurston County as of 2018.
2.2 Covered Species

The HCP Covered Species and their extent in the planning area are listed in Table 2.2. Five of the Covered Species occupy prairies (inclusive of grasslands and open oak savanna) and one is found in riparian/wetland habitat. Detailed descriptions of the Covered Species’ biology and ecology and habitat is available in Appendix B: Covered Species Descriptions. Brief summaries of this information are included in this section, along with the methods used to delineate where each Covered Species occurs within the permit area.

2.2.1 Prairie Species

The mapped extent for each Covered Species residing in prairie habitat is displayed in Figure 2.3. The mapped extent for each species was identified as follows:

- Olympia, Tenino and Yelm Pocket Gopher: extent is defined by soils known to support the subspecies (Table 2.3). These species occur within Service Areas that include these soils. Service Areas for MPG subspecies are designed around the five approximate geographic areas in Thurston County occupied by each Mazama Pocket Gopher subspecies (Figure 2.3).
- Taylor’s Checkerspot Butterfly: extent is defined by proximity to known locations.
- Oregon Vesper Sparrow: extent is defined by proximity to known locations (on JBLM) and habitat patch size.

Table 2.2 Prairie species in the Thurston County HCP.

<table>
<thead>
<tr>
<th>Species/ Subspecies</th>
<th>Basic Habitat and Location Attributes in the Permit Area</th>
<th>Estimated Extent in Permit Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olympia Pocket Gopher (OPG)</td>
<td>For all the subspecies, habitat is east of Black River and south of I-5 on soils that support the burrowing of MPGs, with documented use (Table 2.3)</td>
<td>99,890 ac (40,424 ha), of which (843 ac (341 ha) is federally designated critical habitat for the Tenino and Yelm subspecies)</td>
</tr>
<tr>
<td>Tenino Pocket Gopher (TPG)</td>
<td>Habitat includes upland prairie and wet prairie (uncommon) areas within dispersal distance (1,312 ft (400 m)) of known TCB populations (as of 2018, WDFW Data)*</td>
<td>2,424 ac (981 ha), of which 1481 ac (599 ha) are outside of habitat for MPG subspecies, and 1,053 ac (426 ha) are federally designated critical habitat.</td>
</tr>
<tr>
<td>Yelm Pocket Gopher (YPG)</td>
<td>This was mapped as areas of 20 ac (8 ha) or greater of open grassland-oak savanna (less than 15% canopy). For projection purposes, this area was mapped using streamed ESRI high resolution imagery from 2017.</td>
<td>6,064 ac (2,454 ha), of which 1478 ac (598 ha) is outside of habitat for MPG subspecies.</td>
</tr>
</tbody>
</table>

*Dispersal distance was determined based on best available information and personal communication from Ann Potter, Lepidopterist, WDFW and Ted Thomas, Biologist, USFWS.
Figure 2.3 Mapped extent of prairie species in the Thurston County HCP.
Table 2.3 Prairie soils with documented use by MPG subspecies in Thurston County (USFWS 2016). These soils are used by all subspecies, and are ranked in terms of gopher preference, which was determined through analysis of Thurston County soils, and the frequency and rate of occurrence within soil types (USFWS 2016).

<table>
<thead>
<tr>
<th>Preference by MPG</th>
<th>Description</th>
</tr>
</thead>
</table>
| **More Preferred** | Nisqually loamy fine sand, 0 to 3 percent slopes  
|                    | Nisqually loamy fine sand, 3 to 15 percent slopes  
|                    | Spanaway-Nisqually complex, 2 to 10 percent slopes  
|                    | Cagey loamy sand  
|                    | Indianola loamy sand, 0 to 3 percent slopes  
|                    | Spanaway gravelly sandy loam, 0 to 3 percent slopes  
|                    | Spanaway gravelly sandy loam, 3 to 15 percent slopes  |
| **Less Preferred** | Alderwood gravelly sandy loam, 0 to 3 percent slopes  
|                    | Alderwood gravelly sandy loam, 3 to 15 percent slopes  
|                    | Everett very gravelly sandy loam, 0 to 3 percent slopes  
|                    | Everett very gravelly sandy loam, 3 to 15 percent slopes  
|                    | Indianola loamy sand, 3 to 15 percent slopes  
|                    | Kapowsin silt loam, 3 to 15 percent slopes  
|                    | McKenna gravelly silt loam, 0 to 5 percent slopes  
|                    | Norma fine sandy loam  
|                    | Norma silt loam  
|                    | Spana gravelly loam  
|                    | Spanaway stony sandy loam, 0 to 3 percent slopes  
|                    | Spanaway stony sandy loam, 3 to 15 percent slopes  
|                    | Yelm fine sandy loam, 0 to 3 percent slopes  
|                    | Yelm fine sandy loam, 3 to 15 percent slopes |

Within the mapped areas, not all habitat is presumed to be suitable for the Covered Species. For example, a densely conifer forested area, even if located proximal to a known Taylor’s Checkerspot location, is not suitable habitat. Therefore, the mapped area for each Covered Species is further refined using methods in the description of the Covered Activities (Section 3.1) and the projection of impacts (Chapter 4). One such refinement, applied for projections of impacts from the most widespread Covered Activities (e.g., residential development) is the use of the 2011 National Land Cover Dataset (NLCD; Homer et al 2015) to identify prairie habitat. NLCD is a National land cover product created by the Multi-Resolution Land Characteristics (MRLC) Consortium, and uses a 16-class land cover classification scheme that has been applied consistently across the United States at a spatial resolution of 30 meters. NLCD 2011 is based primarily on classification of circa 2011 Landsat satellite data. Within the NLCD, the classes of: Barren Land (Rock/Sand/Clay), Shrub/scrub, Grassland/Herbaceous, Pasture/Hay, Cultivated Crops, and Developed Open Space, Low intensity, Medium Intensity and High Intensity were considered potential prairie habitat. These NLCD classes cover approximately 68% of the permit area supporting prairie soils.
Thurston County prairie and oak ecosystems formed on excessively well-drained soils generated from glacial outwash (Ugolini and Schlichte 1973) over 10,000 years ago. Some prairies developed on flat or mounded plains with deep but well drained and uncompacted soils, whereas others developed on shallow, rocky soils of balds or bluffs, often with steep slopes and south or west facing aspects (Chappell et al. 2001). Historically, prairies persisted in an open state and avoided succession to coniferous forest though their tendency toward drought and frequent but patchy burning by native peoples (Boyd 1999).

High quality examples of South Puget Sound prairies have a diversity of native plant species that support ecological functions (e.g., through food sources, host or nectar plants, nesting habitat). There are frequent native perennial grasses (graminoids), including Roemer’s fescue (*Festuca roemeri*), California oatgrass (*Danthonia californica*), long stolon sedge (*Carex inops spp. inops*), and prairie junegrass (*Koeleria macrantha*). Interspersed with the native grasses are a suite of native annual and perennial forbs, including yarrow (*Achillea millefolium*), camas (*Camassia quamash*), wooly sunflower (*Eriophyllum lanatum*), strawberry (*Fragaria virginiana*), white-top aster (*Sericocarpus rigidus*), buttercup (*Ranunculus occidentalis*) and violet (*Viola adunca*).

The low shrub kinnikinnick (*Arctostaphylos uva-ursi*) is also found in most South Puget Sound prairies (Dundwiddie et al. 2006). This grouping of plants has been described by the WDNR Natural Heritage program (2015) as the *Festuca roemeri-Sericocarpus rigidus* plant association which is a type associated with the U.S. National Vegetation Classification (USNVC) Southern Vancouverian Shrub and Herbaceous Bald, Bluff, and Prairie Group (G488), and Chappell (2006) suggests most remaining native prairies in the south Puget Sound include this plant association. High quality examples of this type are located on Joint Base Lewis-McChord (JBLM), Mima Mound and Rocky Prairie Natural Area Preserves, Scatter Creek Wildlife Area, and Glacial Heritage Preserve listed in Table 2.2.

Since Euro-American settlement, high quality native prairies in the Puget Sound region have declined due to losses from urban development, agricultural conversion, and fire suppression (Crawford and Hall 1997). Prairies that persist are threatened by invasion from aggressive introduced species (e.g., Scotch broom (*Cytisus scoparius*) that out-compete native species. The grasslands and open woodlands are also being invaded by non-native grasses, often including perennials such as tall oatgrass (*Arrhenatherum elatius*), bentgrass (*Agrostis capillaris*), and velvetgrass (*Holcus lanatus*), or annuals such as silver or yellow hairgrass (*Aira caryophyllea* or *A. praecox*) (Dunwiddie et al. 2006). The extent and diversity of non-native annual grasses often relates to ecological disturbance from past (or on-going) land management practices.

### 2.2.2 Oregon Spotted Frog

The permit area of the HCP also includes known and potential riparian and wetland habitat for Oregon Spotted Frog (OSF) (*Rana pretiosa*) (Figure 2.4). Washington’s remaining populations of OSF occupy wetland habitats connected by an aquatic network of streams, ditches, rivers, and flooded wetlands. Habitat requirements for OSF vary with life stage and season (non-breeding, breeding, rearing, overwintering). Breeding habitat is characterized as shallow water (<12 in (<30 cm)) emergent (sedge, rush, and grass vegetation) wetlands which are relatively unshaded and that ideally have an aquatic...
Figure 2.4 Oregon Spotted Frog Habitat Screen for the Thurston County HCP.
connection to perennial waters. The extent of this habitat can vary inter- and intra-annually with fluctuating water levels. Non-breeding habitat can include characteristics of breeding habitat but also includes slow moving deeper and shaded waters with floating and submerged vegetation. This can include springs, ponds, lakes, sluggish streams or rivers, irrigation canals, shrub wells, or roadside ditches. In contrast, shaded conifer dominated riparian areas with primarily coarse inorganic substrates (gravel, cobble, etc.), and swiftly flowing waters are not considered OSF habitat.

The perennial creeks and associated network of intermittent tributaries provide aquatic connectivity between breeding sites, rearing, and overwintering habitat. The seasonally inundated wetland margins frequently consist of hay fields and pasture. Some occupied sites are formed by American beaver (*Castor canadensis*) activity. Occupied OSF sites have often experienced habitat alteration such as a history of cattle grazing and/or hay production or encroaching or established rural residential development. Hydrology has been altered to some extent at most sites. A detailed description of OSF and its habitat is included in Appendix B: Covered Species Descriptions.

Potentially suitable habitat was mapped in an overlay called the OSF Habitat Screen (Figure 2.5). The OSF Habitat Screen includes 39,493 ac (15,982 ha) and intersects 5,718 tax parcels. Of this area, 4,773 ac (1,931 ha) are federally designated critical habitat (81 FR 29335 29396). Thurston County developed the OSF Habitat Screen with technical assistance from USFWS, WDFW, and other knowledgeable parties. The steps in development of the OSF Habitat Screen are described below.

1. OSF suitable wetland areas were identified using the WA ECY (2011) modeled wetland layer, with the following classes:
   - Grid Code 1, Class_Name Potentially Disturbed Wetlands
   - Grid Code 2, Class_Name Palustrine Forested Wetland
   - Grid Code 3, Class_Name Palustrine Scrub/Shrub Wetland
   - Grid Code 4, Class_Name Palustrine Emergent Wetland
   - Grid Code 9, Class_Name Water
   - Grid Code 10, Class_Name Palustrine Aquatic Bed

2. From the wetlands in step 1, those with needed hydrological connections qualifying them as potential OSF habitat were identified by selecting wetlands within 984 ft (300 m) of mapped streams (using a combination of the WA state hydrography dataset streams and Thurston Geodata streams). These are referred to as “wetland core areas” in the impacts analysis in Chapter 4.

3. The resulting areas were reduced to the extent of the Black River watershed (HUC 12 units - Upper Black River, Lower Black River, Beaver Creek, Mima Creek, and Waddell Creek).

4. Selected wetlands were buffered by 328 ft (100 m) and merged the layer with the federally designated critical habitat for the species (CH) in Thurston County.

5. This layer was then merged with streams (WA state hydrography and Thurston Geodata streams) buffered by 328 ft (100 m).
6. The resulting layer was presented in a larger scale map for comment at the 2015 OSF Washington Working Group. At the recommendation of WDFW biologists, specific areas were added, including 1.4 mi (~2.25 km) of the Black Lake Ditch (buffered by 328 ft (100 m)) north of Black Lake, the area of Lamberts Corner west to the Olympia substation, the area around Trosper Lake/Bush Prairie, and a section between Blooms Ditch and Salmon Creek. These additional areas were added due to OSF egg mass detection in certain locations and because biologists felt these areas contain habitat suitable for the OSF that was not captured using remote sensing (GIS screens) or provide important connections between known OSF populations or potential habitat. The areas of Mima and Waddell Creek drainages on Capitol State Forest (WDNR) lands and a small inclusion of surrounded private land were removed from the OSF Screen for the HCP. The activities that the County is responsible for on that property are limited and the land is zoned for long term forestry.

7. The resulting final OSF screen was then buffered by 200 ft (61 m), with USFWS and WDFW technical assistance that activities within this distance of OSF habitat could result in impacts. A portion of the OSF Habitat Screen (15,005 ac (6072 ha)) overlaps prairie habitat (soils for Mazama Pocket Gopher). Some of these areas are within the 200 ft (61 m) setback (buffer) on potential OSF habitat. Pre-project surveys for OSF habitat in the OSF Habitat Screen will ascertain whether suitable conditions for the species are present (described in Chapter 6: Implementation).

2.3 Federally Listed Species Not Proposed for Coverage

Although federally listed, the species in Table 2.4 either have no federal protection from take on non-federal lands in the HCP permit area (e.g., golden paintbrush, water howellia), or have little or no overlap with the lands or the activities covered under this plan (e.g., Marbled Murrelet, Streaked Horned Lark). Thurston County does not anticipate that any of these species will be subjected to incidental take associated with the Covered Activities, and these species are therefore not proposed for ITP coverage in this HCP.

Table 2.4 Federally listed species not proposed for coverage in the Thurston County HCP.

<table>
<thead>
<tr>
<th>Group</th>
<th>Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds</td>
<td>Yellow-billed cuckoo (Coccyzus americanus)</td>
<td>Threatened</td>
</tr>
<tr>
<td>Birds</td>
<td>Northern spotted owl (Strix occidentalis caurina)</td>
<td>Threatened</td>
</tr>
<tr>
<td>Birds</td>
<td>Marbled murrelet (Brachyramphus marmoratus)</td>
<td>Threatened</td>
</tr>
<tr>
<td>Birds</td>
<td>Streaked horned lark</td>
<td>Threatened</td>
</tr>
<tr>
<td>Fishes</td>
<td>Bull trout (Salvelinus confluentus)</td>
<td>Threatened</td>
</tr>
<tr>
<td>Flowering Plants</td>
<td>Golden paintbrush (Castilleja levisecta)</td>
<td>Endangered</td>
</tr>
<tr>
<td>Flowering Plants</td>
<td>Water howellia (Howellia aquatilis)</td>
<td>Threatened</td>
</tr>
</tbody>
</table>
Chapter 3  Proposed Action

3.1 Covered Activities

This section describes the activities and projects within the permit area for which Thurston County is seeking incidental take coverage. They include a variety of activities for which the County issues permits or approvals, or that it otherwise carries out through the course of its normal business. Chapter 5: Conservation Program describes how the County and plan participants will avoid or minimize and mitigate impacts to Covered Species and their respective habitats that may be impacted by activities described in this section.

Activities are only covered under this HCP if the impacts proposed are of the type discussed in Chapter 4: Impacts Analysis, and:

- There is sufficient take coverage available under the incidental take permit issued to Thurston County for that activity;
- The activity does not preclude achieving the Biological Goals and Conservation Objectives of this HCP;
- The activity is an action under the jurisdiction of Thurston County, or is authorized by Thurston County;
- The activity occurs within the HCP permit area; and
- The activity occurs within the term of the incidental take permit.

Activities that meet these criteria, and are otherwise lawful, are eligible for coverage under an ITP.

In the sections below, we include the best available information on Covered Activity extent, frequency, and location. Projections of overall impact area for each activity and species, and methods used to reach those projections are described in more detail in Chapter 4: Analysis of Impacts.

3.1.1 Residential Development

Dwelling construction and related activities covered by this HCP include, but are not limited to:

- Site-built dwellings and manufactured homes. The site is typically graded with a bulldozer or grader prior to construction. Construction involves delivery of supplies or the manufactured home by large truss truck or other vehicle, and a cement mixer is used to pour the foundation. A laydown, or storage, area and scaffolding could potentially be half the size of the home, depending on construction practices. Workers involved with home construction may park personal vehicles on site. Building construction or placement occurs
year-round, though seasonal restrictions may be put in place with respect to erosion control and protecting natural resources such as streams.

- Residential accessory structures (accessory dwelling unit, unattached garage, shop, shed, pool, etc.). These buildings can range in size and composition, and construction methods will vary, but will be similar to those for site built dwellings. This category includes structures ranging from small garden sheds to full-size barns or garages/workshops. Due to a special rule under section 4(d) of the ESA, certain ongoing non-commercial activities by small private landowners are exempt from accidentally disturbing, harming or killing (“taking”) the four subspecies of Mazama Pocket Gopher (79 FR 19760-19796). These activities are not exempt from incidental take for the other species in the HCP. These activities include construction and placement of fencing, garden plots, or play equipment; and construction and placement of dog kennels, carports, or storage sheds less than 120 $^2$ ft² (11.15 m²). Within lots with these activities occurring, the following associated actions may occur:
  - Private roads created to access small or large lot subdivisions and driveways, if associated with a County-issued permit. Driveways are typically required to be wide enough and of suitable material to allow for emergency vehicle access. Driveways may be gravel or pavement.
  - Installation of gravel pads, >120 $^2$ ft² for additional parking areas or similar use.
  - Installation, maintenance or removal of underground or above ground plumbing, heating fuel, mechanical, and utility facilities.
  - Additions to existing structures on existing legal lots (e.g., attached garage, added room, etc.).
  - Water supplies (wells) – well monitoring and construction.
  - Septic system feasibility studies, installation and testing, removal, moving, replacement, alterations, and repairs.

Estimates of the amount of residential development to occur in the permit term in the HCP permit area relied on development projections from Thurston Regional Planning Council (TRPC 2012). TRPC data from 2014, 2015, 2020, 2025, 2030, and 2035 were used, and 2049 projections were extrapolated from 2035 zoning capacity. The County assumed build out would occur to 70% of capacity (within current zoning allowances). In 2014, the County was at 58% of capacity. Growth in the rural area of Thurston County has been occurring at a more modest pace than in previous periods. Only about 15% of total population growth has occurred in the rural county. Although the slower trend is expected to increase throughout the population forecast period (2020-2045) the new population forecast in comparison to

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5 Structures under 200 sf do not require a Thurston County building permit. This delineation of excluded area was based on a previous version of Thurston County Code.
the 2012 forecast indicates an overall slower pace than the previously projected growth rate over the forecast period.

The estimated area affected per unit of residential development (up to 1 ac (0.4 ha)), for projection purposes, was determined based on analysis of existing residential development in the permit area. Actual impact area per unit of development will be determined on a project by project basis – see Chapter 6 Implementation. The affected area includes the structure, driveway, well, and area of the building envelope likely to be disturbed during construction activity.

The residential development Covered Activity is summarized in Table 3.1.

Table 3.1 Covered activity summary for residential development.

<table>
<thead>
<tr>
<th>Activity Summary – Residential Development</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>Year Round</td>
</tr>
<tr>
<td>Intensity</td>
<td>Complete habitat loss</td>
</tr>
<tr>
<td>Frequency/Permanence of Impacts</td>
<td>Permanent</td>
</tr>
<tr>
<td>Location</td>
<td>Throughout permit area, where development capacity is expected to be utilized.</td>
</tr>
<tr>
<td>Projected Area Affected per Unit</td>
<td>UGA Undeveloped Lots: Entire Lot Rural Undeveloped Lots: maximum of 1.0 ac (0.4 ha)</td>
</tr>
</tbody>
</table>

3.1.2 Added Accessory Structures

Impacts will occur from development of additional accessory structures on parcels developed prior to completion of the HCP and outside of the development envelope that is assumed to already be impacted around driveways and existing structures. Added accessory structures could be barns, detached structures, or other accessory structures requiring a County permit.

County staff projected the total number of such actions to occur based on County-wide records for a 10 year period (2004-2014). The average size of accessory structures constructed during the modeled period was 1000 ft² (93 m²) each. It was assumed that an additional area (buffer) extending a 30 ft (9 m) from the footprint of the accessory structures would be impacted, for an average maximum impact area per structure of 8395 sq ft used to project the total average impact area from added accessory structures associated with residential development (Section 3.1.1).

Assumptions:

- It was assumed that on average, 50% of the added accessory structures and associated 30 ft (9 m) buffer would be located outside the development envelope of existing structures and roads. It was assumed that the remaining 50% of added accessory structures would have part (20%) of their buffer located within the development envelope of an existing structure or road, that portion not adding any additional impact beyond the existing residential construction.

- It was also assumed the area affected by these structures was within prairie habitat 68% of the time, following the approximate proportion of the permit area in NLCD Prairie Habitat.
A summary of this Covered Activity is included in Table 3.2.

Table 3.2 Covered activity summary for accessory structures added to existing (pre-HCP) residential development.

| Activity Summary – Added Accessory Structures, Extended Septic Installation/Repair and Home Heating Oil Tank Removal |
|---|---|
| Duration | Year Round |
| Intensity | Complete habitat loss |
| Frequency/Permanence of Impacts | Permanent |
| Location | Throughout the permit area, on lots with development that occurred before the ITP was issued. |
| Projected Area Affected per Unit | Rural Added Accessory Structures/Additions: Footprint of 1000 ft² (93 m²) each, footprint with 30’ buffer totals 8,395 ft² (778 m²) |

3.1.3 Septic Repair or Extension & Home Heating Oil Tank Removal

Two additional activities occurring on residential lots that are anticipated to affect the Covered Species are:

1. Placement of septic systems that must be installed outside the development envelope or repair or alteration of septic systems existing prior to HCP implementation (both actions, on average, affecting 2,500 ft² (232 m²) per residential unit). Installation of these systems occurs with similar equipment and process to standard septic installations addressed in Section 3.1.1).

2. Removal of above or below ground home heating oil tanks (affecting ~150 ft² (14 m²) per unit). This activity involves use of excavation equipment to remove home heating oil tanks and any adjacent concrete pad or contaminated soil.

County staff projected the total number of such actions to occur during the HCP permit term based on County-wide records for a 10-year period (2004-2014): 10,500 extended septic system installation or repairs, and 450 home heating oil tank removals. The number to occur in prairie habitat or OSF habitat was assumed to be proportional to the mapped area for each species in the County; prairie (3990 septic, 171 heating oil); and OSF (1470 septic, 63 heating oil).

A summary of this Covered Activity is included in Table 3.3.

Table 3.3 Covered activity summary for extended septic system installation or repair and home heating oil tank removal.

| Activity Summary – Extended Septic Installation/Repair, Home Heating Oil Tank Removal |
|---|---|
| Duration | Year Round |
| Intensity | Soil disturbance and replacement |
| Frequency/Permanence of Impacts | Temporary |
### Location

<table>
<thead>
<tr>
<th>Projected Area Affected per Unit</th>
<th>Throughout permit area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extended Septic System Installation or Repair:</td>
<td>2500 ft² (232 m²) per residential unit, Home heating oil take removal: 150 ft² (14 m²)</td>
</tr>
</tbody>
</table>

#### 3.1.4 Commercial and Industrial Development

Commercial and industrial development covered under this HCP may include, but is not limited to construction of business facilities for retail shopping, offices, restaurants, barber/beauty shops, veterinary clinics and hospitals, laundry, dry cleaning, motels, greenhouses, service stations, car wash, automotive and mechanical sales, auction yards, community centers, recreational uses, churches, libraries, museums, schools, and other public facilities in addition to facilities for research and development, factories, warehousing, wholesale, processing, storage, fabrication, printing, and other commercial or industrial uses. This does not include mining or associated activities. General building construction activities will include those described for residential development, and may also include establishment of signs, parking lots, and other facilities, affecting the entire lot.

The amount of commercial and industrial development was projected using the intersection of mapped habitat and TRPC’s dataset for likely commercial, industrial, and mixed use development (TPRC 2012b). In the TRPC dataset, the likelihood of development in parcels zoned for commercial or industrial use is assigned to categories (low, medium high, very high, and vacant) based on the existing amount of development per parcel and the ratio of assessed building value to land value. County Community Planning and Economic Development staff identified the medium, high, very high, and vacant development potential classes as likely for development during the HCP permit term.

A summary of this Covered Activity is included in Table 3.4.

**Table 3.4 Covered activity summary for commercial and industrial development.**

<table>
<thead>
<tr>
<th>Activity Summary – Commercial/Industrial Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>Intensity</td>
</tr>
<tr>
<td>Frequency/Permanence of Impacts</td>
</tr>
<tr>
<td>Location</td>
</tr>
<tr>
<td>Projected Area Affected per Unit</td>
</tr>
</tbody>
</table>

#### 3.1.5 Public Service Facility Construction

A summary of the Public Service Facility construction Covered Activity, specifically rural schools and fire stations, is included in Table 3.5. Any other public facilities proposed during the term of the requested ITP will secure coverage following the mitigation process described for commercial and industrial development.
**Schools**
Thurston County encompasses a total of nine school districts under County jurisdiction, including Olympia, North Thurston, Tumwater, Tenino, Rainier, Rochester, Griffin, and Yelm. Construction of new facilities or refurbishment and expansion of existing facilities is an activity covered under this HCP. At this time there are eight public school campuses in the county. Sites are 10 -20 ac (4-8 ha) in size with the exception of the 77 ac (31 ha) campus in the Rochester School District.

School construction or refurbishment can include but is not limited to establishment of buildings and associated walkways and out-buildings, parking lots and associated driveways, landscaping, and outdoor sports fields (including but not limited to soccer, baseball, softball, football), tennis courts, and outdoor pools. New school building coverage is limited to 6,000 ft² (557 m²) on parcels 5 to 10 ac (2-4 ha) in size and 20,000 ft² (1,858 m²) on parcels larger than 10 ac (4 ha). Typical coverage by school buildings is about one acre per site. This does not include ball fields and other accessory structures and uses. Existing schools can expand as needed with a special use permit and thorough environmental review.

- School expansion is expected during the permit term at the Rochester Primary through High School complex, with a total affected area of up to 42 ac (17 ha) of prairie habitat.
- Refurbishment of existing schools (e.g., Littlerock Elementary, East Olympia Elementary) are expected to affect up to 15 ac (6 ha) of prairie habitat.
- Newly constructed schools in the Tumwater UGA and Rochester District are anticipated to affect 63 ac (25.5 ha) of the prairie habitat.

**Fire Stations**
Construction of fire stations is an activity covered under this HCP. Unincorporated Thurston County currently includes approximately 47 fire stations (some of these are not currently functional). Fire facilities have no building coverage limit. Size is approved project by project through a special use permit and environmental review. The parcels on which these fire facilities are currently established average 1.9 ac (0.4 ha) in size, with a range from 0.9 to 7 ac (0.4 -2.8 ha). Population expansion outside current city limits and urban growth areas is expected to require additional fire facilities to serve the anticipated future growth and development.

Ten new rural fires stations (2 ac (0.5 ha) each) are expected be constructed over the permit term, to affect 20 ac (8 ha) of prairie habitat. Specific locations are not known at this time, but facilities are expected to be distributed across the Permit Area.

**Table 3.5 Covered activity summary for public service facility construction.**

<table>
<thead>
<tr>
<th>Activity Summary – Public Service Facilities: Schools &amp; Rural Fire Stations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>Year Round</td>
</tr>
<tr>
<td>Intensity</td>
<td>Complete habitat loss</td>
</tr>
<tr>
<td>Frequency/Permanence of Impacts</td>
<td>Permanent</td>
</tr>
<tr>
<td>Location</td>
<td>Throughout permit area</td>
</tr>
<tr>
<td>Projected Area Affected per Unit</td>
<td>Entire lot</td>
</tr>
</tbody>
</table>
3.1.6 Transportation Projects

Transportation construction projects within the permit area will be Covered Activities under this HCP. Activities with the potential to affect the Covered Species include those capital improvement activities occurring beyond the currently modified area of existing road, trail, or path prism and gravel shoulder\(^6\), which add bridge, culvert, road or shoulder surface. Thurston County public works staff used information from regular work plans and their 20-year Capital Facilities Plan (CFP) to identify the types of projects and extrapolate areas to be affected during the HCP term (30 years) (Table 3.7 and Table 3.6).

These projects can occur at any time of year, and include:

- **Construction of new roads**: This activity involves heavy equipment for leveling, grading, and stabilizing to construct road beds, plus establishment of the road surface.

- **Widening of existing roads**: This activity uses a process similar to road construction to add additional road prism to an existing road, or to widen an existing road shoulder. It can occur year round, but is typically in the drier months (varies by year, generally June – September).

- **Improvements of existing roads**: This activity includes upgrade of roads and intersections to add turn lanes, sidewalks, bike paths, and realignments where needed. This will involve addition of road prism (described above), modification of the gravel shoulder to add sidewalks, or extension of the gravel shoulder.

- **Bridge and culvert installation or replacement**: This typically involves heavy equipment for excavation to remove the existing structure, installation of the replacement structure, and repair of the adjacent roadway, shoulder and drainage systems.

<table>
<thead>
<tr>
<th>Activity Summary – Transportation Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>Intensity</td>
</tr>
<tr>
<td>Frequency/Permanence of Impacts</td>
</tr>
<tr>
<td>Projected Area Affected per Unit</td>
</tr>
</tbody>
</table>

\(^6\) While MPG may infrequently occur and may be impacted in the currently modified gravel road shoulder of the active ROW, these areas are excluded from the analysis because the area is already modified by past activities and has extremely low suitability and long term viability as habitat for the species.
Table 3.7 Transportation projects expected to occur in HCP habitats as identified by the 20-year Capital Facilities Plan.

<table>
<thead>
<tr>
<th>Project Location in Thurston County</th>
<th>Construction/Replacement</th>
<th>Widening</th>
<th>Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>153rd Ave SE (Vail Rd to Lawrence Lake Rd)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>183rd Ave SW - Old Hwy 99 to SR12</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Albany Rd SW (James Rd to Littlerock Rd)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Bald Hill Road Upgrade - Smith Prairie to Clear Lake Rd</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Black Lake - Belmore Rd. Upgrade 49th to Sapp Rd.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Delphi Road Upgrade - Phase 2/3 - 62nd to McLane Creek</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Elderberry Rd Upgrade - SR 12 to 196th Ave</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Henderson Blvd. Upgrade - Old Hwy 99 to Tumwater</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Kinwood Road Project (Pacific to Martin Way)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Lawrence Lake Rd (153rd Ave to Bald Hill Rd)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Littlerock Rd / 113th Ave</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Marvin Rd (Pac Ave/ SR510 to Mullen)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Maytown Rd. Upgrade SW - Littlerock Rd. to I-5</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>McCorkle Rd SE (113th Ave SE to Old Hwy 99) &amp; 113th Ave SE (SR121 to McCorkle Rd SE)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Meridian Rd (Martin Way to I-5)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mullen Rd. Upgrade - Vicinity of 46th Ave. SE</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mullen Road - W. City Limits to Marvin Rd</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mullen Road Upgrade - Lacey City Limits to Carpenter Rd SE</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Old Hwy 99 / Tilley Rd. Intersection</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Old Hwy 99 Bridge O-7 Replacement</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Old Hwy 99 Rural Capacity Project (S. UGA Boundary to SR12)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Pacific Ave Capacity Project (Unions Mills to SR510)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Rich Road SE (Rixie Rd - Yelm Hwy)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Rich Road Upgrade - Phase 2-89th to Normandy St.</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Sargent Rd. Upgrade</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>SR12 Grand Mound West UGA Boundary to US99 - Access Road</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Steilacoom Road - Phase 1 - Pacific to Marvin/SRS10</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Steilacoom Road / Phase 2 - Marvin/SRS10 to Duterrow</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Tilley Road (T-2) Bridge Replacement Project</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Vail Rd. Upgrade - 138th to Bald Hill Rd</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Vail Rd. Phase 2 (138th to 153rd)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Yelm Hwy / Meridian Intersection</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Yelm Hwy Capacity Project 4-Lacey City Limits to West of Meridian/Phase1 (O-12 Bridge)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>
3.1.7 Transportation Maintenance & Work in Right-of-Way

This section includes overlapping activities that occur within Thurston County right-of-way under County jurisdiction. Thurston County maintains 1,035 mi (1,666 km) of County roadway and adjacent right-of-way. Within the County’s owned and managed roads, 32 mi (52 km) are gravel and the remainder are paved. A typical road cross section is shown in Figure 3.1. There are approximately 500 mi (805 km) of road right-of-way in Mazama Pocket Gopher habitat, 0.43 mi (0.7 km) of right-of-way in mapped Taylor’s Checkerspot habitat, and 90 mi (145 km) of right-of-way in the OSF Habitat Screen\(^7\). Oregon Vesper Sparrow is not anticipated to use roadside areas.

Multiple overlapping Covered Activities with temporary impacts will occur in the portion of right-of-way which contains habitat for the Covered Species. This area will be affected by transportation maintenance activities multiple times over the course of the HCP. Emergency response and utility activities are more difficult to project, but will occur in the area already affected by transportation maintenance. The County will include the area affected by all Covered Activities in the Annual Compliance report (See Chapter 6: Implementation).

Transportation Maintenance

Maintenance of existing paved or graveled road surface are not expected to have impacts to associated habitats. The County also maintains the land from the edge of the road surface to the outer edge of County’s right-of-way (Figure 3.1), using the maintenance operations described below. Additional detail is available in the Regional Road Maintenance Guidelines (WSDOT 2018).

Through a special rule under section 4(d) of the ESA a subset of routine maintenance activities\(^8\) on roadside rights-of-way of highways and roads are exempt from incidental take for Mazama Pocket Gopher subspecies (79 FR 19760-19796), other transportation maintenance activities that are not exempt from take will occur in these areas and coverage for the entire affected area are requested.

Transportation maintenance activities carried out by the County within the right-of-way with potential to impact one or more of the HCP Covered Species and their habitats include:

1. Vegetation maintenance: This activity consists of mowing, trimming bushes/branches and tree removal.
   - Mowing and trimming that may impact HCP species occurs from the outer edge of the gravel shoulder to the top of the back of the roadside ditch (average of 10.5 ft (3.2 m), Figure 3.1). Additional vegetation management includes inlets and outlets of culverts for making necessary repairs and inspections.

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\(^7\) Across all transportation maintenance and work in right-of-way, it was assumed that 50% of the right-of-way in the OSF Habitat Screen was suitable OSF habitat.

\(^8\) Such routine maintenance activities of roadside rights-of-way of highways and roads are limited to the following, and must be conducted in a way that impacts to non-target plants are minimized to the maximum extent practicable: (i) Mowing; (ii) Mechanical removal of noxious weeds or invasive plants; (iii) Selective application of herbicides for removal of noxious weeds or invasive plants; and (iv) Repair or maintenance of fences.
Figure 3.1 Typical road and bridge maintenance cross sections.
Mowing is completed using a tractor mower deck not exceeding 8 ft (2.4 m) in diameter attached to a boom arm of heavy machinery (such as a backhoe excavator or large tractor) and cut to an average height of roughly 2-6 in (5-15 cm) high above the soil or substrate. Trimming brush can be done using a mower as described above or by an individual on the ground or in a bucket truck with small mechanical hand tools (i.e., chainsaw, weed eaters, etc.). Larger limbs and vegetation will be chipped in a large chipper truck (see figure below) and the resulting chips will either be returned to the road right-of-way or taken to an off-site facility. Occasionally mowing and trimming will extend to the right-of-way edge if there is a sight distance safety issue or if it is adversely affecting the stream channel adjacent to a bridge. Mowing and chipping will not occur in standing water. Mowing and trimming activities will follow Best Management Practices (Appendix C).

Herbicide spraying is used in right-of-way vegetation management in Thurston County over approximately 2 mi (3.2 km) of roadside; these areas are treated in spring with a glyphosate herbicide to control vegetation on the roadside (Roger Giebelhaus, Thurston County Public Works, Personal Communication, June 2015), and all of these road sections are in prairie habitat. Site and weed specific spot application of broadleaf herbicide is used for control of invasive and/or problematic species periodically during May and June.

Trees are typically only removed if found to be sight distance safety issue, if trees have potential to hit vehicles/pedestrians, if trees block traffic signs and if decaying trees create a hazard with the potential to fall as verified by a certified arborist. Trees are also removed if they divert stream water in a way that compromises the integrity of a bridge.

This activity occurs year round, but primarily these activities occur in June through September as the vegetation grows. All right of way in the Permit Area will require vegetation maintenance during the HCP permit term.

Additional Information on vegetation management including BMPs, mowing/brushing/trimming heights can be found in the RRMG Maintenance Category #15 (Vegetation Maintenance) and the Thurston County Integrated Vegetation Management Program (http://www.co.thurston.wa.us/health/ehipm/ipm_cntyimp.html).

<table>
<thead>
<tr>
<th>Activity Component Summary – Road Right-of-Way Vegetation Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>Intensity</td>
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<tr>
<td>Frequency/Permanence of Impacts</td>
</tr>
<tr>
<td>Projected Area Affected</td>
</tr>
<tr>
<td>Projected Total Area Affected</td>
</tr>
</tbody>
</table>

(2) Open Drainage System Maintenance (Ditching): This activity consists of re-establishing the flow of ditches, swales and infiltration galleries.

The ditches and swales accumulate sediment, garbage and debris over time and the material needs to be removed to re-establish flow or the infiltration of a gallery. Before
materials are removed vegetation maintenance as described above will be conducted to improve visibility and safety of this operation. The typical depth of soil removed is 6 in (15 cm). Material from the ditch will be removed by backhoe or other mechanical means. The material will be moved to an off-site location. No wetlands will be filled or drained as a result of this activity. All open drainage systems maintenance activities will follow standard road work safety operating procedures and Best Management Practices (Appendix C). The area affected by ditching is a 10.5 ft (3.2 m) wide section of the right of way.

- This activity occurs year round, but primarily in the summer months when ditches are dry or have little to no standing water. All right-of-way in the Permit Area will require ditching during the HCP permit term.

- Additional information on Open Drainage Systems Maintenance including BMP’s are located in the RRMG Maintenance Category #4. Per the Washington Department of Ecology National Pollutant Discharge Elimination System (NPDES) Phase 2 Permit for Thurston County section S.5.C5 subsection c.ii (2) when inspections identify maintenance needs the work is required to be performed within 6 months for open drainage systems within new developments/projects and 1 year for all other open drainage systems. Thurston County Public Works follows the maintenance standards established in the NPDES II permit, Thurston County Drainage & Design Manual (Thurston County 2009) and the RRMG.

### Activity Component Summary – Road Right-of-Way Open Drainage Maintenance (Ditching)

<table>
<thead>
<tr>
<th>Activity Component Summary – Road Right-of-Way Open Drainage Maintenance (Ditching)</th>
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<tbody>
<tr>
<td>Duration</td>
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<tr>
<td>Intensity</td>
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<tr>
<td>Frequency/Permanence of Impacts</td>
</tr>
<tr>
<td>Projected Area Affected</td>
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<tr>
<td>Projected Total Area Affected</td>
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</tbody>
</table>

(3) Guardrail Maintenance: This activity consists of repairing guardrail after it is damaged by vehicles or as it ages.

- Posts are buried in the shoulder or slope adjacent to the shoulder at a depth of 3.5 to 8.5 feet. The soil around the posts may be disturbed during post replacement. This work is performed using a backhoe or excavator with auger attachment, a vactor truck and posthole diggers/shovels.

- This activity occurs year round as damaged by vehicles or as degradation is discovered. All guardrail sections will require maintenance at least once during the 30 year HCP.

### Activity Component Summary – Road Right-of-Way Existing Guardrail Maintenance

<table>
<thead>
<tr>
<th>Activity Component Summary – Road Right-of-Way Existing Guardrail Maintenance</th>
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</thead>
<tbody>
<tr>
<td>Duration</td>
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<tr>
<td>Intensity</td>
</tr>
<tr>
<td>Frequency/Permanence of Impacts</td>
</tr>
<tr>
<td>Projected Area Affected</td>
</tr>
<tr>
<td>Projected Total Area Affected</td>
</tr>
</tbody>
</table>
(4) Sign maintenance and Installation: This activity consists of repairing signs after they are damaged by vehicles or installing new signs. Posts are buried in the shoulder or slope adjacent to the shoulder at a depth of 32 inches. The soil around the posts may be disturbed during post replacement. This work is performed using a truck mounted auger or posthole diggers and rock bars.

- This activity occurs year round, and all signs will be replaced at least once during the 30 year HCP.

<table>
<thead>
<tr>
<th>Activity Component Summary – Road Right-of-Way Sign Installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>Intensity</td>
</tr>
<tr>
<td>Frequency/Permanence of Impacts</td>
</tr>
<tr>
<td>Projected Area Affected</td>
</tr>
<tr>
<td>Projected Total Area Affected</td>
</tr>
</tbody>
</table>

(5) Enclosed Drainage System Maintenance: This activity consists of repair, replacement, installation, and maintenance tasks performed on enclosed drainage systems (see Table 3.8).

- This activity occurs year round, and the majority of culverts in Thurston County will require maintenance or replacement within the HCP term.

- Additional Information on Enclosed Drainage System Maintenance including BMPs are located in the RRMG Maintenance Category #2 & 3. Per the ECY NPDES Phase 2 Permit for Thurston County section S.5.C5.A subsection c.ii (2) when inspections identify maintenance needs the work is required to be performed within 6 months for catch basins and 1 year for all other drainage facilities.

**Table 3.8 Drainage System Types**

<table>
<thead>
<tr>
<th>Drainage System Type</th>
<th>Description of Maintenance Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention/Detention facilities</td>
<td>Mostly vegetation maintenance (described in Section 3.1.7 above) and clearing debris/obstructions by hand with shovels.</td>
</tr>
<tr>
<td>Manholes/Catch Basins/Vaults</td>
<td>Vactor trucks and jetter trucks are used to clean and remove accumulated debris/materials that are then hauled to a County Decant Facility where there is no impact to habitat. Mini-excavators/backhoes are used occasionally to adjust, replace or repair an inadequate structure.</td>
</tr>
<tr>
<td>Pipes/Culverts/Box Culverts</td>
<td>Jetter trucks and vactor trucks are used to clean and remove accumulated debris/materials that are then hauled to a County Decant Facility. Mini-excavators/backhoes are used occasionally to adjust, replace or repair an inadequate structure.</td>
</tr>
<tr>
<td>Inlets/Outlets</td>
<td>Vactor trucks or hand work with shovels is used to remove accumulated debris/materials that are then hauled to a County</td>
</tr>
</tbody>
</table>
Decant Facility or a County pit site. During high flow storm water events a trash truck will be used to remove debris.

Low Impact Development
Underground Injection System
Vector trucks are used to clean and remove accumulated debris/materials that are then hauled to a County Decant Facility.

| Activity Component Summary – Road Right-of-Way Enclosed Drainage System Maintenance |
|---------------------------------|----------------------------------------------------------------------------------|
| **Activity Component** | **Summary** |
| Enclosed Drainage System Maintenance | Disruption and removal of vegetation, gravel, debris, and sediment that may alter water flow in right-of-way |
| **Frequency/Permanence of Impacts** | Temporary, occurring at least 1 x per 30 years |
| **Projected Area Affected** | Varies by drainage system, within open drainage system area. |
| **Projected Total Area Affected** | All right-of-way |

(6) Bridge Maintenance: These activities include inspecting, testing, repairing, replacing, maintaining, painting or resurfacing components of the bridge such as the electrical system, substructure, superstructure, surface footings, piers, supports, access roads, abutments, bridge rail, ramps, and vegetation management.

- Bridge repair, abutment repair, replacement, installation, and maintenance activities are performed to provide a safe roadway system for the traveling public, and to protect bridge infrastructure according to local, state and federal regulations. This, in turn, protects the stream, riparian habitat, and stream bank by limiting the number of crossings through the habitat area.

- In advance of abutment repair, a site inspection and reach assessment is conducted, which will determine the best engineering design to protect the bridge. Before work begins a Hydraulic Permit Approval (HPA) is obtained. Typically, Thurston County uses excavators or cranes for placing large rocks where it is able to reach, and in other areas rock is placed by hand. If a void exists beneath the bridge approach from scour, the asphalt is cut and the void is filled with clean dry fill.

- Bridge scour protection consists of replacing or installing rock or pre-cast devices around bridge piers to prevent the erosion of material. If too much material erodes the bridge could fail. If water is present, Thurston County staff will use Maintenance Category #6 Stream Crossings BMPs.

- Drift removal involves removing built up branches and debris that have collected near or against the structure of the bridge. The debris is typically removed by boat using pole saws or from the bridge itself using a crane, trash truck, or an excavator. Typically it builds up around the piers and abutments. If left in place, the material could cause the bridge to fail or result in flooding issues.
• Maintenance needs are discovered during annual inspections. The timing of these activities are determined by General Hydraulic Permit Provisions; each element has specific conditions. This activity occurs in June-August or other times if immediate attention is required. All bridges crossing waterways will require bridge abutment protection at least once during the 30 year HCP.

• For additional information see the bridge cleaning, painting, general maintenance and repair Hydraulic Project Approval (HPA) in Appendix D.

Activity Component Summary – Bridge Maintenance

<table>
<thead>
<tr>
<th>Activity Component Summary – Bridge Maintenance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>Year round</td>
</tr>
<tr>
<td>Intensity</td>
<td>Variable</td>
</tr>
<tr>
<td>Frequency/Permanence of Impacts</td>
<td>Temporary, occurring at least 1x per 30 years</td>
</tr>
<tr>
<td>Projected Area Affected</td>
<td>Varies by bridge, but within the right of way width</td>
</tr>
<tr>
<td>Projected Total Area Affected</td>
<td>86 bridges in MPG Habitat, 1 bridge in Taylor’s Checkerspot habitat, 32 bridges in OSF Habitat Screen</td>
</tr>
</tbody>
</table>

(7) Beaver Dam Management: This activity consists of beaver dam notching or removal, and shall occur in a manner to ensure the gradual, slow release of impounded water.

• Frequently, beaver dams block roadside ditch or stream areas and result in flooding of adjacent roads, creating a safety hazard. Work to reduce flooding includes using manual or mechanical means to loosen and remove woody material and debris, or use of a mechanical saw to create narrow paths through the dam to restore partial water flow through the dam to reduce flooding. Depending on site specific conditions material and debris are usually placed to the side in riparian vegetation, or may be taken to the road for removal from the site and habitat. The area affected by beaver dam removal varies with the beaver dam.

• Further information describing the County management of beaver dams is included in the Beaver Dam Management Plan (Appendix E). This activity can occur year round as needed, county-wide.

Activity Component Summary – Beaver Dam Management

<table>
<thead>
<tr>
<th>Activity Component Summary – Beaver Dam Management</th>
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<tbody>
<tr>
<td>Duration</td>
<td>Year round</td>
</tr>
<tr>
<td>Intensity</td>
<td>Disruption/Removal of accumulated debris</td>
</tr>
<tr>
<td>Frequency/Permanence of Impacts</td>
<td>Temporary, occurring at least 1x per 30 years</td>
</tr>
<tr>
<td>Projected Area Affected</td>
<td>Varies by occurrence, but within the right of way width.</td>
</tr>
<tr>
<td>Projected Total Area Affected</td>
<td>Varies by occurrence</td>
</tr>
</tbody>
</table>

(8) Watercourse and Stream Maintenance: Repair, replacement, installation, and maintenance tasks are performed on watercourses or streams.

• These activities may include structural repair/replacement, slope stabilization, sediment removal, vegetation management, debris removal, access road maintenance, habitat
maintenance and improvements (for example, fish ladders, weirs, and large woody material). Some roadside ditches and storm water facilities can be watercourses or streams.

- Watercourses and streams can be located within the road ROW, on easements, tracts, and public property or on private property. Proposed maintenance activities within waters of the state will be reviewed prior to work with WDFW staff to ensure HPA compliance. In addition to project-specific HPA requirements, road crews will adhere to the provisions of these Guidelines to ensure compliance with the Regional Program. Environmental support staff will review the planned work and contact WDFW to determine if the facility meets the definition above.

- Ditches or storm water facilities that are watercourses or streams are maintained when sediment, debris, or vegetation impede flows, or storage of water and sediment to a point where safety or the ROW structure is compromised.

- Maintaining ditches or storm water facilities that are watercourses or streams includes activities to preserve line and grade, depth and cross section, and inflow and outflow of culverts (in compliance with federal, state and local regulations).

- This activity can occur year round as discovered during annual inspection or emergencies. Maintenance activities within waters of the state will be reviewed with WDFW, and permitted with an HPA, as necessary.

<table>
<thead>
<tr>
<th>Activity Component Summary – Watercourse and stream maintenance</th>
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</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
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<tr>
<td><strong>Intensity</strong></td>
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<tr>
<td><strong>Frequency/Permanence of Impacts</strong></td>
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<tr>
<td><strong>Projected Area Affected</strong></td>
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<td><strong>Projected Total Area Affected</strong></td>
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</table>

**Emergency Response**
County emergency management actions in response to traffic accidents, hazardous waste spills, spot flooding, illicit discharges, or other accidental and unpredictable events have the potential to impact Covered Species in County right-of-way. The area for such impacts cannot accurately be estimated, therefore the county will put in place a process that assesses any impacts that occur to the Covered Species post-action, and include those impacts in the Annual Compliance report.

**Utilities**
Utility infrastructure includes overhead and underground facilities in right-of-way as well as on private property to the service meter (typically found on the side of the business or residential building). Common practices on installing overhead or underground utilities on private property are a combination of the following:

- **Trench method**: Excavation/trenching: Excavation typically uses a backhoe. Equipment is usually staged on the pavement and excavation spoils are directly loaded into trucks for
disposal off site, either outside of HCP habitat or out of County. Excavations are minimized to the extent practical, both to control cost and minimize restoration requirements. Service installations and repairs are limited to minimal ground disturbance necessary for work.

- **Bore method**: Use of a bore machine, which involves placing the boring machinery and initiating a bore pit where a bore head is inserted into the ground and a receive pit where the bore head ends. Communications cable and/or conduit is attached and pulled back through the hole created by the bore head.

The area for utility impacts cannot accurately be estimated, therefore the County will put in place a process that assesses any impacts that occur to the Covered Species post-action, and include those impacts in the Annual Compliance Report.

### 3.1.8 Landfill and Solid Waste Management

Waste management activities that will impact Covered Species through conversion of habitat to alternate uses include:

- Expansion of two recycling centers, one in Rochester and one in Rainier (1 ac (0.4 ha) each, in prairie habitat). This will include addition of graveled or paved area to existing facilities.

- Solid waste clean-up and remediation activities involving use of excavation equipment to remove affected soil. The projected affected area is 5,000 ft² (464 m²) per site and is projected to occur at 12 sites in the OSF Habitat Screen (50% were assumed to be suitable OSF habitat), and 66 sites in prairie habitat, specific locations unknown.

- Construction of two new solid waste facilities (landfill or transfer stations)- one small (5 ac (2 ha), location unknown) and one large (up to 40 ac (16 ha), location southern Thurston County). Solid waste facility (landfill) construction involves use of excavation equipment to remove excess material and stockpile on site, establishment of groundwater control trenches and placement of protective plastic liner and geotextile protector, placement of leachate pipe system, establishment of a gravel layer prior to use. Roads are established as needed on site. Transfer stations are created by paving the area, and establishing piles of materials and buildings on site for facility needs.

**Table 3.9 Covered activity summary for landfill and solid waste management.**

<table>
<thead>
<tr>
<th>Activity Summary – Landfill and Solid Waste Management</th>
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<tbody>
<tr>
<td>Duration</td>
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<td>Intensity</td>
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<tr>
<td>Frequency/Permanence of Impacts</td>
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<tr>
<td>Location</td>
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<tr>
<td>Projected Area Affected per Unit</td>
</tr>
</tbody>
</table>
3.1.9 Water Resources Management

Water resources management activities that are anticipated to occur over the 30 year HCP and affect Covered Species and their habitats include:

- Water conveyance, flow, runoff, treatment, retention flow control projects are anticipated to affect 118.8 ac (47.5 ha) of prairie habitat and 4.7 ac (1.9 ha) of the OSF Habitat Screen, of which 2.3 ac (0.9 ha) was assumed to be suitable OSF habitat. These activities include:
  - Conveyance Upgrades
    - Generally involves the replacement of storm pipes with newer and resized pipes. Such work typically requires excavation of existing conveyance and replacement of pipe.
  - Installation or Repair of Runoff Treatment Facilities
    - Treatment/Constructed Wetlands are placed to intercept stormwater running in roadside ditches before it discharges into a stream. Treatment wetlands are constructed by excavating a water storage area. Wetland vegetation is planted in the water storage area.
    - Treatment Vaults are large concrete structures with a filter canister. Installation involves excavation.
  - Installation or Repair of Flow Control Facilities
    - Infiltration facilities come in multiple forms; the most common is an underground infiltration piping system. Such a system is installed by excavating, placing a large diameter perforated pipe, then backfilling around the pipe with gravel. Water enters the pipe and slowly percolates out.
    - Detention ponds are placed at the end of a water drainage path, with the purpose of holding water and slowly releasing it into a pipe or to stream. These structures are created by excavation with a backhoe.
    - Roadside bioretention structures are constructed by excavating a roadside ditch to a wider width and in some cases installing under piping, backfilling that excavation with gravel, adding filter fabric and a bioretention soil. This typically involves working in a 16 ft (4.9 m) wide strip of the right-of-way. The structures increase water infiltration, then pick up excess water in a drain pipe.
  - Installation of water and sewer lines.
    - Construction of water treatment system and related water reservoir near existing sewage treatment plants (e.g., the sewage treatment plant in Grand Mound). This activity is anticipated to affect 5.7 ac (2.3 ha) of prairie habitat.
• Installation of groundwater wells.
  
  o Wells are typically drilled with a well drilling rig, and a concrete pad is placed over the top of the well. Impacts from this activity include compression of soil and vegetation by vehicles and equipment. Each well is estimated to affect up to 2,000 ft² (186 m²) each, specific locations unknown. Specific locations are unknown, County projections anticipate 25 wells to occur in prairie habitat, affecting up to 1.2 ac (0.5 ha), and 25 wells to occur in the OSF Habitat Screen, affecting up to 1.2 ac (0.5 ha), of which 0.6 ac (0.25 ha) would in fact be suitable OSF habitat.

Table 3.10 Covered activity summary for water resources management.

<table>
<thead>
<tr>
<th>Activity Summary – Water Resources Management</th>
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<tr>
<td>Duration</td>
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<tr>
<td>Intensity</td>
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<tr>
<td>Frequency/Permanence of Impacts</td>
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<tr>
<td>Projected Area Affected per Unit</td>
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</tbody>
</table>

### 3.1.10 County Parks, Trails, and Land Management

Thurston County conducts management activities on parks and other county lands that may impact Covered Species or their habitats, including:

• Thurston County owns and maintains paved trails, and additional trail development is anticipated over the duration of the proposed permit. These trails are designed for multiple uses, including cycling, walking, jogging, and other forms of recreation. Associated trail activities that are covered in this HCP include trail maintenance and trail development.

  o Trail maintenance, including ditch and stormwater conveyance system and bridge maintenance, which may involve disturbance of soil and vegetation outside the trail itself, and vegetation management in trail rights-of-way for the Chehalis-Wester Trail (11.3 mi in prairie habitat in the permit area) and Yelm-Tenino Trail (10 mi in prairie habitat in the permit area). This includes mowing approximately 3 ft (0.9 m) on each side of the trail once per month in the growing season, spraying and/or wiping herbicides, tree removal, and tree plantings (including Oregon white oak trees) that can involve soil and vegetation disturbance.

  o Construction of new trails, including the Gate-to-Belmore Trail, a trail connecting the Gate area in south Thurston County to the vicinity of Kenneydell County Park in Tumwater. The footprint of this multiuse path is a decommissioned railroad track, which is not habitat for Covered Species. Construction of the trail will not affect or remove habitat for the Covered Species, except at stream crossings. Potential altered hydrology from the construction project near the Mima Creek crossing will potentially affect an estimated 25 ac (10 ha) of OSF habitat (Teal Waterstrat, USFWS, Personal Communication, April 27, 2016).
During the term of the HCP, in prairie habitat, the County anticipates completing public park improvements, potentially adding a new picnic shelter and educational area at Glacial Heritage Preserve (2 ac (0.8 ha) area), plus potential small (1 ac (0.4 ha) each) improvement projects at County Parks, that could include expansion of parking areas, trail head facilities, or interpretive areas.

### Table 3.11 Covered activity summary for County parks, trails, and land management.

<table>
<thead>
<tr>
<th>Activity Summary – County Parks, Trails, and Land Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
</tr>
<tr>
<td><strong>Intensity</strong></td>
</tr>
<tr>
<td><strong>Frequency/Permanence of Impacts</strong></td>
</tr>
<tr>
<td><strong>Projected Area Affected per Unit</strong></td>
</tr>
</tbody>
</table>

### 3.2 Permit Duration

Thurston County is seeking a renewable 30-year ITP from USFWS (permit term). Thirty years was chosen as the permit duration because it is a reasonable timeframe in which to forecast local growth. All assessments and projections in the Plan are based on a 30-year time period. Prior to permit expiration, Thurston County may choose to apply to renew or amend the Plan and the associated ITP to extend their terms in accordance with USFWS regulations.
Chapter 4  Analysis of Impacts

4.1 Introduction

This chapter projects the unavoidable impacts to Covered Species expected to result from the Covered Activities (incidental take) over the 30-year term of the ITP. Incidental take projections are predicted for Covered Activities across the entire permit area. Thurston County has submitted an application for an ITP covering the impacts estimated in this section. Any impacts to Covered Species beyond this estimate will require consultation with USFWS, either for a new HCP, or an amendment to the ITP and HCP. This would include adding conservation measures to mitigate the impacts of the taking, along with possible additional NEPA review. A detailed summary of the impacts analysis process for all Covered Activities, including assumptions around impact distribution and habitat values, is provided in Appendix F: Impact Projection Summary. A summary of the projected impacts to Covered Species from each Covered Activity is presented in Table 4.1 and Table 4.2.

Impacts presented here are estimates of the amount of impact to over the permit term. Each project will be assessed at the time building permits are requested, and that process will assess the amount of impact on a project-by-project basis.

4.2 Methods of Quantifying Habitat Area and Value for the Covered Species

HCPs project and quantify the estimated impacts to Covered Species resulting from the Plan’s Covered Activities. This ensures that minimization and mitigation actions meet statutorily required standards, and allows monitoring of the Conservation Program. This section presents the methods used to identify important habitat characteristics and their value for the Covered Species, and where, over what area, and to what degree the Covered Activities will impact the important habitat characteristics in the HCP permit area over the permit term.

Habitat value is based on the specific resource needs for each Covered Species, e.g., presence of suitable soil types for MPG or the presence of emergent plants in shallow slow-moving waters for OSF. One functional acre is equivalent to one acre of very high value habitat. The impact projections used the methods described in the following sections to assess the habitat value of impacted areas for each HCP Covered Species, producing an index score between 1 (very high value) to 0 (very low or no habitat value). That habitat value score was multiplied by the acreage of impact to generate a functional acreage of impact. One functional acre of impact equals one acre of debit.

In an equation:  \( \text{Habitat Value} \times \text{Habitat Area Impacted (extent)} = \text{Functional Acres Impacted} \).
Table 4.1 Summary of impacts (subtotal) to Olympia Pocket Gopher, Tenino Pocket Gopher and Yelm Pocket Gopher (including Service Area for Yelm Pocket Gopher), projected to occur during the HCP Permit Term. Fx acres are functional acres.

<table>
<thead>
<tr>
<th>Covered Activity</th>
<th>OPG Ac Affected</th>
<th>Fx Acres</th>
<th>TPG Ac Affected</th>
<th>Fx Acres</th>
<th>(YPG N) Ac Affected</th>
<th>Fx Acres</th>
<th>(YPG E) Ac Affected</th>
<th>Fx Acres</th>
<th>(YPG S) Ac Affected</th>
<th>Fx Acres</th>
<th>YPG All Ac Affected</th>
<th>Fx Acres</th>
<th>Subtotal (All MPG) Ac Affected</th>
<th>Fx Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Residential Development</td>
<td>654</td>
<td>306</td>
<td>216</td>
<td>101</td>
<td>2010</td>
<td>1054</td>
<td>1612</td>
<td>808</td>
<td>850</td>
<td>569</td>
<td>4472</td>
<td>2431</td>
<td>5342</td>
<td>2838</td>
</tr>
<tr>
<td>Added Accessory Structures</td>
<td>59</td>
<td>33</td>
<td>43</td>
<td>24</td>
<td>88</td>
<td>39</td>
<td>132</td>
<td>66</td>
<td>113</td>
<td>46</td>
<td>332</td>
<td>152</td>
<td>434</td>
<td>208</td>
</tr>
<tr>
<td>Septic extension or repair, heating oil tank decommission</td>
<td>31</td>
<td>17</td>
<td>23</td>
<td>13</td>
<td>46</td>
<td>21</td>
<td>70</td>
<td>35</td>
<td>60</td>
<td>25</td>
<td>176</td>
<td>81</td>
<td>230</td>
<td>110</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>303</td>
<td>212</td>
<td>43</td>
<td>9</td>
<td>36</td>
<td>21</td>
<td>28</td>
<td>19</td>
<td>437</td>
<td>359</td>
<td>501</td>
<td>399</td>
<td>847</td>
<td>619</td>
</tr>
<tr>
<td>Public Service Facilities</td>
<td>11</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>12</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>106</td>
<td>100</td>
<td>122</td>
<td>105</td>
<td>134</td>
<td>111</td>
</tr>
<tr>
<td>Landfill/Solid Waste Management</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>45</td>
<td>28</td>
<td>52</td>
<td>31</td>
<td>55</td>
<td>32</td>
</tr>
<tr>
<td>Transportation Projects</td>
<td>33</td>
<td>18</td>
<td>12</td>
<td>7</td>
<td>97</td>
<td>44</td>
<td>25</td>
<td>12</td>
<td>92</td>
<td>38</td>
<td>214</td>
<td>94</td>
<td>258</td>
<td>118</td>
</tr>
<tr>
<td>Transportation Maintenance and Work in Right of Way</td>
<td>100</td>
<td>31</td>
<td>74</td>
<td>17</td>
<td>401</td>
<td>162</td>
<td>219</td>
<td>76</td>
<td>223</td>
<td>167</td>
<td>843</td>
<td>406</td>
<td>1017</td>
<td>453</td>
</tr>
<tr>
<td>Water Resources Management</td>
<td>17</td>
<td>9</td>
<td>12</td>
<td>7</td>
<td>25</td>
<td>11</td>
<td>38</td>
<td>19</td>
<td>33</td>
<td>14</td>
<td>96</td>
<td>44</td>
<td>126</td>
<td>60</td>
</tr>
<tr>
<td>County Parks, Trails, and Land Management</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>14</td>
<td>4</td>
<td>15</td>
<td>5</td>
</tr>
</tbody>
</table>

| Total Acres Affected | 1210 | 425 | 2720 | 2141 | 1960 | 6821 | 8456 |
| Total Fx Acres | 632 | 178 | 1357 | 1043 | 1346 | 3747 | 4556 |

*One acre = 0.404686 hectare.
Table 4.2 Summary of impacts to Taylor’s Checkerspot, Oregon Vesper Sparrow and Oregon Spotted Frog projected to occur during the HCP Permit Term, with subtotal of impacts to Mazama Pocket Gopher added. Fx acres are functional acres.

<table>
<thead>
<tr>
<th>Covered Activity</th>
<th>TCB</th>
<th>OVS</th>
<th>OSF</th>
<th>Subtotal</th>
<th>Subtotal MPG (from Table 4.1)</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ac Affected</td>
<td>Fx Acres</td>
<td>Ac Affected</td>
<td>Fx Acres</td>
<td>Ac &amp; Fx Ac</td>
<td>Ac Affected</td>
</tr>
<tr>
<td>New Residential Development</td>
<td>18</td>
<td>5</td>
<td>34</td>
<td>9</td>
<td>235</td>
<td>287</td>
</tr>
<tr>
<td>Added Accessory Structures</td>
<td>11</td>
<td>3</td>
<td>26</td>
<td>7</td>
<td>26</td>
<td>63</td>
</tr>
<tr>
<td>Septic extension or repair, heating oil tank decommission</td>
<td>6</td>
<td>2</td>
<td>14</td>
<td>4</td>
<td>42</td>
<td>62</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>Public Service Facilities</td>
<td>3</td>
<td>1</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Landfill/Solid Waste Management</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Transportation Projects</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>127</td>
<td>134</td>
</tr>
<tr>
<td>Transportation Maintenance and Work in Right of Way</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>115</td>
<td>119</td>
</tr>
<tr>
<td>Water Resources Management</td>
<td>3</td>
<td>1</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>County Parks, Trails, and Land Management</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td><strong>Total Acres Affected</strong></td>
<td>54</td>
<td>93</td>
<td>618</td>
<td>765</td>
<td>8456</td>
<td>9221</td>
</tr>
<tr>
<td><strong>Total Fx Acres</strong></td>
<td>16</td>
<td>25</td>
<td>618</td>
<td>659</td>
<td>4556</td>
<td>5216</td>
</tr>
</tbody>
</table>

*One acre = 0.404686 hectare.*
4.2.1 Mazama Pocket Gopher Subspecies

The USFWS developed a matrix to describe the value of habitat for listed sub-species of MPG in Thurston County using a combination of factors including soil type (MPG soil preference) and occupancy or proximity to occupied lands (Table 4.3, Figure 4.1 and Figure 4.2).

Table 4.3 Assigned relative MPG habitat values for occupancy and soil preference categories. Based on USFWS guidance (August 2015 and January 2017).

<table>
<thead>
<tr>
<th>Occupancy Category</th>
<th>Definition of Category</th>
<th>More Preferred Soils</th>
<th>Less Preferred Soils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1: Occupied</td>
<td>Site is known to be occupied by Mazama Pocket Gophers.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Category 2: Adjacent or Proximal to Occupancy</td>
<td>Site occupancy is unknown, but site is within 656 ft (200 m) of an occupied area (MPG soils are present on project site, and there are no barriers to MPG movement between project site and occupied area).</td>
<td>0.95</td>
<td>0.75</td>
</tr>
<tr>
<td>Category 3: Suitable, Connected but Less Close to Occupancy</td>
<td>Site occupancy is unknown, and site is more than 656 ft (200 m) of an occupied area (MPG soils are present on project site, and there are no barriers to MPG movement between project site and occupied area).</td>
<td>0.60</td>
<td>0.15</td>
</tr>
</tbody>
</table>

*Value of habitat for Mazama Pocket Gopher (1 = 100% value)

Soil type is the most important factor for determining the value of a site for MPG. MPG soils are not known to be restorable, and are a finite resource in Thurston County. The more preferred and less preferred categories indicate the relative preference of MPG for these soils (see Table 2.3). The higher the preference, the higher the habitat value and associated score for each soil category. Preferences were determined through analysis of Thurston County soils, known MPG occurrences, and the frequency and rate of MPG occurrence within soil types (USFWS 2018).

Occupancy of a site by MPG, and proximity to MPG-occupied sites, determines the likelihood of negative impacts to MPGs and their habitat, and therefore the potential for take and the potential for impeding recovery. There are two methods for determining occupancy: 1) MPG mound surveys or 2) using USFWS criteria for determining the relative likelihood of MPG without surveys. Current survey methods can determine occupancy, but cannot prove MPG is not using the site because mounding activity may vary with season, moisture, vegetation, and other factors. For the countywide impact analysis for this HCP, all portions of a site with known MPG use detected at any point, on which soils are suitable, were considered occupied for the purposes of this analysis. Occupancy categories were assigned in relation
to known occupancy on or near the site, known MPG movement distances (656 feet (200 m)), and barriers to MPG movement.

Known areas of MPG occupancy and underlying soil preference were mapped to the extent possible using all compiled MPG survey data from USFWS, WDFW, and Thurston County, through the 2017 survey season (Figure 4.1, Figure 4.2). When MPGs were detected on a parcel, the County considered all contiguous (i.e., without obvious physical barriers) MPG soils on the parcel to be occupied for the purposes of this projection analysis.

The total number of functional acres of impact for each MPG subspecies was calculated based on the intersection of impact area (e.g., project area) with the relative value of habitat at the impact location (e.g., MPG occupancy category and soil preference from Table 4.3, as determined by mapping in Figure 4.1 and Figure 4.2). As described in Appendix F: Impact Projection Summary, where project locations are known (e.g., residential development, commercial development, and school construction), the MPG occupancy category impacted in the activity based on the habitat category at the activity location. For other activities, where location in the County was unknown or widely distributed, to convert affected area to functional acres for Mazama Pocket Gopher subspecies, we assumed the distribution of impacts was proportional to the distribution of habitat across the MPG occupancy and soil preference categories for each subspecies (Table 4.4).

**Table 4.4 Distribution of habitat (land area) in the permit area across MPG habitat categories for each MPG subspecies.**

<table>
<thead>
<tr>
<th>Subspecies/Service Area</th>
<th>Occupancy or Proximity to Known MPG</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Category 1: Occupied</td>
<td>Category 2: Adjacent/Proximal to occupancy</td>
</tr>
<tr>
<td>OPG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Preferred Soil</td>
<td>0.1%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Less Preferred Soil</td>
<td>0.2%</td>
<td>1.0%</td>
</tr>
<tr>
<td>TPG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Preferred Soil</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Less Preferred Soil</td>
<td>0.6%</td>
<td>0.4%</td>
</tr>
<tr>
<td>YPG N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Preferred Soil</td>
<td>0.0%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Less Preferred Soil</td>
<td>0.3%</td>
<td>1.6%</td>
</tr>
<tr>
<td>YPG E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Preferred Soil</td>
<td>0.2%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Less Preferred Soil</td>
<td>0.2%</td>
<td>1.1%</td>
</tr>
<tr>
<td>YPG S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Preferred Soil</td>
<td>0.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Less Preferred Soil</td>
<td>1.3%</td>
<td>4.7%</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td>3.0%</td>
<td>11.1%</td>
</tr>
</tbody>
</table>
Figure 4.1 Map of Mazama Pocket Gopher occupancy categories in each Service Area in Thurston County.
Figure 4.2 Map of Mazama Pocket Gopher soil preference in each Service Area in Thurston County.
4.2.2 Taylor’s Checkerspot Butterfly and Oregon Vesper Sparrow

Habitat values for Taylor’s Checkerspot and Oregon Vesper Sparrow were assigned using information from the previously developed Prairie Habitat Assessment Methodology (PHAM; Thurston County Resource Stewardship Department 2014), which describes how suitable a set of habitat types (PHAM habitat types: Table 4.5) are for these Covered Species. PHAM uses factors to determine habitat value, including: 1) habitat classes defined by vegetation and 2) likelihood of occupancy. PHAM was calibrated for the habitat needs of Taylor’s Checkerspot and Streaked Horned Lark. In the absence of a tool to estimate and describe habitat suitability for Oregon Vesper Sparrow, values for Streaked Horned Lark were used.

Within prairie habitat, we used high-resolution aerial imagery from 2012 and 2013 (Google Earth, <1 m resolution) to estimate the distribution of the PHAM habitat types at 200 randomly selected points via Google Earth. The resulting distribution is assumed to reflect the distribution of PHAM habitat types in the permit area, and is shown in Table 4.6. The impact area from Covered Activities, in combination with the proportional distribution of PHAM habitat types (Table 4.5) and the habitat suitability of those PHAM habitat types (Table 4.5) was used to calculate the functional acres of impact for Taylor’s Checkerspot and Oregon Vesper Sparrow.

4.2.3 Oregon Spotted Frog

Countywide impacts to OSF were projected within the 39,493 ac (15,982 ha) OSF Habitat Screen (Figure 2.4). Impacts that result in permanent degradation or loss of suitable OSF habitat in the OSF Habitat Screen are categorized as permanent. Impacts that degrade habitat for an interim period are categorized as temporary. For OSF, it is assumed the majority of impacts will be minimized, due in part to unsuitable building conditions (permanent water or flooded several months of the year) in OSF habitat and existing wetland protections (see Appendix F: Impact Projection Summary).

On-the-ground surveys for OSF locations in Thurston County to date have focused on areas immediately around known locations. The OSF Habitat Screen identifies a mix of known and potential habitat for OSF. The County acknowledges the entire OSF Habitat Screen is not suitable OSF habitat. Therefore, it is anticipated that prior to any Covered Activity occurring under this HCP in the OSF Habitat Screen except routine right-of-way maintenance, an on-the-ground OSF habitat verification, potentially with a follow up species survey and technical assistance comments from USFWS on survey results will be completed. Impacts will only be assessed where suitable OSF habitat is verified. See Appendix G: Thurston County HCP Oregon Spotted Frog Survey Protocol.
Table 4.5 Projected potential occupancy/suitability values (TCB values from PHAM), which indicate the predicted likelihood (0 = Zero likelihood, 1 = 100% likelihood) that a habitat type is suitable for Taylor’s Checkerspot or Oregon Vesper Sparrow.

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Description</th>
<th>TCB</th>
<th>OVS</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-Quality Native Prairie</td>
<td>Areas dominated by herbaceous vegetation, which includes both annual and perennial grasses and forbs, where less than 25 percent of total vegetative cover is comprised of shrubs, and less than 5 percent is comprised of trees. Native herbaceous species comprise 30 percent or more of total cover. These grasslands are most often located on glacial outwash soils (prairies) and shallow soils on rock outcrops (balds).</td>
<td>0.80</td>
<td>0.80</td>
</tr>
<tr>
<td>Native Prairie</td>
<td>Areas dominated by herbaceous vegetation, where less than 50 percent of total vegetative cover is comprised of shrubs, and less than 5 percent is comprised of trees. Native herbaceous species comprise 10 to 30 percent of total cover. These grasslands are most often located on glacial outwash soils (prairies) and shallow soils on rock outcrops (balds).</td>
<td>0.50</td>
<td>0.40</td>
</tr>
<tr>
<td>Degraded Prairie</td>
<td>Areas dominated by herbaceous vegetation, where less than 50 percent of total vegetative cover is comprised of shrubs and less than 5 percent is comprised of trees. Native herbaceous species comprise less than 10 percent of total cover. This habitat type includes herbaceous vegetation that is located on soil survey map units that may have supported pre-settlement grasslands. This habitat type also includes herbaceous vegetation that is located in areas that are regularly mowed and, in some cases, have remnant native grassland plant species. Some of these grasslands provide habitat for rare animal and plant species.</td>
<td>0.40</td>
<td>0.40</td>
</tr>
<tr>
<td>Shrub-Dominated Vegetation</td>
<td>Areas that have 50 percent or more of total vegetative cover as shrubs at least 0.5 m (1.6 ft) tall and total tree cover less than 5 percent. Vegetation is native or non-native. This habitat type is located on soil survey map units that may have supported pre-settlement grasslands.</td>
<td>0.10</td>
<td>0.10</td>
</tr>
</tbody>
</table>
Table 4.6 Distribution of 200 randomly selected points within PHAM habitat types (Table 4.5) across prairie habitat in the permit area.

<table>
<thead>
<tr>
<th>Permit Area Habitat Type Distribution Based on Sample Point Analysis</th>
<th>% Frequency in Prairie Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAM Habitat Type</td>
<td></td>
</tr>
<tr>
<td>High quality native prairie</td>
<td>0%</td>
</tr>
<tr>
<td>Native Prairie</td>
<td>6%</td>
</tr>
<tr>
<td>Degraded Prairie</td>
<td>57%</td>
</tr>
<tr>
<td>Shrub-dominated vegetation</td>
<td>20%</td>
</tr>
<tr>
<td>Oak Savanna</td>
<td>0%</td>
</tr>
<tr>
<td>Other/None of the above</td>
<td>17%</td>
</tr>
</tbody>
</table>

4.3 Projected Impacts Resulting from Covered Activities

Anticipated countywide impacts to each of the Covered Species resulting from Covered Activities over the 30-year permit term are summarized in Table 4.1 (Olympia, Tenino and Yelm Pocket Gopher) and Table 4.2 (Taylor’s Checkerspot, Oregon Vesper Sparrow and Oregon Spotted Frog), and described in this section. All impacts are assumed to be permanent unless otherwise indicated.

Indirect impacts are those impacts that may occur at a different time or in a different place than the direct impacts (e.g., increased traffic, fragmentation of habitat, etc.), and are discussed for each activity after the description of direct impacts.

Over time, Covered Activities are anticipated to ebb and flow with the pace of growth, but on average over a 5-year period, it is anticipated the projected area of activity and associated take will follow a fairly linear pattern.

4.3.1 Residential Development

Impact estimates for new residential development in the HCP permit area relied on development projections from Thurston Regional Planning Council (TRPC 2012a) as described in Section 3.1.1 Residential Development. Impacts are summarized in Table 4.1 and Table 4.2.

Specific assumptions used in the analysis of impacts are included by habitat type in the sections below.

Prairie Species

Direct impacts to each Covered Species from new residential development were estimated using 1) the intersection of the mapped species extent with TRPC’s anticipated development maps for individual
parcels and 2) the typical area affected by new residential development. The following planning assumptions were used for the countywide analysis:

- Within urban growth areas (UGA), complete habitat loss was assumed over 100% of parcel, as at the time of development these lots are 1 ac (0.4 ha) or less, and lots are frequently completely converted to residential use.

- A typical rural residential dwelling unit and associated infrastructure (driveway, well, etc.) and all accessory buildings will affect no more than 1 ac (0.4 ha) over the 30-year HCP.

- Where NLCD Prairie Habitat intersects less than 30% of a parcel 5 ac (2 ha) or greater outside the UGA, it was assumed that the financial incentive to reduce mitigation costs and existing County CAO regulations to avoid critical areas would result in the impacts being avoided by siting the development footprint outside of habitat.

- Assume only 90% of non-forested (as estimated using NLCD) habitat is in fact suitable instead of 100%, due to forest encroachment and other suitability factors not captured.

- Assume a 5% reduction in impacts overall for the financial incentive to avoid mitigation costs.

- To account for lands to be acquired for mitigation, assume ~11% of Reserve Priority Area (RPA) land is acquired for mitigation purposes, and no development impacts will occur.

- Habitat values for prairie species were assigned for each parcel using the methods described in Section 4.2.1 and 4.2.2.

Indirect effects of residential development on the Covered Species residing in prairie are expected to include:

- Habitat degradation is expected to occur within the areas adjacent to driveways and structures (inside the development envelope). This degradation may include increased noise and light disturbance, disturbance/displacement/trampling/predation by domestic animals, vehicular disturbance/displacement/crushing/strike, introduction or spread of diseases or non-native plant and animal species, placement of small structures (dog houses, children's play houses) trash dumping, compaction of soil from foot and vehicular travel, parking of vehicles, piling of wood or other materials, conversion of habitat to landscaping, or contamination from accidental spills of hazardous materials. These indirect effects may be temporary but recurring, and will vary with the type of residential development and the nature of the dwelling occupants.

- Increased habitat fragmentation, as remaining patches of habitat are either made smaller due to losses from development, or are further separated from each other. Increased fragmentation may result in further genetic isolation of individuals of the prairie species. Habitat fragmentation effects are expected to be permanent in nature, and increase in intensity as remaining habitat is developed.
• Modification of prairie habitat from construction of homes on prairie habitats in the quantity projected to occur in the 30 year permit term will result in loss of biological diversity as habitat loss and degradation occur and species may be removed from the area. Reductions in biological diversity have already occurred from existing development in Thurston County, and further reductions may indirectly (and directly) affect the Covered Species through decreasing the remaining overall ecosystem function in prairie and wetland/riparian habitats.

**Oregon Spotted Frog**

Take of OSF and impacts to their habitat from new residential development were projected using 1) the intersection the OSF Habitat Screen (Figure 2.4) with TRPC’s anticipated development maps for individual parcels, 2) the typical area affected by new residential development, and 3) the following analysis assumptions derived from County records and technical assistance from USFWS and WDFW:

• Where OSF habitat intersects less than 10% of a parcel 5 ac (2 ha) or greater outside the City of Tumwater’s UGA, it was assumed impacts will be avoided by siting the development outside of habitat.

• Ninety percent (90%) of the mapped wetland core areas are suitable for OSF (see Section 2.2.2; Figure 4.3), and 95% of impacts will be avoided in those areas. Many of these core areas are flooded part of the year and unsuitable for construction, which in combination with existing wetland protections, will result in some avoidance of impacts.

• Fifty percent (50%) of the wetland/riparian buffer areas are suitable habitat for OSF, or were within the 200 ft (61 m) setback from suitable habitat.

• In the wetland/riparian buffers, 80% of impacts will be avoided due to existing CAO regulations (CAO Chapter 24.30), and the financial incentive to avoid or reduce mitigation.

• Outside the City of Tumwater’s UGA, an average area of 1 ac (0.4 ha) is assumed to be completely impacted by each residential dwelling construction.

• Where the OSF Habitat Screen intersects the City of Tumwater’s UGA, and avoidance would not occur, complete habitat loss was assumed for the entire parcel since the entire parcel is likely to be graded prior to construction.

Indirect effects of residential development in OSF habitat are expected to include:

• Habitat degradation within the areas proximal to roads and structures (inside the development envelope), as discussed for prairie habitats. Specifically, for OSF habitat degradation may include altered hydrology, and water quality degradation from runoff from driveways and roads associated with development. These indirect effects may be temporary but recurring, and will vary with the type of residential development and the dwelling occupants.
Figure 4.3  Map of Oregon Spotted Frog Habitat Screen wetland core areas in Thurston County.
• Increased habitat fragmentation, as remaining pieces of habitat are either made smaller due to losses from development, or are further separated from each other. Increased fragmentation may result in further genetic isolation of individuals of OSF. Habitat fragmentation effects are expected to be permanent in nature, and increase in intensity as remaining habitat is developed.

4.3.2 **Added Accessory Structures for Residential Development**

Impacts will occur from construction of additional accessory structures on parcels developed prior to issuance of the requested ITP and outside of the 30 ft (9 m) envelope that is assumed to already be impacted around driveways and existing structures. These additional accessory structures could be barns, detached structures, or other accessory structures requiring a County permit. County staff projected the total number of such actions to occur based on County-wide records for a 10 year period (2004-2014). Habitat to be impacted was estimated based on the proportion of the County within prairie habitat and the OSF Habitat Screen, and habitat values were assigned using the proportional methods described in Section 4.2. Impacts were estimated using the average footprint for these structures, with an added 30 ft (9 m) buffer. It was assumed that on average, 50% of the added accessory structures and buffer would be located outside the building envelope of an existing structure or road, impacting a new area. It was assumed that the remaining 50% of the added accessory structures would have 20% of their footprint or buffer area within the building envelope of an existing structure or road, not requiring additional mitigation. It was also assumed the area affected by these structures was unforested (e.g., within NLCD Prairie Habitat), 68% of the time, following the approximate proportion of the Permit Area in NLCD Prairie Habitat. In addition, the County assumed there would be a 5% overall reduction in impacts due to the financial incentive to avoid mitigation costs.

Impacts are summarized in Table 4.1 and Table 4.2.

Indirect effects from added accessory structures for residential development are expected to be similar to those for residential development, but on a smaller scale due to the smaller size of added accessory structures, and their addition in already developed areas.

4.3.3 **Septic Repair or Extension & Home Heating Oil Tank Removal**

Added to the TRPC projections for new residential developments are impacts resulting from:

1. Septic systems that must be installed outside the 30 ft (9 m) development buffer or repair or alteration of septic systems existing prior to HCP implementation (both actions, on average, affecting 2,500 ft² (232 m²) per residential unit).

2. Home heating oil tank decommissioning (affecting ~450 ft² (42 m²) per unit).

County staff projected the total number of such actions to occur based on County-wide records for a 10-year period (2004-2014). Species impacts were projected based on the proportion of the County within the mapped extent for each species (and the OSF Habitat Screen), and habitat values were assigned using the proportional methods described in Section 4.2. Impacts are summarized in Table 4.1 and Table 4.2.
Indirect effects from septic repair or extension and home heating oil tank decommission in areas of high quality or native prairie habitat may include:

- Habitat degradation resulting from non-native species establishment in areas of disturbed soil.

### 4.3.4 Commercial and Industrial Development

The countywide assessment assumes commercial/industrial development will impact 100% of habitat within a parcel based on aerial photography review of existing commercial/industrial developments in Thurston County. Assumptions regarding level of build out and avoidance are consistent with analysis methods for residential development. Impacts are summarized in Table 4.1 and Table 4.2.

Indirect effects of commercial and industrial development are expected to include:

- Habitat degradation within areas adjacent (or close) to commercial developments may include increased noise and light disturbance, vehicular disturbance/displacement, vehicle crushing/strike, introduction or spread of diseases or non-native plant and animal species, trash dumping, or contamination from accidental spills of hazardous materials. Specifically for OSF, habitat degradation may include altered hydrology, and water quality degradation from runoff from impervious surfaces associated with commercial and industrial development. These indirect effects may be temporary but recurring, and will vary with the type of commercial and industrial development.

- Increased habitat fragmentation may also occur, as commercial development impacts remaining pieces of habitat, makes them smaller, or makes remaining habitat patches further separated from each other. Increased fragmentation may result in further genetic isolation of individuals of the Covered Species. Habitat fragmentation effects are expected to be permanent in nature, and increase in intensity as remaining habitat is developed.

- Modification of prairie habitat due to commercial and industrial development on prairie habitats in the quantity projected to occur in the 30 year permit term will result in loss of biological diversity as habitat loss and degradation occur and species may be removed from the area. Reductions in biological diversity have already occurred from existing development in Thurston County, and further reductions may indirectly (and directly) affect the Covered Species through decreasing the remaining overall ecosystem function in prairie and wetland/riparian habitats.

### 4.3.5 Public Service Facility Construction

Unavoidable impacts from public service facilities are expected to occur only in prairie habitat. No impacts to OSF are anticipated due to existing wetland protections. For the purpose of this analysis, 100% of habitat is assumed impacted in areas developed for public service facilities. Impacts are summarized in Table 4.1 and Table 4.2.
**Schools**
Impacts for expanded (42 ac (17 ha)) and newly constructed schools (60 ac (24 ha)) were based on projections from the Rochester and Tumwater School Districts (all school districts within the permit area were invited to provide information). Impacts were estimated using the intersection of parcels with mapped habitat.

**Fire Stations**
Ten new rural fire stations (2 ac (0.5 ha) each) are expected to affect 20 ac (8 ha) of habitat in the permit area. Specific locations are not known at this time. Impacts were estimated based on the proportions of land in prairie habitat as described in Table 4.1.

Indirect effects of public service facility construction are expected to include:

- Habitat degradation within areas proximal to the school or fire station may include increased noise and light disturbance, vehicular disturbance/displacement/crushing/strike, introduction or spread of diseases or non-native plant and animal species, trash/litter spread, or contamination from accidental spills of hazardous materials related to fire fighting. These indirect effects may be temporary but recurring, and will vary with the type of commercial and industrial development.

- Increased habitat fragmentation may also occur, as public service facility construction impacts remaining pieces of habitat, makes them smaller, or makes remaining habitat patches further separated from each other. Increased fragmentation may result in further genetic isolation of individuals of the Covered Species. Habitat fragmentation effects are expected to be permanent in nature, and increase in intensity as remaining habitat is developed.

### 4.3.6 Transportation Capital Projects
Thurston County public works staff used information from regular work plans and their 20-year Capital Facilities Plan (CFP) to estimate impacts from activities implemented or permitted by the public works division, and then extrapolated those impacts (150% of 20-year projections) to estimate the amount of impact likely over the 30-year permit term. Estimated affected areas are included in Table 3.7 for transportation related projects. Affected areas were estimated on a project by project basis by County staff. Impacts are summarized in Table 4.1 and Table 4.2.

Areas around existing, established transportation infrastructure already experience indirect effects of habitat degradation and fragmentation. Expected increases in indirect effects of transportation capital projects (e.g., intersection widening, sidewalk addition) are expected to include:

- Temporary habitat degradation in areas proximal to construction projects such as increased noise and light disturbance during the construction, vehicular disturbance/displacement/crushing/strike, introduction or spread of diseases or non-native plant and animal species from equipment, trash/litter spread, or contamination from accidental spills of hazardous materials from equipment.

- Recurring habitat degradation in areas proximal to construction projects that increase road width or capacity, may include increased noise and light disturbance from increased vehicle use.
or number, increased vehicular disturbance/displacement-crushing/strike risk, and increased introduction or spread of diseases or non-native plant and animal species, greater trash/litter spread, or higher likelihood of contamination from accidental spills of hazardous materials resulting from higher levels of vehicle and pedestrian traffic.

4.3.7 Transportation Maintenance and Work in Right-of-Way

Transportation maintenance and work occurring in the roadside right of way, as described in Chapter 3: Proposed Action are covered by the HCP throughout the permit area (associated with transportation infrastructure in County jurisdiction). The area of the road right-of-way outside the road surface/gravel prism where soil disturbing activities are likely (an average of 10.5 ft (3.2 m) on both sides of the road), and all culverts will be affected by a maintenance activity at least once during the permit term of the HCP. Impacts to the Covered Species from transportation maintenance activities will be minimized as practicable through application of the Best Management Practices (Appendix C). Impacts from transportation maintenance are expected to be temporary in nature, were analyzed as described in Section 4.2 and are included in Table 4.1 and Table 4.2.

Utility work and emergency response actions will also occur in the same area of right-of-way already affected by transportation maintenance, therefore additional temporary impacts from utility work and emergency response activities are not projected individually here. All right-of-way impacts will be categorized by activity and included in the annual HCP reports to USFWS.

Indirect effects of public transportation maintenance and work in right-of-way are expected to include:

- Temporary but recurring habitat degradation (beyond that already occurring from regular road traffic) in areas proximal to the road right-of-way may include increased noise and light disturbance during periodic maintenance equipment operation (e.g., mowing equipment), introduction or spread of diseases or non-native plant and animal species from equipment, trash/litter spread, or contamination from accidental spills of hazardous materials from equipment.

4.3.8 Landfill and Solid Waste Management

Based on the Capital Facilities Plan and past activities, County Public Works and Environmental Health staff estimated areas that would be affected by waste management-related Covered Activities implemented or permitted by the County. Where specific locations were not known, the distribution of impacts across all species was estimated based on the methods in Section 4.2.

Projected impacts from landfill and solid waste management are included in Table 4.1 and Table 4.2.

Indirect effects of landfill and solid waste management activities are expected to include:

- Habitat degradation within areas proximal to the newly constructed facilities may include increased noise and light disturbance, introduction or spread of diseases or non-native plant and animal species, trash/litter spread, or contamination from accidental spills of hazardous materials. These indirect effects may be temporary but recurring, and will vary with the type of facility constructed.
- Habitat degradation in areas disturbed for solid waste clean-up may include temporarily increased noise and light disturbance from equipment during the clean-up process, introduction or spread of diseases or non-native plant and animal species from equipment, trash/litter spread, or contamination from accidental spills of hazardous materials from equipment.
- Increased habitat fragmentation may also occur, as solid waste management facilities impact remaining pieces of habitat, makes remaining habitat patches smaller, or makes remaining habitat patches further separated from each other. Increased fragmentation may result in further genetic isolation of individuals of the Covered Species. Habitat fragmentation effects are expected to be permanent in nature, and increase in intensity as remaining habitat is developed.

4.3.9 Water Resources Management

County public works, water resources, and environmental health staff estimated impact areas for water and wastewater management related Covered Activities implemented or permitted by the County. Where specific locations were not known, the distribution of impacts was analyzed as described in Section 4.2. Projected impact areas are summarized in Table 4.1 and Table 4.2.

Indirect effects of water resources management activities are expected to include:
- Habitat degradation within areas proximal to the newly constructed facilities may include increased noise and light disturbance, introduction or spread of diseases or non-native plant and animal species from construction or maintenance equipment, trash/litter spread, or contamination from accidental spills of hazardous materials. These indirect effects may be temporary but recurring, and will vary with the type of facility constructed.
- Increased habitat fragmentation may also occur, as water resource management facilities impact remaining pieces of habitat, make remaining habitat patches smaller, or make remaining habitat patches further separated from each other. Increased fragmentation may result in further genetic isolation of individuals of the Covered Species. Habitat fragmentation effects are expected to be permanent in nature and increase in intensity as remaining habitat is developed.

4.3.10 County Parks, Trails and Land Management

County public works and parks staff identified trail and park management activities expected to be implemented or permitted by the County over the requested 30-year permit term. Analysis methods are included in Section 4.2.

Projected impact from trail maintenance, trail construction, and park improvements and summarized in Table 4.1 and Table 4.2.

Indirect effects of County parks, trails, and land management activities are expected to include:
- Habitat degradation within areas proximal to the newly constructed trails or parks improvements may include increased noise disturbance from non-motorized public use, noise disturbance from trail maintenance (e.g. mowing) equipment, introduction or spread of diseases or non-native plant and animal species, increased predation or harassment by domestic pets, trash/litter spread or contamination from accidental spills of hazardous materials from
maintenance equipment. These indirect effects may be temporary but recurring and will vary with season (increasing in drier months (June-September)).

- Increased habitat fragmentation is not expected from trail maintenance, construction (on railway), or small parks improvements.

4.4 Effects on Designated Critical Habitat

Critical habitat is designated by the USFWS for specific areas that have the physical and biological features essential to the conservation and recovery of listed species (Primary Constituent Elements: See Appendix H: Covered Species Critical Habitat PCEs).

As defined by the USFWS, designated critical habitat is the specific areas within the geographic area, occupied by the species at the time it was listed, that contain the physical or biological features that are essential to the conservation of endangered and threatened species and that may need special management or protection. Critical habitat may also include areas that were not occupied by the species at the time of listing but are essential to its conservation. Critical habitat designations affect only Federal agency actions or federally funded or permitted activities. Critical habitat designations do not affect activities by private landowners if there is no Federal “nexus”—that is, no Federal funding or authorization. Federal agencies are required to avoid “destruction” or “adverse modification” of designated critical habitat.

The HCP’s effect on designated critical habitat must be evaluated during the USFWS review of the HCP, and are summarized in the sections below.

Designated Critical habitat for five of the species/subspecies covered by this HCP (OSF, Olympia Pocket Gopher, Tenino Pocket Gopher, Yelm Pocket Gopher, and Taylor’s Checkerspot) is found within the permit area (no critical habitat for streaked horned lark is present in the permit area (78 FR 61506-61584)). In general, designated critical habitat areas are high priority for habitat conservation and acquisition under the HCP or by partners, and are often located within Reserve Priority Areas (see Chapter 5: Conservation Program). Impacts will be avoided or minimized as practicable through implementation of the Best Management Practices (Appendix C). Potential impacts on designated critical habitat are evaluated below and are expected to occur incrementally throughout the permit term.

4.4.1 Mazama Pocket Gopher Subspecies

In April 2014, USFWS finalized critical habitat designations for the subspecies of MPG addressed in this HCP (79 FR 19712-19756).

**Olympia Pocket Gopher**

Olympia Pocket Gopher has approximately 676 ac (273 ha) of designated critical habitat, which is entirely on land owned by the Port of Olympia at the Olympia Airport. These lands are not in the permit area and will therefore not be impacted by the Covered Activities.
Tenino Pocket Gopher

Tenino Pocket Gopher has approximately 400 ac (162 ha) of designated critical habitat, located in the Rocky Prairie vicinity, and entirely within the permit area. Potential adverse impacts to critical habitat may occur from a subset of the Covered Activities, which are described below. Total critical habitat affected is estimated to be approximately 54.2 ac (21.5 ha), or 14% of the critical habitat for Tenino Pocket Gopher.

**Development**

The designated critical habitat is within a 593 ac (240 ha) privately owned tax parcel. County records indicate there is currently one dwelling, and projections (70% build out) through 2045 indicate 53 dwelling units could be added to this parcel during the permit term, with up to 53 ac (21 ha) of habitat affected.

**Transportation Projects and Maintenance**

Roadside maintenance activities are expected to have temporary effects to 1.2 ac (0.5 ha) of designated critical habitat for Tenino Pocket Gopher.

Yelm Pocket Gopher

Yelm Pocket Gopher has two units of designated critical habitat, covering 533 ac (216 ha), of which roughly, 443 ac (179 ha) are in the permit area. Potential adverse impacts to designated critical habitat may occur from a subset of the Covered Activities, which are described below. Total critical habitat affected is estimated to be 47.2 ac (19.1 ha), or 11% of the critical habitat in the permit area.

**Development**

- **All 289 ac (117 ha) of subunit 1-YPG-A (Tenalquot Prairie area) is in the permit area. The critical habitat is spread over 9 lots. Three of the lots (135 ac (54.6 ha) of critical habitat) are protected by The Nature Conservancy as part of Tenalquot Prairie, and will not have impacts covered under the HCP. The remaining 6 lots have 154 ac (62.3 ha) of designated critical habitat, and under HCP projections and development assumptions, these lots could have a total of 21.3 dwelling units added in the critical habitat, affecting up to 21.3 ac (9 ha).**

- **Approximately 154 ac (62.3 ha) of subunit 1-YPG-B (Rock Prairie vicinity) is in the permit area. The designated critical habitat is spread over 6 lots. A total of 16.7 dwelling units are projected for construction in the designated critical habitat, affecting 16.7 ac (6.8 ha).**

**Transportation Projects and Maintenance**

Roadside right of way maintenance activities are expected to have temporary effects to 1.7 ac (0.69 ha) of critical habitat in 1-YPG-A and 1.9 ac (0.77 ha) in 1-YPG-B.

4.4.2 Taylor’s Checkerspot Butterfly

In October 2013, USFWS designated 1,941 ac (785 ha) of critical habitat for Taylor’s Checkerspot butterfly (78 FR 61506-61584).

Seven subunits of designated critical habitat, covering approximately 1,053 ac (426 ha), are within the Puget Sound area, and the permit area. Potential impacts to designated critical habitat may occur from a
subset of the Covered Activities, which are described below, and would affect a total of 25.1 ac (10 ha) or 2% of critical habitat in the permit area.

**Development**
Potential impacts from development to designated critical habitat are summarized across all subunits. Approximately 330 ac (133.5 ha) of subunit 1-D and 1-E (East and West) are on developable private lands in the permit area. Anticipated development in designated critical habitat, is approximately 23 dwelling units affecting 23 ac (9 ha).

**Transportation Projects and Maintenance**
Roadside maintenance activities are expected to have temporary effects to 0.6 ac (0.24 ha) of subunit 1-B and 1.8 ac (0.7 ha) of subunit 1-D.

Table 4.8 Anticipated potential effects to Taylor’s Checkerspot butterfly critical habitat from development covered under the HCP.

<table>
<thead>
<tr>
<th>SUBUNIT</th>
<th>Total Acres* Critical Habitat Outside City and Federal</th>
<th>Landowner</th>
<th>Projected Dwelling Units</th>
<th>Affected Critical Habitat (acres)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-A (Rocky Prairie)</td>
<td>15</td>
<td>WDNR</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1-A (Wolf Haven)</td>
<td>28</td>
<td>Wolf Haven</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1-B (Reserve)</td>
<td>135</td>
<td>TNC</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1-C (Glacial Heritage)</td>
<td>545</td>
<td>Thurston County</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1-D (Rock Prairie)</td>
<td>154</td>
<td>Private</td>
<td>16.7</td>
<td>16.7</td>
</tr>
<tr>
<td>1-E (Bald Hills E + W)</td>
<td>176</td>
<td>Majority private</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,053</strong></td>
<td></td>
<td><strong>22.7</strong></td>
<td><strong>22.7</strong></td>
</tr>
</tbody>
</table>

*1 acre = 0.4 ha

**4.4.3 Oregon Spotted Frog**
In May 2016, USFWS designated critical habitat for OSF (81 FR 29335 29396).

There are approximately 4,773 ac (1,931 ha) of designated critical habitat in the permit area. All critical habitat lies within the OSF Habitat Screen. Potential adverse impacts to critical habitat may occur from a subset of the Covered Activities, which are described below, and would affect approximately 76 ac (31 ha) or 1.6% of critical habitat in the permit area.

**Development**
Designated critical habitat in the permit area intersects 434 lots. Of those, 85 lots are under conservation easement or public ownership and will not have impacts covered under the HCP.
Of the remaining 349 lots with designated critical habitat, 62 have development capacity of one or more dwelling units. Of the lots with development capacity, 26 have designated critical habitat outside mapped wetland core areas (in which buildability is limited and the County will encourage avoidance through its CAO and BMPs). In the 26 lots, we project a total of 69 new dwelling units, each affecting up to one acre of designated critical habitat, for a total potential impact of 69 ac (28 ha). This impact is expected to remove Primary Constituent Elements, or PCEs from the designated critical habitat. For more information on PCEs, please see Appendix H.

Transportation Projects and Maintenance
Transportation projects (Tilley Road Bridge replacement, Maytown Road Upgrade) are anticipated to permanently affect 1.6 ac (0.6 ha) of designated critical habitat. In addition, regular roadside maintenance is expected to have temporary, recurring effects to 5.6 ac (2.3 ha) of designated critical habitat (11,689 ft (3,562 m) of roads at 21 ft (6.4 m) width of combined right-of-way). This activity may affect refugia if large woody debris is being removed and mowing down to the substrate occurs (cover removed).

Parks and County Land Management
The Gate to Belmore trail will modify an existing railroad line, intersecting roughly 2.5 mi (4 km) in designated critical habitat. Work is not anticipated to affect PCEs. Specific conservation measures for this project are included in Chapter 5: Conservation Program.

4.5 Projected Impacts of the Taking

In the absence of better available information to describe the number of individuals occurring within the permit area or areas to be impacted, the overall projected effects of the impacts in the HCP on each Covered Species from all Covered Activities was calculated as the estimated percent of current (2019) mapped habitat area for each Covered Species in the HCP Permit Area that will be impacted by each Covered Activity (Table 4.7). For each MPG subspecies, we also estimated the % of current habitat area in functional acres to be impacted by each Covered Activity. Olympia, Tenino and Yelm Pocket Gopher: Total current habitat in the permit area was estimated as the area in each MPG subspecies area with MPG soils in NLCD prairie habitat. Total functional acres were estimated using methods consistent with those in Section 4.2.1. All road right-of-way was assumed to be open habitat equating to NLCD prairie habitat.

- Taylor’s Checkerspot: Total current habitat in the permit area was estimated as the area within dispersal distance of known populations in the permit area.
- Oregon Vesper Sparrow: Total current habitat in the permit area was estimated as the area mapped for potential Oregon Vesper Sparrow occupancy.
- OSF: Total current habitat in the permit area was estimated as the area of the OSF Habitat Screen (Figure 2.4).

The County assumes that the primary impact to the Covered Species will be habitat loss and harassment, though direct injury or mortality to non-mobile individuals may occur (e.g., Taylor’s
Checkerspot eggs, larvae or Oregon Vesper Sparrow eggs or unfledged young in nests). Habitat loss will result in a reduced ability for the Covered Species to forage, feed, and reproduce.

Table 4.7 Summary of the overall effect of the impacts in the HCP on the Covered Species, as described by the percent of overall habitat in the permit area for each Covered Species affected by the Covered Activities.

<table>
<thead>
<tr>
<th>Effect of the Taking: Estimated % of Overall Habitat for each Covered Species in Permit Area Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPG</td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>Total Estimated Acres Habitat in Permit Area</td>
</tr>
<tr>
<td>Percent of Acres Habitat affected by HCP</td>
</tr>
<tr>
<td>Total Estimated Functional acres in Permit Area</td>
</tr>
<tr>
<td>Percent of Functional Acres affected by HCP</td>
</tr>
</tbody>
</table>

* 1 acre = 0.404686 hectare

4.6 Expected Benefits of the Conservation Program

The expected result of the Conservation Program, as described in Chapter 5, is that the functional amount of habitat lost from impacts, which is expected to be degraded in quality and fragmented in distribution, will be compensated with an equal functional amount of protected, restored and managed lands in the Conservation Lands System. The increased amount of protected, restored and managed habitat is expected to result in increases in the overall quality of habitat for the Covered Species in the permit area, both due to reduction in habitat fragmentation, but also in increases in the quality of vegetation condition. The structure of the Conservation Lands System will also allow for expansion of existing Covered Species populations and future range expansions, supported by greater habitat connectivity. The Conservation Program is also expected to result in increases in acres and quality of suitable breeding habitat, increased numbers of offspring, enhanced survival of adults, and reduction of threats to breeding areas for the Covered Species.

4.7 Net Effect to Covered Species

The net effects are an accounting of the impact of take in comparison to the benefits of the HCPs Conservation Program. This calculates the expected end or net result of implementation of the HCP. Per the USFWS:

\[
\text{Negative impact of the taking} + \text{Benefits of the conservation program} = \text{Net effect of HCP}
\]
Accounting of the net effect of the HCP is included in Table 4.8. Calculation of future expected impacts and benefits are described in Chapter 6: Implementation.
Table 4.8 Accounting of the net effect of the Thurston County HCP to the Covered Species.

<table>
<thead>
<tr>
<th>Covered Species</th>
<th>Negative Impact of the Taking: Habitat Lost</th>
<th>Benefits of Conservation Program: Habitat protected, restored, and managed for occupancy in perpetuity.</th>
<th>Net Effect of HCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olympia Pocket Gopher</td>
<td>632 Fx Ac Habitat lost is fragmented, degraded in quality. Less than 5% of habitat has confirmed species presence.</td>
<td>632 Fx Ac Habitat is protected, restored, and managed for occupancy in perpetuity.</td>
<td>0 Fx Ac habitat loss Net increase in habitat quality, occupancy, and stability.</td>
</tr>
<tr>
<td>Tenino Pocket Gopher</td>
<td>175 Fx Ac Habitat lost is fragmented, degraded in quality. Less than 10% of habitat has confirmed species presence.</td>
<td>175 Fx Ac Habitat is protected, restored, and managed for occupancy in perpetuity.</td>
<td>0 Fx Ac habitat loss Net increase in habitat quality, occupancy, and stability.</td>
</tr>
<tr>
<td>Yelm Pocket Gopher</td>
<td>3747 Fx Ac Habitat lost is fragmented, degraded in quality. Less than 10% of habitat has confirmed species presence.</td>
<td>3747 Fx Ac Habitat is protected, restored, and managed for occupancy in perpetuity.</td>
<td>0 Fx Ac habitat loss Net increase in habitat quality, occupancy, and stability.</td>
</tr>
<tr>
<td>Taylor’s Checkerspot Butterfly</td>
<td>16 Fx Ac Habitat is fragmented, degraded in quality. Habitat lost is not known to be occupied, but within dispersal distance for intermittent use.</td>
<td>16 Fx Ac Habitat is protected, restored, and managed for occupancy in perpetuity.</td>
<td>0 Fx Ac habitat loss Net increase in habitat quality, occupancy, and stability.</td>
</tr>
<tr>
<td>Oregon Vesper Sparrow</td>
<td>25 Fx Ac Habitat is fragmented, degraded in quality. Habitat lost is not known to be occupied, but within potential dispersal distance from populations on JBLM, and may receive some intermittent use.</td>
<td>25 Fx Ac Habitat is protected, restored, and managed in perpetuity.</td>
<td>0 Fx Ac habitat loss Net increase in habitat quality, occupancy, and stability.</td>
</tr>
<tr>
<td>Covered Species</td>
<td>Negative Impact of the Taking: Habitat Lost</td>
<td>Benefits of Conservation Program: Habitat protected, restored, and managed</td>
<td>Net Effect of HCP</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Oregon Spotted Frog</td>
<td>618 Acres</td>
<td>618 Acres</td>
<td>0 Ac habitat loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Net increase in habitat quality and stability.</em></td>
</tr>
</tbody>
</table>
Chapter 5  Conservation Program

5.1 Overview

This section presents the overall HCP Conservation Program, including biological goals and conservation objectives, minimization measures, mitigation measures, monitoring, and adaptive management—all of which are designed to meet the regulatory requirements of the ESA and to be consistent with state species and habitat requirements. The Conservation Program will build on and work in concert with existing local, state, and federal conservation actions in the County. The intent is to contribute to the recovery of the HCP Covered Species in Thurston County.

Central to the Conservation Program are mitigation measures to build the Thurston County Conservation Lands System (*Conservation Lands System*), expanding on the existing network of protected lands managed for Covered Species and their habitats. The Conservation Lands System identifies the priority places, tools, and processes to protect the habitats important to the HCP Covered Species. The Conservation Lands System incorporates key areas for conservation throughout Thurston County. Lands will be prioritized for acquisition using criteria in Appendix I: Conservation Land Prioritization Criteria, and through working with the HCP Implementation Team.

Conservation Lands System terminology and currently identified Reserve Priority Areas (RPAs) are mapped in Figure 5.1 and described below:

- **Reserve Priority Areas** (RPAs) are specific areas within where biological and physical conditions are favorable for the conservation of Covered Species and where HCP conservation actions will be directed. One or more RPAs are identified in each Service Area for each subspecies of Mazama Pocket Gopher, Taylor’s Checkerspot, Oregon Vesper Sparrow, and in the area of the Oregon Spotted Frog Habitat Screen.

- **Reserves** consist of individual and adjacent parcels in each RPA that are protected (e.g., as HCP Conservation Lands). Reserves are assemblages of permanently protected parcels, composed of core areas and connecting corridors that are of sufficient collective size and connectivity to enable HCP Covered Species survival in numbers adequate for long-term sustainability.
5.2 Biological Goals and Conservation Objectives

The Biological Goals, Conservation Objectives, and Conservation Measures are intended to illustrate the vision and commitments of the Conservation Program. The Biological Goals describe what the Conservation Program will accomplish by the end of the incidental take permit duration. The Conservation Objectives serve as benchmarks by which to measure progress in achieving goals for each Covered Species, across temporal and spatial scales. Conservation Measures are specific measurable actions that will be implemented to meet the Conservation Objectives and achieve the Biological Goals.

The Biological Goal of the HCP is to maintain viable populations of each of the Covered Species within Thurston County.

Conservation Objectives to meet the Biological Goal are:

1. **Minimize** impacts to the Covered Species, through application of Best Management Practices and outreach to the community (see Section 5.3);
2. Acquire, from willing sellers, **New Reserves** to secure, stabilize, and expand species strongholds, while also building the framework for species recovery. Habitat on each permanently protected parcel will be enhanced and funded for long-term management. Mitigation credits will be earned;

3. Secure permanent **Working Lands** reserves, via conservation easements with willing landowners, to conserve, stabilize, and expand species distributions, and demonstrate land uses compatible with the Covered Species. Habitat on each permanently protected parcel will be maintained with funding for long-term management; and

4. **Enhance the Habitat at Existing Preserves** with current or historical populations of the Covered Species, through funding habitat restoration, enhancement and long-term maintenance on existing protected reserves. This will increase the long-term habitat stability and conservation benefit of these lands and provide essential support for their Covered Species populations.

Conservation Objectives 2, 3 and 4 will generate mitigation credits to offset the impacts from the Covered Activities (summarized in Chapter 4, Table 4.1 Table 4.2). The implementation logistics of credit computation, verification and release are described in the performance standards (included in Chapter 6 and Appendix J: Performance Standards). Performance standards describe the habitat conditions or Covered Species status necessary to release mitigation credits from New Reserves, Working Lands Easements or Enhanced Existing Preserves in the Conservation Lands System during the phases of their habitat enhancement and management over the life of the property. The projected quantity of mitigation credits to be generated for each Covered Species by each Conservation Objective are included in Table 5.1. These quantities may change over the course of HCP implementation. The logistics of the Conservation Lands system are described in Chapter 6: Implementation.

### Table 5.1 Projected mitigation credits to be generated through the Conservation Program.

<table>
<thead>
<tr>
<th>PROJECTED MITIGATION CREDITS GENERATED PER CONSERVATION OBJECTIVE</th>
<th>YPG N</th>
<th>YPG E</th>
<th>YPG S</th>
<th>OPG</th>
<th>TPG</th>
<th>TCB</th>
<th>OVS</th>
<th>OSF</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 1:</strong> Minimize Impacts</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Objective 2:</strong> New Reserves</td>
<td>1357</td>
<td>730</td>
<td>943</td>
<td>632</td>
<td>133</td>
<td>0</td>
<td>0</td>
<td>618</td>
<td>4413</td>
</tr>
<tr>
<td><strong>Objective 3:</strong> Working Lands Easements</td>
<td>0</td>
<td>261</td>
<td>337</td>
<td>0</td>
<td>44</td>
<td>0</td>
<td>25</td>
<td>0</td>
<td>667</td>
</tr>
<tr>
<td><strong>Objective 4:</strong> Enhanced Existing Preserves</td>
<td>0</td>
<td>52</td>
<td>67</td>
<td>0</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>136</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1357</td>
<td>1043</td>
<td>1346</td>
<td>632</td>
<td>178</td>
<td>16</td>
<td>25</td>
<td>618</td>
<td>5216</td>
</tr>
</tbody>
</table>
5.2.1 Conservation Objective 1: Minimize Impacts to the Covered Species

Conservation Measure 1-1: Implement Best Management Practices (BMPs; Appendix C) to minimize impacts to the HCP-covered habitats and species from the Covered Activities.

Tasks:

1-1.1. The County and its permittees will adhere to recommended BMPs to minimize impacts. If BMPs cannot be implemented, County permittees will provide justification and a plan for mitigating unavoidable impacts. BMPs will be reviewed and updated as necessary, as new information becomes available, at least every 5 years.

1-1.2. The County will minimize impacts from the construction of trails, interpretive structures, and other recreation related facilities such as restrooms, picnic areas, and parking lots (See Appendix C: Best Management Practices).

1-1.3. The County identifies Special Management Areas (Appendix C: Best Management Practices) for OSF in County roadside right-of-way that supports or is proximal to known OSF locations, and will apply BMPs for Special Management Areas, including actions under emergency conditions (e.g., road flooding), and non-emergency conditions (regular activities).

1-1.4. Maintain a Beaver Dam Management Plan (Appendix E: Beaver Dam Management Plan) where transportation or stormwater facility maintenance creates neutral to positive effects for OSF and helps ensure transportation safety and protection of private property from flood damage.

Conservation Measure 1-2: Promote management to control and reduce invasive species on private lands throughout the County, but especially in the Reserve Priority Areas (see Section 5.1). The County will not use this broad invasive species control program to offset take from impacts, but feels it is important to manage the long-term cost and effectiveness of the Conservation Program.

Tasks:

1-2.1. Provide landowners technical assistance to control problem species—especially Scotch broom, reed canarygrass, tall oatgrass, and encroaching Douglas-fir. Coordinate technical assistance with USFWS, WDFW, and other prairie restoration practitioners to adaptively update control strategies for use in areas with Covered Species.

1-2.2. Update County Noxious Weed Program list for county-owned property to include Scotch broom, reed canarygrass, tall oatgrass, and other non-native plants that have disproportionate impacts to native prairies in Thurston County.

1-2.3. Continue to hold workshops about invasive species management for private landowners within Reserve Priority Areas.

1-2.4. Maintain the County’s current Noxious Weed Program’s website, which provides information about species biology and control.

Conservation Measure 1-3: Implement the Critical Areas Ordinance (CAO) provisions for avoidance and minimization.
Tasks:

1-3.1. Update and continue implementation of avoidance and minimization provisions in the CAO, and monitor consistent implementation of these measures.

Conservation Measure 1-4: Implement outreach to build community awareness of prairie and wetland/riparian habitat, and facilitate voluntary prairie and wetland/riparian restoration activities in the County to minimize impacts from habitat degradation due to increased development in the HCP Permit Area. These actions will not be used as mitigation.

Tasks:

1-4.1. The County will maintain information on its website regarding Covered Species, prairie and wetland/riparian habitats, conservation measures and programs. The website will be updated at least every 12 months.

1-4.2. The County and partners will host an annual workshop/field day on prairie or wetland/riparian habitat management for landowners.

1-4.3. The County will provide permittees who have prairie-habitat early information on how best to avoid and minimize impacts to habitat and offer opportunities to participate in Conservation Programs.

1-4.4. Encourage landowners within the Reserve Priority Areas to participate in Thurston County’s Voluntary Stewardship Program (VSP) as enabled by the Growth Management Act, RCW 36.70A.700, or the state enabled Open Space Tax Program that provides a reduced tax assessment for Conservation Lands (Chapter 84.34 RCW).

5.2.2 Conservation Objective 2: Protect and Enhance New Reserves

Conservation Measure 2-1: The County will permanently protect and manage New Reserves within the Reserve Priority Areas to offset the unavoidable impacts caused by the Covered Activities. A total of 4,413 credits are anticipated to be generated from New Reserves over the permit term, including credits for Yelm Pocket Gopher, Olympia Pocket Gopher, Tenino Pocket Gopher and Oregon Spotted Frog. (Table 5.1).

Tasks:

2-1.1. The County will acquire via fee title acquisition, from willing landowners, New Reserves for the Conservation Lands System to mitigate and keep pace with permitted impacts. Lands will be funded for habitat enhancement and maintenance to generate the mitigation credits, for a subset of the Covered Species, as identified in Table 5.1. Lands for acquisition will be prioritized based on the criteria identified in Appendix I: Conservation Lands Prioritization Criteria.

2-1.2. A Site Management Plan (Appendix K) will be developed for each new reserve within 12 months of securing the land that identifies actions necessary to achieve high quality habitat, the number of conservation credits expected to be provided by the site, performance standards, monitoring protocol, and long-term stewardship of the site to ensure habitat function. Each Site Management Plan will be implemented in accordance with the HCP. No
5.2.3 **Conservation Objective 3: Secure Working Lands Easements**

**Conservation Measure 3-1:** The County will protect and manage working lands with prairie habitat within the Reserve Priority Areas to offset the unavoidable impacts caused by the Covered Activities. A total of 667 credits are anticipated to be generated from Working Lands Easements over the Permit Term, including credits for Yelm Pocket Gopher (YPG E & YPG S), Tenino Pocket Gopher, and Oregon Vesper Sparrow (Table 5.1).

Tasks:

3-1.1. The County will secure, from willing landowners, permanent conservation easement reserves on working farm and ranch lands to mitigate and impacts to the Covered Species. Lands will be funded for compatible habitat enhancement and maintenance to generate mitigation credits. Lands for acquisition will be prioritized based on the criteria identified in Appendix I: Conservation Lands Prioritization Criteria.

3-1.2. The County will develop a Site Management Plan (Appendix K) for each working lands easement within 12 months of securing the land that identifies actions necessary to achieve habitat values, the number of conservation credits expected to be provided by the site, performance standards, monitoring protocol, and long-term stewardship of the site to ensure habitat function. Each Site Management Plan will be implemented in accordance with the HCP. No credits can be released until a Site Management Plan has been approved by the HCP Implementation Team and according to an approved credit release schedule (see Appendix J: Performance Standards).

5.2.4 **Conservation Objective 4: Enhance Existing Preserves**

There are Existing Preserves that support Covered Species or include suitable habitat, but lack funding for habitat enhancement and management endowments. These areas are often located adjacent to the reserve priority areas. The County will fund and implement habitat enhancement activities, including prescribed burning, targeted herbicide application, invasive species management, mowing, and seeding, and establish endowments for the long-term management of some of those lands. Mitigation credit will only be generated by County actions that improve upon the baseline condition of the existing protected land (e.g., via enhancing habitat quality and habitat extent).

**Conservation Measure 4-1.** The County will fund and implement habitat enhancement activities and establish endowments for the long-term management of existing reserves with the Covered Species. A total of 136 credits are anticipated to be generated from Working Lands Easements over the permit term, including credits for Yelm Pocket Gopher (YPG E and YPG S), and Taylor’s Checkerspot (Table 5.1).

Tasks:
4-1.1. The County will identify Existing Preserves where habitat enhancement via HCP mitigation is possible. Lands for acquisition will be prioritized based on the criteria identified in Appendix I: Conservation Lands Prioritization Criteria. The County must secure an agreement with the landowner that clearly provides rights to the County to mitigation credits.

4-1.2. The County will establish long-term management endowments or other funding at levels and commitments needed to maintain the habitat function of existing reserves in perpetuity.

4-1.3. The County will establish a Site Management Plan that demonstrates the desired future condition lift above baseline. The Site Management Plan needs to clearly document A) the funding sources used to fund protection and any habitat enhancement, B) the habitat value requirements from those funding sources, C) the baseline habitat conditions, and D) the additional habitat value provided by the mitigation measures generating credit. No credits can be released until a Site Management Plan has been approved by the HCP Implementation Team and according to an approved credit release schedule (see Appendix J: Performance Standards).

4-1.4. The County will implement habitat enhancement and continued maintenance. All creditable mitigation measures must be above baseline conditions, as described in the management plan.

5.3 Mitigation within the Conservation Lands System

The Conservation Lands System concept and general priorities for land acquisition were developed by Thurston County in consultation with WDFW and USFWS, based on the best available science and professional judgment of agency personnel knowledgeable in the areas of species biology, conservation biology, species recovery, and ESA regulations. The Conservation Lands System represents the places where A) avoiding and minimizing impacts provide the greatest conservation benefit, B) Thurston County will prioritize conservation incentives and voluntary conservation measures to work with private landowners, and C) protection and enhancement New Reserves, Working Lands Easements, and Enhanced Existing Preserves for mitigation will have the greatest benefit to the Covered Species.

Selection of lands to be engaged in the Conservation Lands System through the Conservation Objectives of the HCP will be prioritized for each species as described in Appendix I: Conservation Lands Prioritization Criteria.

Mitigation for Olympia, Tenino and Yelm Pocket Gopher will occur on Conservation Lands close to sites where impacts occur. Mitigation for Olympia and Tenino Pocket Gopher will occur within the same Service Area as impacts (see Figure 5.1 for Service Area map). For Yelm Pocket Gopher, mitigation may occur in a different YPG Service Area than the impact (e.g., an impact in YPG S Service Area may be mitigated in YPG N Service Area) but the mitigation efforts will be assessed a higher number of credits (via an Out of Service Area Multiplier, see Appendix M: Credit-Debit Methodology). Mitigation for one Pocket Gopher subspecies may not in occur in the Service Area for another Pocket Gopher subspecies (e.g., Olympia Pocket gopher mitigation may not occur in Yelm Pocket Gopher or Tenino Pocket Gopher Service Areas). Mitigation for Olympia, Tenino and Yelm Pocket Gopher will be an incremental process,
taking place as impacts occur. Precise timing of when impacts will occur is unknown, but mitigation will keep pace with impacts.

Mitigation for Taylor’s Checkerspot or Oregon Vesper Sparrow will occur in the nearest Reserve Priority Area with suitable habitat, which may or may not be within the same Mazama Pocket Gopher Service Area as the impact. Due to the limited nature of impacts for these species, the County anticipates approaching mitigation programatically, rather than on an incremental impact by impact basis.

Oregon Spotted Frog impacts will be mitigated within the OSF Habitat Screen, prioritizing USFWS designated critical habitat and WDFW identified population polygons as described Appendix I: Conservation Lands Prioritization Criteria. This will be an incremental process, as impacts occur. Precise timing of when impacts will occur is unknown, but mitigation will keep pace with impacts.

The logistics of mitigation implementation, including legal and financial protections, and options for mitigation are described in Chapter 6: Implementation. Financial aspects of mitigation are described in Chapter 7: Costs and Funding.

5.4 Monitoring & Adaptive Management

Monitoring and adaptive management are crucial to a successful HCP. Thurston County will implement a monitoring program with two components (Compliance Monitoring, Effectiveness Monitoring). Monitoring allows the County, USFWS, and stakeholders to track progress toward implementing the terms of the incidental take permit (Compliance), meeting Biological Goals and Conservation Objectives of the HCP (Effectiveness).

5.4.1 Compliance Monitoring

Compliance monitoring will be undertaken as a component of the HCP. Thurston County will evaluate its compliance with the terms and conditions of the County’s incidental take permit and compile the information into an Annual HCP Compliance Report, which will be submitted to the USFWS by March 31st of the following year for each year the incidental take permit is in effect (see Appendix L: Sample Annual Compliance Report). This report will provide the information to demonstrate to USFWS that the HCP is being implemented in line with its terms and conditions, propose any modifications to HCP implementation, and identify administrative or other minor changes to improve success.

At a minimum, the Annual HCP Compliance Report will include reporting year and cumulative (from the start of the permit term) summary of:

1. All impacts for each Covered Species (acres affected and functional acres) from Covered Activities implemented, categorized by Covered Activity and by Service Area.
2. All conservation measures implemented for each Covered Species, categorized by Service Area, goal, Conservation Objective, conservation measure, and task.
3. All funds received, by type (e.g., mitigation fees, Conservation Futures funds, etc.).
4. All funds expended.
5. Accounting of mitigation credit-debit balance by Covered Species, mitigation mechanism (see Section 6.4.2), and Conservation Objective.
6. Assessment of the rates of return and other performance for conservation land endowment funds (e.g., 5-8% earnings on endowment fund investments).
7. Effectiveness monitoring data (see section 5.4.2)
8. A summary of all land management activities undertaken on HCP Conservation Lands and a discussion of the management issues facing the manager at each Conservation Lands System property.
9. A description of any changed circumstances, including remedial actions.
10. A summary of any HCP administrative changes, minor modifications, or major amendments proposed or approved during the reporting year (see Section 6.10).

5.4.2 Effectiveness Monitoring

Overview
Effectiveness monitoring will be undertaken as a component of the HCP. The purpose of effectiveness monitoring is to determine the success of habitat enhancement and maintenance, as measured by tracking species status (including distribution and abundance) and habitat condition. Effectiveness monitoring metrics will inform the progress of a site towards the Performance Standards (Appendix J). Performance standards describe the habitat conditions or target species status necessary to release mitigation credits from Conservation Lands during the phases of their enhancement and management over the life of the property. Effectiveness monitoring will be conducted on all HCP Conservation Lands, at intervals to be identified in the Management Plan, with objectives including:

- Tracking Covered Species presence and distribution
- Tracking and habitat condition
- Determining what management actions are necessary
- Measuring success of habitat enhancement activities (i.e., evaluate effects of mowing, burning, herbicide application, seeding, etc.)
- Measuring progress (habitat enhancement) towards performance measures for mitigation credit releases
- Early detection of invasive plants and animals
- Providing feedback for adaptive management

Effectiveness monitoring plans will be incorporated into the Site Management Plans for each HCP Conservation Land. Effectiveness monitoring will be based on the Credit-Debit Methodology (Appendix M: Credit-Debit Methodology). At a minimum, each monitoring plan will include:

1. Name of site.
2. Management goals and objectives (e.g., control of invasive species) for the site.
3. Subject of the monitoring program (e.g., habitat and/or species status).
4. Description of what is being monitored (e.g., habitat and/or species status), including a site description (which may be generated using the first year’s monitoring data and any prior surveys) with information about the abundance of HCP species, if present.

5. Variables to be measured and how data will be collected.

6. Frequency (minimum of five-year cycle), timing (dependent on species being monitored), duration (minimum of six years), and intensity (number of sample plots) of the sampling.

7. Sampling locations/layout.

8. How data will be analyzed, who will conduct analysis (e.g., qualified biologist, statistician), and how results will determine whether the HCP goals and objectives are being met through the conservation measures.

9. Adaptive management process (such as use of the results to update management methods).

10. Monitoring equipment needs.

11. Dates for when field work/data gathering is to occur.

12. Format for effectiveness monitoring reports (e.g., data collection forms and reporting templates that include dates when field work was performed, field data sheets, and raw data and summarized findings).

13. Personnel responsible for implementing monitoring program.


The first year of monitoring data, and subsequent run of the Credit-Debit Methodology (see Appendix M) will serve as the site’s baseline inventory. Once baseline conditions have been established, periodic re-sampling (monitoring) will occur at a minimum of every five years. Each monitoring run, and subsequent run of the Credit-Debit Methodology, will yield a direct assessment of the ecological status of the Conservation Lands, and describe the progress of a site towards meeting the performance standards (see Appendix J). If significant management activities (e.g., prescribed fire) are implemented, monitoring should be conducted at a greater frequency (e.g., to collect pre-and post-treatment data) if needed to supply data for adaptive management, then return to regular monitoring cycles. Conservation land managers may implement monitoring at different intervals depending on the phase of management, needs for credit release, and eventually on the stability of trends concerning the habitat and species at the site. Monitoring shall be conducted during the growing season or other specific required timing for the individual Covered Species. This may vary by multiple weeks per year due to weather conditions, and differences in site conditions (elevation, aspect, etc.).

Monitoring shall be conducted by qualified biologists or natural resource specialists in possession of any permits required by regulatory agencies (state or federal) for the monitoring activities they are conducting. These specialists may be County staff or their designees.
**Effectiveness Monitoring Protocols for Prairie Species**

The Credit-Debit Methodology field protocol for prairie species is a census of habitat quality within a grid of cells distributed contiguously across the prairie at a site (see Appendix M). Percent cover of tree, shrub, native herbaceous vegetation and bare ground is visually estimated by category. The diversity of native species and the presence of species or specific habitat (e.g., pocket gopher mounds, nectar/host plants for Taylor’s Checkerspot, habitat structure for Oregon Vesper Sparrow) is recorded within each cell. These data are then used to categorize each cell as to its habitat type and presence or potential for Covered Species. Appendix M: Credit-Debit Methodology describes the data collection methods in more depth.

**Effectiveness Monitoring Protocols for OSF**

Monitoring protocols for OSF are currently under development by the USFWS (Waterstradt, USFWS, Personal Communication April 2016) and will be integrated into HCP implementation in collaboration with the HCP Implementation Team, inclusive of technical assistance from WDFW and USFWS, when they are complete. These protocols will then be adaptively updated over time. These protocols are likely to include measures of water inundation depth, vegetation type and structure, and frog abundance and use.

**Effectiveness Monitoring Data Management**

Proper data management, analysis, and reporting are critical to the success of the monitoring and adaptive management program. Data on monitoring methods, results, and analysis must be managed, stored, and made available to interested parties including, but not limited to, County staff, any technical advisors, USFWS and WDFW. A database and clear reporting procedure are also required for incidental take permit compliance. Further information about data management is available in Chapter 6: Implementation. The data will be managed to ensure accurate and up-to-date information is available for making management decisions.

**Effectiveness Monitoring Reporting**

In the year 5, 10, 15, 20, 25, and 30 HCP Compliance Reports, the County will also include the following effectiveness monitoring information for prior HCP years:

- A description of the effectiveness monitoring undertaken during the reporting period and a summary of monitoring results.

- An assessment of the effectiveness of the monitoring methods and recommended changes to the program based on interpretation of monitoring results or outside research.

- A description of the adaptive management process utilized during the reporting period (e.g., technical assistance from USFWS, WDFW, convening of Technical Teams).

- An assessment of the effectiveness of habitat enhancement and maintenance methods in achieving performance standards and recommended changes.

- An assessment of the functionality of the performance standards based on the results of effectiveness monitoring, and recommended changes to performance standards.
• An evaluation of the economic assumptions on which the Plan was based (e.g., land acquisition, monitoring, etc.) and proposed changes to ensure permit compliance.

5.4.3 Adaptive Management

The U.S. Department of the Interior defines adaptive management as a structured approach to decision making in the face of uncertainty that makes use of the experience of management and the results of research in an embedded feedback loop of monitoring, evaluation, and adjustments in management strategies (Williams et al. 2009). Adaptive management helps modify implementation actions to improve progress toward Biological Goals. Uncertainties may include a lack of biological information for the Covered Species, a lack of knowledge about the effectiveness of mitigation or management techniques, or doubt about the frequency, extent, or anticipated effects of the Covered Activities. Adaptive management is a required component of HCPs that allows for the incorporation of new information into conservation and mitigation measures during HCP implementation. Effective implementation of this approach requires explicit and measurable objectives, and identifies what actions are to be taken and when they are to occur. Adaptive management measures do not generally trigger the need for an amendment of the HCP, however if revisions are needed, they can be completed via the process described in Chapter 6: Implementation.

Program Level Adaptive Management

Adaptive management functions at both the program level (entire HCP), and site (e.g., individual reserve) level. Program level adaptive management will generally address areas of uncertainty that are monitored with compliance monitoring. Some specific sources of uncertainty that may need to be addressed by HCP program-level adaptive management could include changing demands for residential development and other Covered Activities, the effectiveness of certain minimization and mitigation measures, or the availability of lands (New Reserves, Working Lands Easements, Enhanced Existing Preserves) to be engaged the Conservation Lands System (e.g., Conservation Objectives 2, 3 and 4).

Examples of adaptive management actions that may be triggered at program (overall HCP) scales are outlined in Table 5.2. The HCP Implementation Team will review annual compliance monitoring information for these program level adaptive management triggers and make recommendations for program improvement to County staff no less than annually in years 1-5 of the HCP, and no less than every five years in years 5-30 of the HCP.
Table 5.2 Example program level adaptive management triggers and responses.

<table>
<thead>
<tr>
<th>Source of Uncertainty</th>
<th>Adaptive Management Trigger</th>
<th>Program Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing development demand</td>
<td>A 20% increase or decrease in 5-yr development projections (assuming even pace of development over the permit term)</td>
<td>Adjust blend of conservation measures to stay within take permit conditions, consider balance of impacts across activities for a given species</td>
</tr>
<tr>
<td>Cost of land acquisition, restoration and management</td>
<td>Greater than 5% increase or decrease in a projected cost demonstrated over a cost averaged over 2-year period</td>
<td>The County reviews financial model, determines whether credit costs require adjustment</td>
</tr>
<tr>
<td>Availability of Conservation Lands</td>
<td>Insufficient reserves available for acquisition within a Conservation Objective or Service Area</td>
<td>Consider adjusting blend of Conservation Objectives used for credits, reducing credits generation at Existing Preserves, and increasing credit generation at New Reserves</td>
</tr>
<tr>
<td>Effectiveness of best management practices</td>
<td>Evidence of better BMPs supplied by WDFW, USFWS, or another entity</td>
<td>Amend best management practices</td>
</tr>
</tbody>
</table>

**Site Level Adaptive Management**

Site level adaptive management will be informed by effectiveness monitoring, and address areas of uncertainty related to Covered Species and associated habitat response to habitat restoration, management, and maintenance. The objective of the effectiveness monitoring for purposes of adaptive management is to determine whether the status of Covered Species and associated habitat is improving or declining on lands within the Conservation Lands System. Declines may be due to HCP Covered Activities, changes in habitat conditions, or other factors. Through adaptive management, land managers may detect changes in habitat conditions (e.g., increasing invasive species populations) prior to a resulting decline in habitat quality or Covered Species populations. In response to monitoring data, the County will work with the HCP Implementation Team to make minor adjustments to Site Management Plans, acquisition criteria, monitoring frequency, or other adjustments.

Examples of adaptive management actions that may be triggered at the site scale are outlined in Table 5.3. Compliance monitoring information will be reviewed for these site level adaptive management triggers during each effectiveness monitoring cycle. Any triggered adaptive management, and commensurate responses will be reported to the HCP Implementation Team and specifically identified in effectiveness monitoring reports and annual compliance reports.
Table 5.3 Examples of site level adaptive management triggers and responses.

<table>
<thead>
<tr>
<th>Source of Uncertainty</th>
<th>Adaptive Management Trigger</th>
<th>Site Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response of covered subspecies to habitat management</td>
<td>Occupied area at a given site decreases by &gt; 20% over two consecutive monitoring periods.</td>
<td>County and site manager will consult with HCP Implementation Team and consider revision to habitat management prescriptions within site management plan(s).</td>
</tr>
<tr>
<td>Spread of invasive species</td>
<td>New invasive species population discovered, or &gt; 30% increase in abundance of existing population of invasive species at a site detected from prior monitoring event</td>
<td>Immediate eradication efforts will be undertaken and coordinated with USFWS/WDFW when invasive species population is adjacent to or overlapping area occupied by Covered Species. Additional monitoring will take place the first season following treatment.</td>
</tr>
<tr>
<td>Plant community response to habitat management</td>
<td>Native species cover decreases by &gt; 30% or shrub cover increases by &gt;15%</td>
<td>Evaluate site management, including mowing and prescribed fire frequency/timing with USFWS/WDFW.</td>
</tr>
<tr>
<td>Unexpected natural disturbance</td>
<td>Significant windfall, erosion or change in hydrology detected</td>
<td>Confer with USFWS and WDFW for recommended actions.</td>
</tr>
<tr>
<td>Unexpected anthropogenic disturbance</td>
<td>Any signs of unauthorized use, including new trails, camping, or other trespass</td>
<td>Evaluate management of public use, and revise outreach (including interpretive signs) as needed.</td>
</tr>
</tbody>
</table>

*Other Adaptive Management Methods*

Recovery plans for the Covered Species may be developed or revised by USFWS over the life of the incidental take permit. The HCP may be amended to incorporate recommendations contained in recovery plans when such recommendations:

1. Identify relevant new information, approaches, techniques, or Covered Species protection needs.
2. Fit within the overall Biological Goals and Conservation Objectives, framework, and funding levels of this HCP.
3. Do not exceed or require more mitigation than identified in this HCP.
Chapter 6  Implementation

6.1  Introduction

This section describes the roles and responsibilities of Thurston County in implementing the HCP.

6.2  Roles and Responsibilities of Thurston County

For the duration of the incidental take permit, Thurston County will provide the staff and resources necessary to fully implement the Conservation Program described in this HCP. The Thurston County Board of Commissioners (Board) is responsible for implementing the Conservation Program described in this HCP. An HCP Implementation Team will be formed (see Section 6.2.3), staffed by the County’s HCP Coordinator, that will advise the Board on A) prioritizing Conservation Lands to add to the Conservation Lands System, B) reviewing annual reports on HCP progress (Appendix L: Sample HCP Annual Compliance Report), and C) helping the County apply lessons learned for ongoing program improvement.

6.2.1  Thurston County Board of Commissioners

Many of the tasks to be performed by the County will be delegated to staff, particularly to an HCP Coordinator position to be housed in the Community Planning and Economic Development Department. The following tasks will be performed by the Board, or designee:

- Conservation Program Supervision
- Review and approve Resolution for adoption of HCP and Implementing Ordinance on issuance of the Incidental Take Permit
- Review and approve amendments to the HCP and incidental take permit
- Provide guidance and approval for acquisition of lands and/or conservation easements
- Biennially, Thurston County will prepare a budget and work plan for implementation of the HCP. Each department with responsibility for implementation of the HCP will submit their budgets to the County’s budget office. The Board has the overall responsibility for adopting the County’s budget. The budget will be completed consistent with the current County budget process or cycle which may be annually or biennially
- Adopting final code amendments to meet requirements of the HCP
- Approval of major amendments to the HCP

The Board shall by ordinance amend the County’s Development Code, to include procedures and requirements for implementation of the HCP and incidental take permit. The ordinance will be finalized
and adopted no later than one year after issuance of the incidental take permit by USFWS. The ordinance may be amended over time based on HCP amendments and changes to applicable federal and state laws.

The responsibilities for each department outlined below may change over time as do department names, responsibilities, and staffing appointments and levels. Thurston County will inform USFWS of any changes.

### 6.2.2 Community Planning and Economic Development Department

The Community Planning and Economic Development Department will designate a staff person to be the County’s HCP Coordinator with the task of providing overall program implementation oversight. Implementation tasks and responsibilities, will include:

- Mitigation Program Management
- Reviewing Field Surveys
- Reviewing Habitat Management Plans
- Implement and record Participation Agreements
- Contractor management
- Data Management
- Compliance and Effectiveness Monitoring
- Reporting
- Grant applications
- HCP amendments
- Coordination with land management partners
- Issue a call for reserve priority area conservation projects
- Land acquisition
- Management Guidelines and Plans
- Permitting
- Staff Training
- Coordination with other County Departments
- Staff support to the Implementation Team
- Drafting work plans and budgets for BOCC approval
- Drafting code revisions for Planning Commission and BOCC approval including public review of amendments
- Maintain and provide to permittees a list of surveyors and their qualifications and links to up-to-date survey protocol
- Application of BMPs and other measures to minimize impacts
- Work with applicants to reduce impacts through site design
- Maintain and approve Cooperative Agreements with landowner for on-site mitigation
- Maintain and approve Conservation Lands Agreements with conservation partners
- Provide for permanent habitat protection of a site through acquisition, conservation easement, or a permanent working lands easement held by a third party
- Develop and/or coordinate development of long-term management plans for the conservation properties
- Establish and maintain an endowment for each property
- Consider alternative mitigation proposals on a case by case basis using the County's Expanded Review process
**Real Estate Activities**

The County will conduct relevant financial and legal analyses to guide the selection of parcels for the reserve system. It will also conduct or manage appraisals and transactions. The County may hire or contract with a specialist with expertise in real estate to fulfill the fiduciary duties of the County for the acquisition of properties. This specialist will work in coordination with the HCP Coordinator and Board to acquire properties. Existing county department may already have staff members with these skills; the County may partner with such department to obtain these skills. The County may also hire contractors or consultants to provide these functions under the direction of the Board.

### 6.2.3 HCP Implementation Team

An HCP implementation team will be assembled within 12 months of ITP issuance, convened regularly by Community Planning and Economic Development Department staff to provide science and technical guidance to help implement the HCP and the terms of the Incidental Take Permit. The HCP Implementation Team will be composed of County staff, and three to five biologists who collectively have experience with conservation agricultural practices and the habitat types and species that are covered. Representatives from the wildlife agencies may also participate as liaisons. The HCP Implementation Team will be tasked with:

- Helping the County adaptive manage the criteria defined in Appendix I: Conservation Lands Prioritization Criteria.

- Reviewing proposed changes to standard defined in Appendix J: Performance Standards for Conservation Lands and Appendix O: Site Evaluation protocols.

- Reviewing the County’s progress toward meeting HCP commitments and Incidental Take Permit Conditions; and review annual reports prior to submission to USFWS.

- Review and provide guidance for site-specific management, restoration and monitoring.

- Coordinate, as requested, with County staff to provide input, guidance, and recommendations on conservation actions, preserve land use issues, and species needs.

- Providing guidance for integration with other monitoring and research efforts in the region by other state, federal, and local entities.

- Making program improvement recommendations for HCP Implementation to County staff and the Board.

The HCP Implementation Team’s role in the Thurston County Prairie HCP is advisory only. The team will make recommendations to the Board through the HCP Coordinator. The Board will retain authority to approve work under the HCP program. Decisions effecting the implementation of the HCP will be subject to USFWS approval.
6.2.4 Public Works Department

Responsibilities of the Public Works Department regarding implementation of the HCP for Public Works activities will include:

- Implementing BMPs for County-funded or implemented Capital Improvement projects
- Field Surveys
- Contractor Management
- Reporting
- Permitting
- Coordination with other County departments
- Reporting Activities to the HCP Coordinator
- Staff Training on avoidance, minimization, and mitigation measures
- Coordinate with HCP Coordinator on real estate acquisition for form willing sellers.

6.2.5 Public Health and Social Services Department

Responsibilities of the Public Health and Social Services Department, particularly the Environmental Health Division, regarding HCP implementation will include:

- Implementing the BMPs for County-funded or implemented sewer/septic repair and extension
- Permitting
- Coordination with other County departments
- Reporting
- Staff Training on avoidance, minimization, and mitigation measures

6.2.6 Thurston GeoData

The Thurston County GeoData department will coordinate with all departments to analyze and maintain spatial data related to the HCP, including, but not limited to impact areas, survey records, and habitat management actions.

6.2.7 Public Information Personnel

County public information personnel, guided by the County’s HCP Coordinator, will be responsible for working with other Thurston County departments in the dissemination of information about the HCP and about prairie conservation in general.

6.2.8 Prosecuting Attorney’s Office

The Prosecuting Attorney’s Office is responsible for reviewing legal instruments, agreements, and other binding documents to ensure sufficiency as to form. The Prosecuting Attorney’s Office is also responsible for legal representation of the County in the event the County is appealed during its implementation of the HCP.
6.2.9 Public Participation and Outreach

The public has demonstrated strong support for and involvement conservation of natural resources; as well as in the development of the HCP. Transparency through early and continuous public participation is a guiding principle of Thurston’s County. Maintaining this public support is vital to the County’s ability to fulfill the commitments made in this HCP. This participation means that the public provides an oversight function of the County’s HCP implementation. Examples of public participation that Thurston County intends to pursue include collaborative partnerships (below) and public outreach. For the latter, Thurston County staff will be available for presentations at public or special interest group meetings to report on the program and its progress (i.e., Planning Commission, and Agricultural Advisory Committee). Thurston County will also prepare reports, fact sheets, maintain space on Thurston County’s website for HCP information for landowners and others who may participate, and make use of other forms of media to communicate information about the County’s HCP. Ten-year reviews will also have significant involvement by the public.

Thurston County may also use interested citizens to monitor sites and collect data (citizens scientists) on the condition of resources. At this time, Thurston County will not commit to include this effort in the HCP, but such an effort would be in keeping with our commitment to advance the goals of the HCP through education, outreach, and participation.

6.2.10 Collaborative Partnerships

Thurston County will continue to seek out partnership opportunities, such as the JBLM-Sentinel Landscape Partnership, in support of implementing the goals of the HCP on a landscape scale, thereby extending its effectiveness beyond the boundaries of the Permit Area.

Thurston County will also foster partnerships with other local jurisdictions within the County and will support their habitat conservation planning and implementation efforts, particularly the HCP of the City of Tumwater/Port of Olympia (Bush Prairie HCP). Thurston County will also foster cooperation and to those partners that contribute to the implementation of the County HCP. The County will foster partnership with the Washington State University (WSU), The Evergreen State College and other public and private schools in order to maximize effectiveness of research and education efforts pertaining to the HCP goals.

Thurston County will pursue partnering opportunities in association with private landowners and non-profit organizations with common conservation goals (i.e. land trusts and conservation districts). Such partnering efforts may include but are not limited to:

- Shared staffing;
- Matching or other shared funding of land acquisitions and/or conservation easements;
- Joint efforts in management activities;
- Public information, outreach, and environmental education efforts and materials; and
- Coordination and use of local contributions, including land, trusts, volunteer support, and other in-kind services.
6.3 Process to Obtain Incidental Take Coverage

6.3.1 Overview

The County will issue HCP Participation Agreements (Certificates of Inclusion to the County Incidental Take Permit (ITP)) to those needing a County permit for Covered Activities resulting in unavoidable impacts to the Covered Species. This process will be similar for private landowners and county partners, such as county school and rural fire districts. A template HCP Participation Agreement is included in Appendix N. The County is working actively to integrate the terms of this HCP with existing building and other permitting processes—providing as seamless a path as possible for both economic development and conservation actions.

A Participation Agreement will be incorporated with County development permits, and will:

- Describe the proposed project and document that it is a Covered Activity
- Identify and quantify anticipated impacts to the Covered Species (following the process described in Appendix M: Credit-Debit Methodology)
- Set forth the requirements of the parties, including mitigation commitments (following the process described in Appendix M: Credit-Debit Methodology) and costs.

The County will work with all permit applicants to ensure appropriate Best Management Practices are applied, to the extent practicable, for applicable Covered Activities (see Appendix C: Best Management Practices). The County will also work with applicants to inform them how siting activities differently (e.g., clustering development, or moving activities off of high value habitat) will reduce impacts and their mitigation obligations and resulting mitigation fees.

At any time during the term of the HCP, if there is no remaining incidental take authorization available, or no mitigation credits are available for the County to allocate, no Participation Agreement will be issued and the permit applicant will need to work with the USFWS to obtain an incidental take permit. In this case the County may elect to amend its ITP (see Section 6.10). The County reserves the right to refuse take authorization to any party or may restrict, or prioritize, the amount of take coverage available to individual parties, if at any time the County’s estimated growth appears to exceed the total mitigation available under this plan, or based on other criteria published by the County.

County staff will provide Covered Species screening information in the HCP Basemap (a higher resolution version of the mapped species extents displayed in Figure 2.3, and on file as GIS files with Thurston Geodata) that allows development permit applicants to identify potential habitat within their site proposed for development. If the proposed project will not impact Covered Species or their respective habitats, the permit issuance process moves forward without additional review. Applicants proposing to engage in Covered Activities that may impact Covered Species or their habitats may seek to participate through the County’s ITP by executing a Participation Agreement (Appendix N) that documents the landowner’s compliance with the County HCP, and continue the permit application process (as outlined in Figure 6.1 and described below). Applicants engaging in projects that will not impact Covered Species or their habitats do not need to execute a Participation Agreement or
Figure 6.1 Diagram of process to receive a Thurston County HCP Participation Agreement. All projects need to meet other normal County permitting requirements. Land use projects that do not require a county permit, but may impact Covered Species should work with USFWS to determine whether a proposed project or action is likely to result in take.
participate in the County’s ITP (see survey procedure in Section 6.3.2.2). Landowners with projects that will impact Covered Species that choose not to participate through the County’s expedited ESA compliance process can seek take authorization directly from the USFWS, then proceed with the County development permit application process.

County permit applicants seeking take authorization for Olympia, Yelm or Tenino Pocket Gopher from the County may follow one of two paths for the permit review process: Standard or Expanded. The standard permit review process for these species is completed entirely in the office, with no field survey required, and is strongly preferred. The expanded review process requires field survey during a specific survey window (see Appendix O: Site Evaluation Protocol)) Once a permit applicant has selected the expanded permit review process, they may not revert to the standard permit review process.

The permit review process for Taylor’s Checkerspot and Oregon Vesper Sparrow does not require field survey.

The permit review process for Oregon Spotted Frog may require a field survey, and is described in the following sections and in Appendix G: Thurston County HCP Oregon Spotted Frog Survey Protocol.

### 6.3.2 Olympia, Tenino and Yelm Pocket Gopher Permit Review

**Standard Permit Review - Olympia, Tenino and Yelm Pocket Gopher**

1. When a permit application is submitted, County staff will identify projects that lie within the mapped extent for the Mazama Pocket Gopher subspecies using aerial maps and the mapped Covered Species extents from Thurston County GeoData. Staff will work with the applicant to identify opportunities minimize impacts from their proposed project.

2. County staff will identify the habitat area and value unavoidably impacted by the Covered Activity. County staff will assign a functional acre quantity of impact, called a debit, using the procedure for calculating debits included in Appendix M: Credit-Debit Methodology and described in Section 6.4. Areas of complete forest canopy cover will be excluded from debits. For Olympia, Tenino or Yelm Pocket gopher, debits are calculated based on species occupancy and habitat quality and function. MPG species occupancy will be based on the data underlying Figure 4.1, and the map of occupancy is not expected to be modified during the Permit Term.

3. The permittee will enter into a Participation Agreement with the County, pay the associated mitigation fee (fee in lieu of land dedication) to the County (see Chapter 7 for more on costs and financing), to secure the credits needed to offset the identified debit.

4. Once the Participation Agreement is signed and recorded with the County Auditor’s office and the fee has been paid, the permittee continues any remaining County permitting processes to issue a permit.

5. The County records the impact and reports permitted impacts and commensurate mitigation to USFWS on an annual basis as part of the Annual Compliance Report.
**Expanded Permit Review - Olympia, Tenino and Yelm Pocket Gopher**

1. When a permit application is submitted, county staff will identify projects which lie within the mapped extent for the covered prairie species using aerial maps and the mapped Covered Species extents from Thurston County GeoData. Staff will work with the applicant to identify opportunities to minimize impacts from their proposed project.

2. The permit applicant can choose to complete a site-specific soils survey rather than relying on USDA soil series data integrated in the HCP Basemap for Olympia, Tenino or Yelm Pocket Gopher. The surveys need to be conducted by a County-approved, qualified natural resource professional using methods approved by the County (see Appendix O: Site Evaluation Protocol) with technical assistance from USFWS and WDFW. The County HCP Coordinator will review survey results, and use the results to adjust any mitigation or minimization requirements based on increased or decreased habitat area.

3. The permittee pays the associated mitigation fee (see Chapter 7 for more on costs and financing).

4. The permittee may also be able to dedicate land as mitigation for impacts instead of paying a mitigation fee (see Section 6.4.2). The permittee submits a proposal for land dedication describing the habitat area and value of the site, a site enhancement and management plan, and how the site will be secured and managed in perpetuity. The site plan must be approved by the County in coordination with USFWS and WDFW.

5. Once the fee has been paid or an approved land dedication has been completed, the permittee continues on with normal County permitting processes.

6. The County records the impact and reports permitted impacts and commensurate mitigation to USFWS on an annual basis.

**6.3.3 Taylor’s Checkerspot and Oregon Vesper Sparrow Permit Review**

1. When a permit application is submitted, County staff will identify projects which lie within the mapped extent for Taylor’s Checkerspot and Oregon Vesper Sparrow using aerial maps and the mapped Covered Species extents from Thurston County GeoData. Staff will work with the applicant to identify opportunities to minimize impacts from their proposed project.

2. County staff will identify the habitat area and value unavoidably impacted by the Covered Activity. County staff will assign a functional acre quantity of impact, called a debit, using the procedure for calculating debits included in Appendix M: Credit-Debit Methodology and described in Section 6.4. Areas of complete forest canopy cover will be excluded from debit calculations. For Taylor’s Checkerspot and Oregon Vesper Sparrow, debits are calculated based on habitat quality and function alone.

3. Because Taylor’s Checkerspot or Oregon Vesper Sparrow have much smaller specific mapped extents and very limited occupancy in Thurston County, the County has elected to address their mitigation without any further obligation from the permit applicant, beyond avoiding and minimizing impacts to the extent practicable.

4. The permittee will automatically be entered into a Participation Agreement with the County, but will not pay a mitigation fee. Administrative costs in this instance will be covered by Thurston County as part of HCP Operating costs.

5. The permittee will continue with any remaining County permitting processes to issue a permit.
6. The County records the impact and reports permitted impacts and commensurate mitigation to USFWS on an annual basis as part of the Annual Compliance Report.

6.3.4 Oregon Spotted Frog Permit Review

Oregon Spotted Frog habitat is known to occur in wetlands and wetland buffers in the greater Black River watershed of Thurston County. Permit applications which overlap the OSF screen will be processed as follows.

1. When a permit application is submitted, County staff will identify projects which lie within the OSF Habitat Screen using aerial maps and OSF screen layer in Thurston County GeoData. The application will be flagged for OSF screening and routed to the appropriate county planner (project manager).

2. Using application materials, photos, and GIS system, the county planner will determine whether the project requires an onsite OSF screening by following the procedures set forth in Appendix G: Thurston County HCP Oregon Spotted Frog Survey Protocol.

3. If a project cannot be excluded in-office, a site visit will be conducted by county staff to verify:

   o Whether the property supports suitable OSF habitat using the field screening protocol as described in Appendix G: Thurston County HCP Oregon Spotted Frog Survey Protocol. Generally, screening is to be conducted between January 1st – April 15th and,

   o If the property contains wetland; if so, a wetland delineation, conducted by a qualified consultant, will be required (Thurston County Code (TCC) 17.15, Part 900; Chapter 24.30, Wetlands).

NOTE: Where applicable, OSF habitat determination will occur concurrently with an assessment for wetlands.

4. Wetland rating documentation will be completed using the Washington State Wetland Rating System for Western Washington.

5. A critical area report shall be submitted which contains information required in TCC 24.35, impacts shall follow the mitigation sequencing described in TCC 24.01. If avoidance is not feasible, a reasonable use exception (RUE) and mitigation will be required (TCC Chapter 24.30, TCC 24.45).

6. If OSF site screening confirms suitable OSF habitat and impacts to the habitat is unavoidable, the State of Washington Department of Ecology Western Washington Wetland Compensatory Mitigation credit-debit system will be applied to determine mitigation requirements (Hruby 2012). Should the OSF habitat extend landward of a CAO qualified wetland the mitigation shall be no less than a 1:1 ratio.
6.4 Overview of Credit and Debit Calculations

6.4.1 Credit-Debit Methodology for Olympia, Yelm and Tenino Pocket Gopher

For Olympia, Yelm and Tenino Pocket Gopher debits and credits will be computed based on 1) occupancy, or incremental/increased occupancy (or other agreed measure of improved demography), and 2) habitat quality and function, or incremental/increased habitat quality and function. For all the Mazama Pocket Gopher subspecies, occupancy is measured based on the relative values located in Table 4.3 and used in impacts projection. Habitat quality and function are measured based on the relative values assigned to four management categories of overall prairie quality: Shrub-Dominated, Degraded, Native, and High-Quality, as summarized in Table 6.1. These values were identified by the USFWS (Ryan McReynolds, USFWS WFWO, Personal Communication, 2019), and the categories of prairie quality are described with the performance standards Table 6.2.

When debits are calculated, Mazama Pocket Gopher (all subspecies) occupancy will be assigned based on the HCP Basemap values (derived from survey data collected through 2017) that identify the soil preference and proximity to known Mazama Pocket Gopher occupancy (e.g., Figure 4.1 and Figure 4.2). Habitat value will be assigned to a default category of Shrub-dominated, or 0.5 (debits/acre; Table 6.1). For Yelm Pocket Gopher, if the debit will be mitigated outside the Service Area where impacts occurred, an out-of-service area multiplier will of 1.25 will be applied. This multiplier is applied to the debit-side formula only.

When credits are calculated on Conservation Lands, Mazama Pocket Gopher (all subspecies) occupancy and habitat values will be generated based on field surveys during effectiveness monitoring. These on-the-ground field surveys will identify the extent of pocket gopher use of habitats across a site to describe occupancy, per the categories in Table 4.3. On the ground surveys will also evaluate the vegetation composition across the site, collecting the data needed to assign acres of habitat at the site to the categories of prairie quality in Table 6.2. The methods to be employed in field survey are described in detail in Appendix M: Credit-Debit Methodology.

Table 6.1 Assigned relative Mazama Pocket Gopher (all subspecies) values for Mazama Pocket Gopher prairie quality categories.

<table>
<thead>
<tr>
<th>Prairie Quality Category</th>
<th>Relative MPG Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrub-Dominated</td>
<td>0.5*</td>
</tr>
<tr>
<td>Degraded Prairie</td>
<td>0.7</td>
</tr>
<tr>
<td>Native Prairie</td>
<td>0.9</td>
</tr>
<tr>
<td>High-Quality Prairie</td>
<td>1.0</td>
</tr>
</tbody>
</table>

*The USFWS will not approve habitat management plans that seek to establish and maintain a significant shrub-dominated component as part of the desired future condition.
6.4.2 Credit-Debit Methodology for Taylor’s Checkerspot and Oregon Vesper Sparrow

For Taylor’s Checkerspot and Oregon Vesper Sparrow, debits and credits will be computed, validated or verified, earned, and released based on habitat quality and function, or incremental/increased habitat quality and function. Habitat quality and function is measured based on the prairie quality categories and relative values in Table 4.5. The definition of these categories differs from those for Olympia, Tenino and Yelm Pocket gopher because the species have different needs, and the category definitions were developed in separate processes. Regardless, the respective values for each species set are the best available information.
Table 6.2 Performance Standards, Measures, and Metrics - Primary Determinants of Dry Prairie Habitat Quality for Mazama Pocket Gopher subspecies.

<table>
<thead>
<tr>
<th>Prairie Quality Category</th>
<th>Percent Cover</th>
<th>Native Richness</th>
<th>Landscape Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Overall Habitat Quality)</td>
<td>Trees³</td>
<td>Woody Shrubs⁴</td>
<td>Native Herbaceous Vegetation</td>
</tr>
<tr>
<td>“Shrub-Dominated”</td>
<td>&lt; 5</td>
<td>&gt; 25</td>
<td>NA</td>
</tr>
<tr>
<td>“Degraded Prairie”</td>
<td>≤ 25</td>
<td>&lt; 10</td>
<td>3 to 9 spp. minimum</td>
</tr>
<tr>
<td>“Native Prairie”</td>
<td>&lt; 5</td>
<td>&lt; 10</td>
<td>10 to 30</td>
</tr>
<tr>
<td>“High Quality Prairie”</td>
<td>&lt; 5</td>
<td>&lt; 10</td>
<td>&gt; 30</td>
</tr>
</tbody>
</table>

1 The performance standards define five management categories of overall prairie habitat quality; mitigation sites and proposals should realize benefits in the form of long-term restoration and enhancement of dry prairie habitat functions (functional lift).
2 Percent cover metrics are assessed with PHAM, using a grid of 25m x 25m sample cells; or, a conditionally approved alternative sample cell/unit configuration.
3 Trees may not exceed 5 percent cover, unless native oak savanna (less than 25 percent cover of oaks, *Quercus garryana*).
4 Woody shrubs; excludes native oak and kinnikinnick (*Arctostaphylos uva-ursi*).
5 Native richness (number of native species) and soils should be assessed with a conditionally approved sample cell/unit configuration.
For calculation of debits for Taylor’s Checkerspot and Oregon Vesper Sparrow, no field survey will be implemented. Habitat value will be assigned to a relative value of 0.3 (debits/acre impacted), which is intermediate between prairie quality categories of Degraded Grassland (relative value of 0.4) and Shrub Dominated (relative value of 0.2) in Table 4.5.

When credits are calculated on Conservation Lands for Taylor’s Checkerspot and Oregon Vesper Sparrow, habitat values will be generated based on field surveys implemented as part of effectiveness monitoring. On the ground surveys will evaluate the vegetation composition across the site, collecting the data needed to assign acres of habitat at the site to the categories of prairie quality in Table 6.2. The methods to be employed in field surveys are described in detail in Appendix M: Credit-Debit Methodology.

### 6.4.3 Credit-Debit Methodology for Oregon Spotted Frog

For the Oregon Spotted Frog, debits and credits will be computed using the “Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington. The manual can be found on the Ecology website [https://fortress.wa.gov/ecy/publications/documents/1006011.pdf](https://fortress.wa.gov/ecy/publications/documents/1006011.pdf). The Oregon Spotted Frog through its life cycle relies upon wetland habitat which including, lakes margins, marshes, and emergent wetlands as well as some riparian area. The Department of Ecology has created a rapid assessment tool to be able to determine the functions and values for these types of freshwater vegetated wetlands. The credit-debit tool considers water quality, hydrologic functions and habitat functions (e.g. accounting for providing of habitat for federally listed species) through the assessment process. The tool also accounts for indirect effects of landscape scale impacts (e.g. urbanization). The tool is based on the best available information and is the only peer reviewed “rapid” method available and calibrated to wetlands in the State.

If Oregon Spotted Frog habitat is delineated in an area that does not meet the Washington State definition of a wetland the habitat will be mitigated for at a 1:1 ratio.

### 6.5 Mitigation Mechanisms

#### 6.5.1 Mitigation Fee in lieu of Land Dedication

Habitat mitigation credits will be secured by the County in advance of impacts occurring to the Covered Species. Credits will be secured via the conservation measures within the Conservation Objectives described in Chapter 5: Conservation Program. Each site generating credits will, at a minimum:

- If the site is not owned by the County, enter into a cooperative agreement with the County to define the relationship of the site to the Thurston County HCP;
- Provide for permanent habitat protection of the site through fee title acquisition or a permanent conservation easement (e.g., Appendix P: Model Conservation Easement);
- Develop a Site Management Plan (e.g., Appendix K: Site Management Plan Template) for the site; and
• Provide financial assurances to cover monitoring and long-term management of the site through establishment of an endowment, or similar financial mechanism.

County Participation Agreement applicants will access released habitat mitigation credits by paying a mitigation fee to the County. Participation Agreement applicants that pay a mitigation fee will use the County’s Standard Permit Review process. This fee will be deposited into a dedicated County account for Conservation Program implementation, including securing mitigation credits from Conservation Lands.

6.5.2 Mitigation via Land Dedication

A Participation Agreement applicant may request to mitigate on an unaffected portion of the property where impacts will occur or mitigate on other lands, he/she owns (land dedication). This form of mitigation is subject to the County’s Expanded Review process (see Section 6.3.2.2). Thurston County, in coordination with USFWS, will determine whether such mitigation is allowable under the HCP using the following criteria:

• The site must be located within a Reserve Priority Area or in areas deemed critical for OSF, depending on the species/habitat impacted (see Section 5.4, Section 6.4.1, and Appendix I: Conservation Land Prioritization Criteria) and recommended by USFWS to be key for conservation of the Covered Species or habitats.

• The site must be under permanent conservation easement that includes protection of the Covered Species and habitat to be mitigated.

• The site must be supported by an endowment for management of the property in perpetuity. The site must have sufficient size and spatial extent of the Covered Species habitat or proximity to the Covered Species to satisfy the mitigation requirement (see Appendix I: Conservation Land Prioritization Criteria).

• The site owner/manager must enter into a cooperative agreement with Thurston County that outlines the mitigation and long-term maintenance commitment, in addition to monitoring and reporting requirements.

Project proponents must provide a critical area report that includes baseline data on the properties that are proposed in lieu of development fees, including the biological value to the HCP. Documentation should explain how the site meets land acquisition requirements and relevant biological goals and objectives. The property owner also must provide access to the proposed site to allow County staff members or their designees to survey the site and verify its biological value for the reserve system. The County may require the project proponent to pay some or all of the costs of the evaluation, including potential surveys, and the process through which the landowner places an easement on the property. The County may require a project proponent to pay the cost of other due diligence, such as a Phase 1 site assessment, appraisal, and title search.

The County will determine the amount of development fee credit based on the fair market value of the property. The County must also ensure that it has sufficient funds with which to conduct necessary management and monitoring of the proposed land in lieu. If the County finds that sufficient funds are
available or are expected to be available for its operational costs associated with the land, it will allow credit of the land in lieu against all of the development fee, except for the portion of the fee dedicated to the endowment contribution (see Section 7, Funding). If the County does not have or will not have sufficient funds for the operating costs associated with the property, the County may credit only the land in lieu against the portion of the development fee that pays for land acquisition (in these cases, the project proponent would pay the remainder of the fee).

If land proposed for dedication is of sufficient conservation value to the reserve system, the County may offer additional incentives to the project proponent for the land dedication. The County will determine the conservation value of the land that has been proposed for transfer based on the current and projected land acquisition needs of the County and the ability of the proposed site to meet those needs. In limited circumstances, and only late in the permit term, the County may, for sites with high conservation value, credit the land dedication against the full value of the development fee, including the share of the fee for the endowment. This full fee credit is available only in circumstances where the County can document that the endowment is fully funded or can be fully funded from other expected sources.

**6.5.3 Use of Mitigation Bank**

A mitigation bank is a privately or publicly owned land that is managed for its natural resource values. Mitigation banks may sell species credits, wetland credits or both. Mitigation banks must be approved by USFWS. In exchange for permanently protecting and managing the land, the wildlife agencies allow the bank operator to sell species credits to developers who must satisfy legal requirements for compensating the effects of projects that affect listed species or their habitat. A conservation or mitigation bank is a free-market enterpriser that performs the following functions.

- Offers landowners economic incentives to protect natural resources,
- Saves project proponents’ time and money by providing them with the certainty of preapproved compensation lands,
- Provides for long-term protection and management of habitat; and
- Operates with goals similar to those of regional HCPs, including this Plan.

There is one mitigation bank that is proposed for Thurston County (Mazama Meadows) that once approved will have credits for the Yelm Pocket Gopher.

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9 A conservation bank is a type of mitigation bank directed specifically at providing credits for species habitat (rather than wetlands, as in a wetland mitigation bank).
10 For additional information on banking see [https://www.fws.gov/endangered/landowners/conservation-banking.html](https://www.fws.gov/endangered/landowners/conservation-banking.html)
6.6 Performance Standards and Credit Release Schedules

Performance standards describe the habitat conditions or Covered Species status necessary to release mitigation credits from reserves or preserves in the Conservation Lands System during the phases of their habitat enhancement and management over the life of the property. Performance standards are tied to site specific thresholds in habitat condition within the configuration of different habitat types, habitat qualities, and soil types at each site. Variables included in performance standards may include, but are not limited to, Covered Species abundance, Covered Species occupied area, restored prairie or OSF habitat spatial extent, native plant species cover, native plant species richness, host or food-source plant species abundance, and non-native or invasive plant species cover. Appendix J includes performance standards that can be used throughout Thurston County at HCP Conservation Lands. Each conservation land site will be unique, therefore the schedule of achieving specific performance standards, consistent with Appendix J, will be established in the individual site management plans and conservation bank documentation for each conservation land property from which mitigation credits will be sold, and reviewed by the HCP Implementation Team.

Credits may be earned (and released) incrementally, and will accrue over time, but cannot be used for the purpose of off-setting debits until net benefits are convincingly demonstrated. Initial credits can be earned and released after successful completion of the administrative milestones (i.e., acquisition of the site or easement, establishment of MED endowment, stewardship endowments, or other assurances, and approval of a habitat management plan), and are calculated from the existing habitat/occupancy baseline. Additional credits can then be earned with successful attainment of ecological milestones, such as improvement in prairie quality and/or expansion of the area of occupancy during the active management period (i.e., fuller restoration of ecological functions and enhancement of habitat conditions). Ultimately, the fullest attainment of enhanced conservation value and credit will depend on achieving the performance standards and desired future conditions for the site (including MPG occupancy and/or demographics), and the maintenance of those desired future conditions in perpetuity.

Greater detail describing the performance standards is included in Appendix J: Performance Standards.

6.7 Land and/or Conservation Easement Acquisition

6.7.1 Overview and Logistics

Protection, with ensuing enhancement and management of habitat supporting the Covered Species is paramount to achieving the biological goal of the HCP.

Thurston County will prioritize proposed Conservation Lands based on criteria established in Appendix I. All mitigation lands will be secured by adequate legal, real estate (e.g., conservation easement), and financial protections to ensure the success of the mitigation and meet performance standards. All lands will have a site management plan (Appendix K: Site Management Plan Template) reviewed by the HCP Implementation Team. Each site management plan will set site-specific objectives for habitat enhancement, performance standards, and management actions to protect Covered Species and their habitat.
The estimated acres of Conservation Lands to be engaged in the Conservation Program for each Covered Species or Service Area is included in Table 6.3. The acres per Conservation Objective are designated based on the County’s initial assessment of the feasibility of engaging lands in each aspect of the Conservation Program, which will be reassessed and adaptively managed over the term of the HCP. The acres per Conservation Objective were calculated based on assumptions of credit yield from the lands engaged in each Conservation Objective (Table 6.4). These assumptions will be adjusted as Conservation Lands are acquired and progress towards Performance Standards is tracked through effectiveness monitoring.

A summary of logistics (differentiated by Conservation Objective) in Conservation Lands acquisition, including roles of ownership, holding of easements and endowments, implementing restoration, management, maintenance and monitoring, is included in Table 6.5. Thurston County’s HCP Coordinator will coordinate the acquisition of Conservation Lands with oversight from the Board of Commissioners. The County will work from the projected acres of Conservation Lands to be engaged through the Conservation Program identified in Table 6.3, in concert with modeling of population, real estate and permitting trends in the Reserve Priority Areas, to develop a schedule to pursue land acquisitions for each Covered Species and Service Area.

Table 6.3 Projected acres of Conservation Lands to be engaged through the Conservation Program.

<table>
<thead>
<tr>
<th></th>
<th>PROJECTED CONSERVATION LANDS ENGAGED (ACRES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YPG N</td>
</tr>
<tr>
<td>New Reserves</td>
<td>744</td>
</tr>
<tr>
<td>Working Lands Easements</td>
<td>0</td>
</tr>
<tr>
<td>Enhanced Existing Preserves</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>744</td>
</tr>
</tbody>
</table>

Table 6.4 Projected average credit yield per acre for each Covered Species within each Conservation Objective.

<table>
<thead>
<tr>
<th></th>
<th>OPG, TPG, all YPG</th>
<th>TCB</th>
<th>OVS</th>
<th>OSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Reserves</td>
<td>1.83</td>
<td>0.8*</td>
<td>0.8*</td>
<td>1</td>
</tr>
<tr>
<td>Working Lands Easements</td>
<td>1.6</td>
<td>0.6*</td>
<td>0.8</td>
<td>n/a</td>
</tr>
<tr>
<td>Enhanced Existing Preserves</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4*</td>
<td>1*</td>
</tr>
</tbody>
</table>

* These Conservation Objectives are not currently proposed for this Covered Species.
Table 6.5 Summary of Conservation Lands System logistics for the Thurston County HCP, including land ownership, holding easement and endowment, habitat restoration, habitat maintenance, monitoring and reporting.

<table>
<thead>
<tr>
<th>Conservation Lands Program Component</th>
<th>Ownership</th>
<th>Easement Holder, M &amp; D</th>
<th>Endowment Holder</th>
<th>Restoration, Enhancement, Maintenance Implementation</th>
<th>HCP Compliance Monitoring &amp; Reporting</th>
<th>Biological Effectiveness Monitoring &amp; Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Reserves</td>
<td>County</td>
<td>NGO</td>
<td>NGO or NFWF</td>
<td>NGO, Contractor, funded by endowment</td>
<td>County</td>
<td>County-Contractor/NGO</td>
</tr>
<tr>
<td>New Reserves</td>
<td>NGO</td>
<td>County</td>
<td>NGO or NFWF</td>
<td>NGO, Contractor, funded by endowment</td>
<td>County</td>
<td>County-Contractor/NGO</td>
</tr>
<tr>
<td>Working Lands Easements</td>
<td>Private</td>
<td>NRCS, NGO*</td>
<td>NGO or NFWF</td>
<td>NGO, Contractor, funded by endowment</td>
<td>County</td>
<td>County-Contractor/NGO</td>
</tr>
<tr>
<td>Enhanced Existing Preserves</td>
<td>State/Land Trust</td>
<td>n/a, by MOU/Management Plan, land already has dedicated conservation purpose</td>
<td>NGO or NFWF</td>
<td>On behalf of state, funded by County</td>
<td>County</td>
<td>County-Contractor/NGO</td>
</tr>
</tbody>
</table>

* May vary with landowner preference, must align with limitations on federal funds.
On an as needed basis, the County will issue a call for Conservation Lands opportunities (New Reserves, Working Lands Easements, Existing Preserves). Anyone is welcome to respond to that call (e.g., land trusts, private conservation banks, individual landowners, homebuilders, etc.). The process will follow these steps:

- County issues a call for HCP Conservation Lands and mitigation credit needs by Service Area (Figure 5.1) and Conservation Objective (New Reserves, Working Lands Easements, Existing Reserves).
- The County conducts outreach and provides technical assistance to increase interest in participation.
- Interested parties submit letters of inquiry describing site location, habitat type, habitat objectives, project cost, and estimated credit types and quantities.
- County, working with USFWS, will review letters of inquiry to invite a subset of eligible projects for full proposals.
- Project proposals are selected, and enter into an agreement with the County. The agreement might simply be a credit purchase agreement from a private conservation bank, or could be a closer partnership to develop a project together with a landowner.
- The County will review and approve, in consultation with the HCP Implementation Team, Site Management Plans and Performance Standards.
- The County will record all habitat mitigation credits and report those credits to USFWS (see Appendix L: Sample HCP Annual Compliance Report).
- Securing Working Lands Easements will be overseen by the County, but implemented in close coordination with contractors familiar to landowners and farmers.
- The County and its designees will work with willing landowners to develop Site Management Plans, document baseline conditions, and enter into agreements with landowners.

6.7.2 Conservation Easements

Voluntary permanent conservation easements (hereafter referred to ‘conservation easements’) on private lands are an important tool, one that the County will use together with fee title acquisition from willing sellers to fulfill the land conservation commitments. Conservation easements are voluntary, legally binding agreements between a landowner and an easement holder that restrict certain uses of the land to protect specified wildlife and plant species and natural communities while the landowner maintains ownership. Under the HCP, the conditions of conservation easements must provide sufficient protection of a sufficient amount of land to achieve the biological goals and objectives of the HCP. A number of entities may hold HCP conservation easements (e.g., the County and land trusts); however, the County must always be granted the right of enforcement of the easement and access for monitoring (see the template conservation easement in Appendix P). Although conservation easements can include a variety of restrictions and stewardship commitments, only those that are permanent and meet...
statutory and regulatory requirements, including specific substantiation requirements, are considered viable tools for implementing land conservation under the HCP.

The primary purpose of conservation easements on private lands under the HCP will be to provide the combined benefit of conservation for Covered Species and natural communities and continued viable use of rangelands and certain agricultural lands in the plan area. The County will achieve a portion of this conservation through conservation easements. Easements the County purchases from willing landowners on agricultural lands will allow the use of agricultural practices that are compatible with the conservation of the covered species.

The County will use conservation easements as an important tool in HCP implementation in two ways:

- Conservation easements purchased from a private party and placed on the land that remains in the ownership of that private party (i.e., as an alternative to fee title acquisition),
- Conservation easements placed on land acquired in fee title by the County to secure credit under the Plan (see Section 6.7, Land and/or Conservation Easement Acquisition).

The section below describes the process for developing acceptable conservation easements in all cases.

**Easements on Private Lands**

The HCP assumes that the County will purchase land for the reserve system in conservation easements. Conservation easements are appropriate where landowners wish to retain ownership and control of the property and the County can meet the HCP conservation goals with an easement. The conservation easements purchased by the County are intended to preserve the habitat values of the covered species and other native species habitat values that exist on a property. The County will count only portions of properties that meet one or more of the goals of the HCP toward the conservation commitments outlined in the conservation strategy. In some cases, an easement may be placed over more of a property than the County initially counted toward the conservation targets if the County determines that other portions of the property will be restored or enhanced to accommodate HCP goals in the future. Additional credit would be applied to the other sites once they meet HCP goals.

**Easements Acquired for or by the County**

If the County purchase land for the reserve system land, a conservation easement must be placed on the site to ensure permanent protection. For lands acquired for the reserve system but owned by other public entities, and for lands acquired in fee or easement but owned by private parties, permanent protection must also be ensured by a conservation easement, consistent with the requirements herein. In all cases, conservation easement terms will be consistent with those described in this section.

The County, or partners who acquire conservation easements on behalf of the County with HCP funding, will use the guidelines described below.
All conservation easements acquired to fulfill the requirements of the HCP will be in perpetuity and in accordance with Washington Revised Code Section 64.04.130 as well as the current policies of the wildlife agencies. All conservation easements will be acquired voluntarily. The County or another qualified conservation organization (i.e., land trust) may own or hold the easement, provided the easement holder complies with all applicable provisions of state and federal law that dictate the qualifications of conservation easement holders. In addition, a binding agreement must exist between the County and the easement holder to ensure compliance with the Permits, Implementing Agreement, and HCP. After acquisition of an easement interest in qualifying lands, the department may transfer its interest in such lands by a recorded instrument to a state agency, or a private nonprofit nature conservancy corporation (as defined in RCW 64.04.130). Alternatively, the County may contract with one or more of the foregoing entities to exercise the County’s management authority over the qualifying lands. Any such contract will include provisions fully advising the contracting party of the rights of the landowner under this chapter and the conveyance instrument. The County shall notify the landowner of any transfer of its interest in the qualifying lands or any transfer of management responsibilities over those lands, provided that failure to so notify the landowner shall not affect the validity of the transfer. An objective of the easements is to have consistency in enforcement, monitoring, and maintenance. For land owned by the County, the easement must be held by another qualified conservation organization.

USFWS will be named as third-party beneficiaries on all conservation easements so that all rights conveyed to the County will also be conveyed to the wildlife agencies. The USFWS will rely on the County to verify and enforce all easement terms. In the highly unlikely event that the County fails to do so, the USFWS, as third-party beneficiaries, would have the right to access the property to verify compliance with the easement terms and to enforce those terms, if necessary. To ensure compliance with the HCP, all conservation easements will follow the template easement in Appendix P as closely as is reasonably possible. Reasonable variations from the template may be needed to address site-specific constraints. USFWS, along with the County, must review and approve any substantive modifications to the template easement.

It is the responsibility of participating landowners to abide by the terms of these conservation easements. The landowner and the County will negotiate the terms and prices of conservation easements on a case-by-case basis. The specific terms of the conservation easement will be based on site conditions, landowner site management preferences and/or operations, and species and habitat need. Some landowners may wish to reserve a portion of their property for a home site or other approved use. In those cases, the conservation easement may either exclude the incompatible site or apply to the entire property but define the portion of the site in which the incompatible uses are allowed. The HCP will receive credit only for the portion of the property that is compatible with goals

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11 This section of Washington law allows placement of restrictions on the use of land for conservation purposes that is binding on all successive owners of the land.

12 The conservation easement template is likely to be modified over the course of HCP implementation, subject to approval by the wildlife agencies, through the minor modification process described in Section 6.12, Amendments.

13 There may be advantages to having the conservation easement apply to the entire site (e.g., to avoid cost boundary surveys to define the conservation easement more narrowly than the property boundary).
and objectives of the HCP. Each conservation easement for the property or portion of the property that will be incorporated into the reserve system will be drafted to:

- Ensure that the property will be kept in compatible agricultural uses or, for properties that will not be used for the production of crops, in its natural or existing condition (all or portions of the site may also be enhanced or restored);
- Protect the existing, enhanced, and/or restored conservation values of the property in perpetuity;
- Ensure the easement cannot be extinguished without the prior written consent of the County and the identified third-party beneficiary wildlife agencies and compliance with any applicable provisions of state and federal law;
- Confine the allowable uses of the property to those activities that do not interfere with the protection or enhancement of those conservation values, consistent with the HCP; and
- Prevent any use of the property that would impair or interfere with the conservation values of the property.

The conservation easement will describe the conservation values of the property in terms of Covered species and their habitat, as well as land cover types and natural communities on the property. It will describe conservation values, at a minimum, using the land cover types and covered species habitat described in Section 2.2, Covered Species and Habitat, and Appendix B: Covered Species Descriptions. A legal description and map must be included in the easement.

Each conservation easement will prohibit certain activities, as described in the template provided in Appendix P, except as necessary to meet the biological goals and objectives of the HCP (including reserve infrastructure required to support monitoring, management, and maintenance). The County will describe these allowances in the site-specific reserve management plan that the County will develop in coordination with the landowner, consistent with the management plan template provided in Appendix K: Management Plan Template. In addition, all recorded conservation easements will include or incorporate by reference the items listed below.

- The initial pre-acquisition assessment, or baseline report, of covered species habitat and natural communities present;
- A detailed list of the allowable uses and use restrictions on the parcel, consistent with the minimum requirements stated above; any mandatory terms and conditions to maintain or enhance the habitat, pursuant to Chapter 5 or Appendix J, of the HCP;
- Provisions for reasonable access upon prior notice by the wildlife agencies and the County or its designee to monitor compliance with the terms of the conservation easement and to carry out all applicable management and monitoring requirements described in Chapter 5;
• Conservation easements on grazing lands will describe the general nature of the grazing to be allowed or refer to a management plan that covers such matters. The easement or its management plan will specify the desired vegetation and other habitat conditions and, if necessary, impose limits on the timing, stocking density, and duration of permitted grazing to meet those conditions. These desired conditions and grazing limitations will be allowed to fluctuate according to the adaptive management process. The conservation easement will describe a baseline condition to provide a benchmark and measure habitat enhancement on the site. The conservation easement may accomplish this requirement by reference to a separate management plan prepared for the lands that are covered by the easement;

• Conservation easements will consider issues of water use and runoff into adjacent or nearby streams and their potential effects on covered species, if applicable;

• Provisions for enforcement and available remedies for the County or appropriate other party in the event that title holder or a third party violates the terms of the conservation easement;

• If the easement boundaries are different from the parcel boundaries, a legal description and map of the easement boundaries will also accompany the easement; and

• When a site-specific management plan is prepared for private property, the easement will indicate where that the site-specific management plan may be found and that the terms of such site-specific management plan will be followed. Such a record, to be recorded with the land deed, ensures that the site-specific management plan will be tied to the conservation easement in the event property ownership changes. It also ensures management of the site in perpetuity.

To approve and accept a conservation easement, the County must have the following documentation:

• A pre-acquisition assessment of the property, or baseline report, that summarizes the baseline biological conditions, including the presence and condition of natural communities and covered species, if known;

• A preliminary title report and legal description of the property;

• Assurance that any superior liens or interests will not substantially conflict with the property’s conservation values;

• Evidence of all other easements, covenants, restrictions, reserved rights (including mineral rights), and property interests (including water rights);

• A Phase I Environmental Site Assessment to identify potential environmental contamination if there are indications that a property may have previously included uses that have the potential for contamination; and

• A map of the parcel and a description of its physical condition (e.g., roads, buildings, fences, wells, other structures) as well as its relation to other components of the reserve system
and other properties that are subject to other permanent protections for conservation purposes.

*Conservation Easement Minimum Requirements*

This section describes the required content of a conservation easement and the minimum restrictions that must be placed on a conservation easement for it to count toward the goals of the HCP.

*Content of an HCP Conservation Easement*

HCP conservation easement deed is a recorded in-perpetuity deed restriction instrument that is conveyed to the County or other appropriate entity (e.g., a land trust) to restrict the uses of the subject property in a manner that achieves the intended conservation goals and objectives. HCP conservation easements must state a specific conservation purpose, such as the protection of specified natural communities, covered species habitat, and agricultural uses that support one or more covered species. The following describes the minimum content of HCP conservation easements:

1. **Conveyance Form.** This section of the easement contains the identification of the parties, a description of the parcel(s), required words of conveyance, and a statement of consideration. All persons with ownership interest in the property must be a party to the deed;
2. **Recitals.** The recitals identify the nature of the agreement and describe the intent of the parties in establishing the conservation easement. They also identify the conservation values that warrant protection and the statutory foundation for the transaction;
3. **Easement Holder’s Rights.** This section must grant the County the right to enforce the restrictions of the easement and the right to access the land for monitoring purposes. Ancillary rights related to these two primary functions of the holder are also granted;
4. **Restrictions and Reserved Rights.** This section identifies the land use restrictions, allowable and prohibited uses and activities, the requirement for prior approval of certain activities by the County, and those rights reserved by the landowner. All rights and restrictions will be directly relevant to the conservation purposes of the easement;
5. **Administrative Provisions.** This section must include all provisions that establish the easement holder’s and the County’s rights and remedies in case of a violation. The easement must include an environmental indemnity to ensure that the easement holder will not be liable under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 United States Code [U.S.C.] Sections 9601 et seq.) or the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. Sections 6901 et seq.). Additional administrative clauses that govern, among other items, procedures for enforcement, notices, and required approval may be included;
6. **Signatures of Necessary Parties.** All owners and the easement holder must sign the document. Signatures must be notarized; and
7. **Exhibits.** The legal description of the property is incorporated as an exhibit at the end of the conservation easement. The easement may also be clarified by attaching maps and other relevant information.
Minimum Restrictions of a Thurston County HCP Conservation Easement

The County will develop performance standards and minimum conservation easement requirements for HCP conservation easement properties. In particular, the County will identify standard restrictions on allowable uses and develop a list of inconsistent uses for each conveyed easement to clearly identify the intended objectives, methods, and assurances that each conservation easement is expected to provide for achieving the conservation objectives of the property. These performance standards will represent the minimum conservation easement requirements. The County may negotiate additional requirements and restrictions with each property owner on a case-by-case basis. At minimum, the Restrictions and Reserved Rights section of each HCP conservation easement (or, in some instances, the Management Plan) must:

1. Identify the conservation purpose and the natural communities and habitat for covered species that are addressed by the conservation easement;
2. Identify the conservation actions that may be implemented by the County on property (e.g., habitat improvements, control of nonnative species);
3. Identify the range of agricultural uses that are allowable under the easement and/or the practices that are not allowable under the easement, as applicable for active agricultural fields that are included in HCP reserve lands;
4. Grant in-perpetuity protection of the subject natural communities and habitat values, permanently restricting the use of the property;
5. Allow the County to designate a successor or easement holder at its discretion;
6. Protect the land surface from mineral extraction where feasible;
7. Prevent improvements that reduce the property’s conservation values;
8. Allow the easement holder and County access to the property to determine compliance with and to enforce the easement;
9. Allow the easement holder, the County, and its designees access to the property to conduct HCP required biological monitoring and documentation of conditions, implement habitat improvements covered under the conservation easement, and control nonnative species;
10. Reference the site-specific management plan that is tied to the easement;
11. Provide standards for easement enforcement, amendments, and modification procedures;
12. Provide a clear set of restrictions and/or limitations on allowable uses, including commercial, agricultural, and recreational uses;
13. Clearly describe activities and actions by the landowner that require prior consent from the County;
14. Describe generally the extent to which removal, filling, or other disturbances to the soil surface as well as any changes in topography, surface or subsurface water systems, wetlands, or natural habitat may be allowed without approval by the County, except for active agricultural fields where normal farming practices will continue and the easement will identify the allowable (or, alternatively, prohibited) range of agricultural practices and specify any additional prohibitions;
15. Declare that all terms and conditions of the easement run with the property and shall be enforceable against the landowner or any other person or entity holding any interest in the property;
16. Provide for the notification of the County at least 30 working days prior to the transfer of title to the property; and
17. Include provisions in case a property interest is taken by public authority under power of eminent domain.

**Allowable Activities on Thurston County HCP Reserve System**

The following discretionary and non-discretionary activities may be conducted on HCP reserve priority lands. In many instances, these activities will involve both the continuation of ongoing activities on properties and new activities related to implementation of HCP conservation measures. Within the restrictions on allowable uses detailed in conservation easement deeds, the following activities may be allowable on HCP reserve lands at the discretion of the County:

- Habitat management activities, as provided for in Chapter 5 Conservation Program, and Appendix J Performance Standards for Conservation Lands
- Biological and physical resources monitoring, as described in Section 5.4, Monitoring and Adaptive Management;
- Directed studies that support the HCP adaptive management decision-making process and non-HCP related research approved by the County;
- Controlled passive recreational uses (e.g., hiking, bird watching, and non-commercial fishing and hunting) and facilities to support such uses (e.g., trails, check-in kiosks, and interpretive signs), as approved within reserve lands management plans and County approved conservation easements. If there are trails or permanent structures, however, this acreage will not count toward the HCP conservation commitments. If new trails or structures are built, this acreage will be counted as part of the jurisdiction's take. The County expects that most conservation easements will preclude public access;
- Access for emergencies and public safety (e.g., fire suppression, flood control, and emergency response);
- Use of non-public roads on reserve lands to provide land manager and local landowner access to adjoining lands, as approved by the County;
- Access to and maintenance of existing road and utility infrastructure (e.g., maintenance of below- and aboveground electric transmission lines, below- and aboveground cable and telephone lines, and underground pipelines) on reserve lands, consistent with pre-existing easements and any other in-perpetuity agreements attached to property titles;
- Ongoing agricultural and grazing practices and other land uses (including customary fallowing and rotation practices that are necessary to maintain production over time), as allowable under County-approved conservation easements;
- Ongoing use of approved pesticides, herbicides, and other agro-chemicals in accordance with U.S. Environmental Protection Agency (EPA) labels; for land application, the
The County must, in all cases, ensure that the intended conservation benefits and conservation values of the reserve lands, as stated in the HCP conservation strategy, are not compromised.

### 6.7.3 Willing Sellers

Properties or conservation easements acquired as part of the HCP will only be acquired from willing sellers. Thurston County will not condemn land to satisfy the conservation measures in the HCP, nor will the County partner with any organization to condemn land for the HCP, including contributing funding towards condemnation.

### 6.7.4 Gifts of Land

Thurston County may accept land or conservation easements as a gift or charitable donation. The County will evaluate the conservation benefit of the lands donated relative to the Biological Goal, Conservation Objectives, and requirements of the HCP. Donated land not contributing to these Biological Goals, Conservation Objectives, and requirements may be sold or exchanged, subject to any restrictions imposed by the donating entity, to enable acquisition of land or conservation easements that do contribute to the HCP Biological Goal and Conservation Objectives, and requirements.

### 6.7.5 Public Access

Public access to properties with conservation easements will only be allowed with the express easement holder and landowner’s consent and where access and use does not adversely affect the Covered Species or their habitats. Public access will be specifically addressed in each conservation easement and Site Management Plan.

If Thurston County contracts with a landowner subject to the terms of a conservation easement or another party to manage property for conservation of Covered Species, Thurston County may employ third party monitoring to ensure compliance with the terms of the conservation easement.

### 6.8 Data Management

Thurston County will maintain a data management system to track incidental take permit compliance, monitoring data, and all appropriate aspects of the HCP. The data repository will be updated as needed, and queried for annual reporting to the USFWS (see Section 6.9). The County will ensure quality assurance/quality control of the data and provide adequate metadata documentation for all data (i.e., why, how, and where data were collected). Spatial data will be maintained by Thurston GeoData. The primary types of information to be included in the County’s data management system for the HCP include, but are not limited to, the information needed for the annual HCP Compliance Report (see Section 6.9).
Thurston County will comply with Washington State RCW 40.14 Preservation and Destruction of Public Records regulations. More specifically, the County will continue to comply with the file retention and storage standards pursuant to the Local Government Common Records Retention Schedule and Land Use Planning and Permitting Records Retention Schedule as approved and amended by the Washington Office of the Secretary of State. Additionally, GeoData stores County enterprise data, which includes the gopher and prairie data, in a SQL Server ESRI Geodatabase. This database is archived and records all edits, back to 2012 when it was implemented. The layers stored inside the geodatabase can be pulled for anytime since the archiving was implemented. More details can be found about archiving in ArcGIS GeoDatabases at [Error! Hyperlink reference not valid.]

6.9 Schedule and Reporting

Milestones for HCP implementation are outlined in Table 6.6. This schedule does not prevent Thurston County from accomplishing these milestones earlier than anticipated. Compliance and other monitoring report requirements are described in Section 5.4.

Table 6.6 Milestones for HCP implementation.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Program Operation:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Pass local resolution and ordinance to implement HCP</td>
</tr>
<tr>
<td></td>
<td>• Train staff on HCP requirements, particularly BMPs for County actions and permit issuance</td>
</tr>
<tr>
<td></td>
<td>• Establish databases to track the elements set forth in Section 6.8</td>
</tr>
<tr>
<td></td>
<td><strong>Conservation:</strong></td>
</tr>
<tr>
<td></td>
<td>• Create Site Management Plans for Conservation Lands acquired since the listing decision date for MPG, OSF, TCB, and OVS and establish Conservation Land agreements with land managers for credits</td>
</tr>
<tr>
<td></td>
<td>• Create Site Management Plans for Working Lands Easements, Existing Preserves, New Reserves</td>
</tr>
<tr>
<td></td>
<td>• Secure properties from willing sellers to establish HCP Conservation Lands and prepare associated Site Management Plans</td>
</tr>
<tr>
<td></td>
<td>• Conduct public outreach activities (see Chapter 5, Conservation Objective 1)</td>
</tr>
<tr>
<td></td>
<td>• Begin Effectiveness and Compliance Monitoring (see Section 5.4)</td>
</tr>
<tr>
<td></td>
<td><strong>Development:</strong></td>
</tr>
<tr>
<td></td>
<td>• Begin receiving and reviewing requests for take authorization</td>
</tr>
<tr>
<td>Years 2-3</td>
<td>Program Operation:</td>
</tr>
<tr>
<td></td>
<td>• Prepare annual Compliance Reports.</td>
</tr>
<tr>
<td></td>
<td><strong>Conservation:</strong></td>
</tr>
<tr>
<td></td>
<td>• Secure properties from willing sellers to establish new HCP Conservation Lands and prepare associated Site Management Plans</td>
</tr>
<tr>
<td></td>
<td>• Conduct public outreach activities</td>
</tr>
</tbody>
</table>
• Implement habitat restoration and enhancement projects at newly secured HCP Conservation Lands
• Continue Effectiveness and Compliance Monitoring

**Development:**
• Continue receiving and reviewing requests for take authorization

**Years 4-30**

**Program Operation:**
• Prepare annual Compliance Reports

**Conservation:**
• Secure properties from willing sellers to establish new HCP Conservation Lands and prepare associated Site Management Plans
• Conduct public outreach activities
• Implement habitat restoration at HCP Conservation Lands
• Complete Effectiveness and Compliance Monitoring
• Follow management guidelines at HCP Conservation Lands and update Site Management Plans and guidelines as needed through Adaptive Management

**Development:**
• Continue receiving and reviewing requests for take authorization

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**6.10 Changed Circumstances**

If circumstances change during the term of the incidental take permit, Thurston County may update its activities to address such changes. Possible changed circumstances are discussed in Table 6.7. The County is committed to implement the responses outlined in Table 6.7 and has built funding assurances in the plan to cover the costs of perpetual endowments for long-term maintenance to control circumstances such as invasive species and recovery from fire or drought. If any of these circumstances permanently degrades the habitat value of an HCP conservation land generating credit, the County will ensure alternative sites with similar habitat types are available to offset the current level of incidental take from Covered Activities.

**6.10.1 Additional Federally Listed or State Listed Species**

Should additional species not covered by the HCP be listed, proposed, or petitioned for listing, Thurston County may choose to amend this HCP and request a major amendment to the ITP to provide coverage for incidental take that may result from the Covered Activities described in this plan, or from additional Covered Activities that may result in take. To determine whether to make this request, Thurston County may consider whether the species is present in the permit area covered by the HCP and if it is likely to be affected by the Covered Activities. If incidental take coverage is desired by Thurston County, the County will seek to amend the incidental take permit and HCP. Alternatively, Thurston County may
apply for a new and separate incidental take permit. Procedures for amending the HCP are outlined in Section 6.12. Alternatively, the County may elect to refer affected parties seeking a County permit to the USFWS.

6.10.2 Delisting

In the event that an HCP Covered Species is recovered and delisted by USFWS, Thurston County will consider altering its mitigation and other requirements for delisted species. Management of existing Conservation Lands with habitat for the species shall continue.

6.10.3 Newly Discovered Populations of Covered Species

Thurston County’s approach to address habitat conservation on a County-wide scale reduces the need to modify the HCP as species occupancy across the landscape may change during the HCP permit term. The analysis and projections completed for the HCP reflect the best available information of where the Covered Species and their habitat occur. Therefore, the likelihood of discovering a new wild population of a HCP Covered Species outside their currently identified ranges in the Permit Area is low. However, if new wild populations are found during the 30-year permit term, the County may not have sufficient take coverage to cover additional impacts. The County will evaluate the incidental take remaining under its permit. In the event the County does not have sufficient incidental take coverage, Thurston County may consider amending the HCP to add the needed additional impacts and mitigation to be fulfilled, or Thurston County may elect to refer affected parties seeking a County Participation Agreement to the USFWS.

6.10.4 Newly Introduced Populations of Covered Species

Where there are successful introductions of new Taylor’s Checkerspot populations, on protected lands, there are at least two separate mechanisms exist to ensure that land use activities on neighboring properties are not restricted. The Good Neighbor Principle described in Chapter 1, and included in the Yamhill Soil and Water Conservation District HCP for Fender’s Blue Butterfly on Private Lands (YSWCD 2019), and the Benton County Prairie Species HCP (Benton County 2010), provides landowners with regulatory assurance that butterflies from introduced populations may migrate off of the targeted lands and onto adjacent properties without restricting the rights of those neighboring landowners. U.S. Fish and Wildlife Service Safe Harbor Agreements provide similar assurances and are described in Chapter 5 of this document.

6.10.5 New Invasive Species

Invasive species are a continuing threat to native prairie habitat. Additional invasive species could further stress areas already threatened by invasive species. The County will work with regional partners on an early detection and control program for any new invasive species likely to threaten habitat in the HCP Conservation Lands.
### Table 6.7 Summary of possible changed circumstances during the term of the incidental take permit.

<table>
<thead>
<tr>
<th>Category</th>
<th>Circumstance /Scenario</th>
<th>Potential Impact on Covered Species</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovery Plans</td>
<td>Recovery Plan issued</td>
<td>Consider amendments to Management Plans for Conservation Lands</td>
<td>The County will consider adjusting Reserve Priority Area Maps and Criteria</td>
</tr>
<tr>
<td>Climate Change</td>
<td>Change to recovery plans or reserve priority criteria</td>
<td>Consider amendments to Management Plans for Conservation Lands</td>
<td>The County will consider adjusting Reserve Priority Area Maps and Criteria; and consider adjusting credit debit methodologies</td>
</tr>
<tr>
<td>Species Status</td>
<td>Additional, non-HCP Covered Species Listed in the HCP Covered Area</td>
<td>Additional habitat protections may be enacted for new species.</td>
<td>The County will evaluate need for incidental take coverage, and consider amending this HCP or seeking an additional incidental take permit.</td>
</tr>
<tr>
<td>Species Status</td>
<td>Covered Species Delisted by the USFWS</td>
<td>Species protections will be removed.</td>
<td>The County will consider altering its mitigation and other requirements for delisted species. Management of existing Conservation Lands with habitat for the species shall continue.</td>
</tr>
<tr>
<td>Covered Area</td>
<td>Previously Undiscovered Covered Species Population found, not accounted for in the HCP impacts analysis</td>
<td>Insufficient incidental take may be available under the County’s incidental take permit.</td>
<td>For activities covered by the HCP, if insufficient incidental take coverage is available, the County may elect to amend the HCP to add the needed anticipated impacts and mitigation to be fulfilled, or refer the affected landowners seeking incidental take authorization to the USFWS. All non-HCP Covered Activities will be regulated by the USFWS.</td>
</tr>
<tr>
<td>Invasive Species or Diseases</td>
<td>Invasive plant population unexpectedly expands to threaten HCP Covered Species and associated habitat</td>
<td>Loss of native species</td>
<td>HCP effectiveness monitoring include measures to address invasive species. In the event that conditions change to favor a disease affecting HCP species or promote rapid expansion of an invasive species, and the invasive species does not respond to regular control and eradication measures, the County will discuss with USFWS.</td>
</tr>
<tr>
<td>Natural Catastrophes</td>
<td>Drought, wildfire or windstorm on HCP Conservation Lands</td>
<td>Unavoidable damage to habitat at HCP Conservation Lands may occur.</td>
<td>The County will minimize impacts as much as possible with technical assistance from USFWS, the County will evaluate the effects from the drought, fire or windstorm, and modify mitigation Site Management Plans as needed.</td>
</tr>
</tbody>
</table>
6.10.6 Natural Catastrophes

A number of natural catastrophes could occur during the term of the Permit, including flooding, drought, wildfires, and windstorms.

**Flooding**

If any HCP Conservation Lands are flooded beyond regular seasonal flows during the permit term, Thurston County will evaluate the site during the field season following the flood to determine any negative effects the flooding may have had on the site, and the County will take appropriate action, with technical assistance from USFWS, to determine effectiveness of restoring or enhancing the site.

**Drought**

Extreme and prolonged drought may threaten drinking water, water supplies for fire suppression, water-dependent agriculture, industry, and fish, wildlife, and plants. Drought is a serious problem for all Covered Species, but particularly for Taylor’s Checkerspot. If it’s host and/or nectar sources do not produce sufficient food at the right time, mortality of butterfly adults and larvae occur. During drought conditions some plants do not produce seed, which could further affect the continued existence of the population of that species. If drought conditions threaten Covered Species in HCP Conservation Lands, Thurston County, in collaboration with the HCP Implementation Team and the conservation land manager(s), may determine if water is reasonably available elsewhere and coordinate to transport it to the affected sites for drought abatement in key restoration areas. Thurston County, in collaboration with the HCP Implementation Team and the conservation land manager(s), may also consider enhancing populations of more drought-tolerant plants.

**Wildfires**

When managed, prescribed fires are a useful tool for conserving or enhancing native prairie species. However, uncontrolled wildfires may negatively affect Covered Species populations either directly by burning the organisms or indirectly through firefighting actions (trampling of plants, eggs, or larvae; potential harm from fire retardants). If a fire occurs and fire fighters attempt to control it, human health and safety will take precedence over protection of Covered Species. Within one year of a wildfire affecting HCP Conservation Lands, the County will determine the status of the site and the need for restoration and/or enhancement efforts. Any restoration/enhancement work needed will be performed pursuant to the contingency measures in the Site Management Plan (Appendix K).

**Windstorms**

The Pacific Northwest may experience strong windstorms in the fall and winter months. These windstorms can damage trees, buildings, and structures. Following a windstorm, Thurston County will assess the damage to the HCP Conservation Lands within six months. Any fallen trees negatively affecting the Covered Species or its habitat will be removed with care to minimize further impacts to the species. Sites will be restored or enhanced, as needed.
6.11 Unforeseen Circumstances and “No Surprises” Assurances

Unforeseen circumstances defined by Federal regulation (50 CFR §17.3), are changes in circumstances affecting a species or geographic area covered by an HCP that could not reasonably have been anticipated by the applicant or the USFWS at the time of an HCP’s development, and that result in a substantial and adverse change in the status of the Covered Species. The USFWS is responsible for determining if an unforeseen circumstance has occurred and notifying Thurston County. In the event of an unforeseen circumstance, Thurston County will not be required to increase the amount of mitigation required under the HCP. USFWS and the County may work together to identify opportunities to re-allocate resources in an appropriate manner, but only if measures are limited to modifications within covered habitat areas, if any, or the HCP’s operational Conservation Program for the affected species, and if such measures maintain the original terms of the HCP to the maximum extent possible (50 CFR 17.22)

The County requests assurances consistent with federal No Surprises Regulation that USFWS will not:

- Require the commitment of additional land, water, or financial compensation by the Permittees in response to unforeseen circumstances other than those agreed to elsewhere in the HCP; or
- Impose additional restrictions on the use of land, water, or natural resources otherwise available for use by the Permittees under the original terms of the HCP to mitigate the effects of the Covered Activities or in response to unforeseen circumstances.

As described in the No Surprises Regulation, it is USFWS’ responsibility to demonstrate the existence of unforeseen circumstances using the best scientific and commercial data available. For the purpose of this plan, “unforeseen” circumstances are circumstances that are highly unlikely and not reasonably foreseeable to occur and thus will not be funded by this Plan.

The federal No Surprises Regulation does not limit or constrain the USFWS or any federal, state, local, or tribal government agency, or private entity, from taking additional actions at its own expense to protect or conserve Covered Species. The federal No Surprises Regulation also does not prevent USFWS from asking the Permittees to voluntarily undertake additional mitigation on behalf of the affected species.

6.12 Amendments

The County requests a renewable ITP with a 30-year duration based upon implementation of this HCP. During that period the County may seek to amend or modify the HCP or the ITP.

6.12.1 Amendments to the HCP or Incidental Take Permit

Thurston County and the USFWS may propose minor or major amendments to the HCP or the ITP. The party proposing the amendments shall provide the other parties with a written statement of the reasons for the amendments and analysis of the effects of the amendments on (1) the Covered Species, and (2)
Minor Amendments

Thurston County may request minor amendments to the ITP or HCP. Minor amendments may include, but are not limited to, the following:

- Correction of any maps or exhibits to correct errors in mapping or to reflect previously approved changes in the ITP or HCP.
- Modifications to Credit-Debit Methodology.
- Changes in land ownership.
- Changes to survey, monitoring, or reporting protocols.
- Modifications to or adoption of additional conservation measures likely to improve the conservation of Covered Species.
- Discontinuing any conservation measures determined through monitoring and adaptive management to be ineffective.
- Clarification of components of the ITP or HCP
- Any other types of modifications of lesser significance.

The party proposing the amendment must provide the other parties with written notice, except when another process is specifically identified under the terms of the HCP with respect to a particular amendment. The parties agree to use their best efforts to respond to proposed amendments within sixty (60) days of receipt of such written notice. The amendment shall be approved upon written agreement of both parties. A minor amendment of the HCP does not require an amendment of the ITP, but require approval from both parties before being implemented. If the one party agrees with a minor amendment proposed by the other party, the USFWS will submit such approval in writing in accordance with applicable regulations and policies. The modifications will be considered effective on the date of USFWS’ written authorization. A record of any minor amendments to the HCP or ITP shall be documented in writing by Thurston County.

Minor modifications to the HCP or ITP do not require amendment of the County’s Implementing Ordinance. Minor amendments do not include actions:

- Resulting in obligations under the modified HCP significantly different from those analyzed in connection with the original HCP.
- Resulting in adverse effects on the environment significantly different from those analyzed in connection with the original HCP.
- Allowing additional take not analyzed in connection with the original HCP.
• Reducing the number of mitigation credits (functional acres) required.

**Major Amendments**

A major amendment to the HCP is a change affecting the impact analysis, need for additional incidental take coverage, or the Conservation Measures. Major amendments require amending the HCP or the ITP following a formal review process similar to that used for the original HCP and ITP, including USFWS review, NEPA review and internal USFWS Section 7 consultation.

Major amendments to the HCP or ITP may require amendment of the County’s Implementing Ordinance pertaining to the HCP or incidental take permit.

Major amendments may include, but are not limited to, the following:

• Adding or removing one or more species to the list of Covered Species.

• Increasing the amount of take allowed under the incidental take permit.

• Adding one or more activities to the list of Covered Activities if that activity will result in greater adverse effects to the Covered Species than those analyzed through the NEPA documentation.

• Modifying a conservation measure so substantially as to affect the level of authorized take, the Covered Activities, funding, or the nature and scope of the conservation measures, including the amount of mitigation.

Thurston County will submit requests for major amendments to the USFWS. The request shall include a description of the proposed amendment, the need for the amendment, and an assessment of its impacts.

**Amendments for Future Species Listings**

If a species not currently included in the HCP is federally listed as threatened or endangered pursuant to the ESA during the term of the HCP, and Thurston County desires incidental take coverage for activities that may impact these newly listed species, Thurston County may coordinate with the USFWS on an HCP and incidental take permit amendment to include the newly listed species.

The process to amend the HCP and ITP shall include a review of the HCP to determine if the Conservation Measures identified in the HCP are adequate for conservation of the newly listed species. If the USFWS and Thurston County determine the Conservation Measures are adequate, then Thurston County shall request an amendment to the HCP and ITP to include the newly listed species.

If the Conservation Measures in the HCP do not adequately cover the newly listed species, Thurston County may submit a revised or supplementary HCP and supporting documentation with the request to amend the ITP. The USFWS is responsible for completing environmental compliance documents under NEPA and for all internal compliance under Section 7 of the ESA.

Amending the HCP to add one or more additional species is considered a “major” amendment to the HCP and ITP.
6.13 HCP and ITP Renewal

Incidental take coverage will be available over the life of the requested 30-year ITP duration. Thurston County is requesting a renewable ITP. If a written request for renewal is on file with USFWS at least 30 days prior to the HCP/ITP expiration, the ITP will continue to be valid while the renewal request is processed. The renewal request must certify the statements and information in the original HCP are correct or include a list of changes. The renewal request must also specify what take has occurred under the incidental take permit/HCP and the Covered Activities still likely to occur during the renewal time period. The USFWS will process the renewal application in accordance with applicable statutes and regulations.

6.14 Enforcement

The provisions in this HCP are enforceable through the terms and conditions of the ITP and other applicable statutes, regulations, and policies.

6.15 Notice

Any notice required to be given by USFWS pursuant to the terms and conditions of the HCP and incidental take permit must be given to the Thurston County Board of Commissioners by personal delivery or by certified mail/return receipt requested as described in the ITP.

6.15.1 Suspension/Revocation

The USFWS may suspend or revoke the incidental take permit if Thurston County fails to implement the HCP in accordance with the terms and conditions of the ITP or federal law. Suspension or revocation of the ITP, in whole or in part, by the USFWS shall be in accordance with (50 CFR Section 13.27 and 13.28 and other applicable statutes and regulations) in force at the time of suspension.

Thurston County may suspend or revoke an HCP Participation Agreement to any party if that party fails to comply with the terms and conditions of the HCP Participation Agreement (Appendix N).
Chapter 7  Costs and Funding

One of the key requirements for an incidental take permit is identification and pursuit of reliable funding sources to implement the Conservation Program set forth in the HCP. Thurston County understands that failure to ensure adequate funding of the Conservation Measures outlined in the HCP is grounds for full or partial suspension of the incidental take permit. This section addresses the costs of implementing the HCP and identifies sources of funds for implementation.

Thurston County is fully committed to fund and implement the HCP in its entirety. Although the funding measures may be modified during the term of the ITP, the County shall ensure that adequate, reliable funding is in place for the life of the HCP.

7.1 Cost to Implement the Conservation Program

The cost analysis is based on the County’s vision of 30-year implementation of the Conservation Program. Cost estimates were based on the best available information and represent average unit costs in 2019 dollars. The costs of individual items will fluctuate above and below these averages. Therefore, costs should be considered planning-level estimates. Cost estimates are for the 30-year permit term of the HCP assuming 5,216 functional acres of habitat impact (debits) and the commensurate mitigation credits required. If not all impacts occur, cost projections will require adjustment through adaptive management.

Table 7.1 summarizes the costs likely to be necessary to implement the HCP, within the following four categories:

- Conservation Program administration
- Conservation Lands acquisition
- Conservation Lands initial habitat restoration and enhancement
- Conservation Lands management and maintenance

7.2 Cost Estimate Methodology

This section provides an explanation of each cost category and the methods that were used to develop the Conservation Program cost estimate.
Table 7.1 Projected HCP costs by category and implementation period (2019 dollars).

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Implementation Period (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual costs</td>
</tr>
<tr>
<td>Conservation Program Administration &amp; Reporting</td>
<td>$400,000</td>
</tr>
<tr>
<td>Conservation Lands Acquisition and Easements</td>
<td>$2,350,706</td>
</tr>
<tr>
<td>Habitat Enhancement</td>
<td>$358,021</td>
</tr>
<tr>
<td>Conservation Lands Management and Maintenance</td>
<td>$1,063,240</td>
</tr>
<tr>
<td>(includes endowments)</td>
<td>$4,171,966</td>
</tr>
</tbody>
</table>

7.2.1 Conservation Program Administration

Conservation Program administration costs involve the support of employees, facilities, equipment, and vehicles to implement the program. Administration also includes the required data collection and reporting. Annual program administration costs are estimated to be, on average, $400,000 during the permit term (Table 7.1). The County may choose to assign some of its HCP administration functions to designees. Employee costs comprise the annual salaries for program administration personnel. For the purposes of the cost estimate, it is assumed that the following positions would be staffed within the County: HCP Coordinator (Program Lead) and HCP Conservation Associate. A standard Thurston County salary multiplier was used for each employee (program administration and non-program administration staff) to include the cost of standard County employee benefits such as health insurance, payroll taxes, training, and a retirement plan.

Conservation Program administration also includes the operational costs of land acquisition transactions, which are only expected during the 30-year permit term. Land transaction costs include landowner recruitment, due diligence, reconnaissance-level biological surveys (pre-acquisition surveys), and initial site improvements. The process of investigating a parcel of land before acquiring it is considered due diligence. Due diligence costs include the costs for appraisal, preliminary title report, Phase 1 Site Assessment, and legal description. Due diligence costs may include the cost of a boundary survey and documentation, if necessary. To determine the cost of boundary surveys and other costs that are dependent on parcel size, an average parcel size and perimeter length was developed using GIS analysis. Prior to acquisition land will be surveyed for land cover type, vegetation quality, soils, and Covered Species populations. The cost of these surveys is based on the estimated number of hours per acre required to gather data and hourly rates for contracting biologists.

7.2.2 Conservation Land Acquisition

Total land acquisition costs for the Conservation Program are estimated at approximately $70,521,181 ($2,350,706 annually) over 30 years (Table 7.1). Land values were estimated based market land value
data for the 2020 tax assessment year pulled directly from the Thurston County Assessor’s Office, accessed on 8/16/2019, 8/22/2019 and 11/07/2019. The analysis included 9,000 parcels of greater than 5 acres in size within Reserve Priority Areas, stratified by each Service Area, and 1,991 parcels of greater than 5 acres in size in the Oregon Spotted Frog Habitat Screen. The estimated average cost of land per acre is summarized by Service Area in Table 7.2. All land value estimates represent average planning-level estimates. Actual sales prices of individual properties will vary.

Table 7.2 Estimated average land acquisition value (fee simple acquisition) per acre in the Service Areas and the OSF Habitat Screen.

<table>
<thead>
<tr>
<th>Service Area</th>
<th>YPG N (Includes OVS)</th>
<th>YPG E (Includes OVS)</th>
<th>YPG S (includes TCB)</th>
<th>OPG</th>
<th>TPG</th>
<th>OSF Habitat Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Land Cost/Acre</td>
<td>$22,543</td>
<td>$18,643</td>
<td>$12,142</td>
<td>$78,928</td>
<td>$10,787</td>
<td>$12,253</td>
</tr>
</tbody>
</table>

OVS = Oregon Vesper Sparrow, TCB = Taylor’s Checkerspot Butterfly

Easement costs for permanent Working Lands Easements were estimated at the $10,000/acre maximum used by USDA Natural Resources Conservation Service for critical habitat for threatened and endangered species (Dave Kreft, NRCS, personal communication January 12, 2016). The share of acquisition costs paid by a given project proponent will be proportional to the debit (impact) of the project.

Fee title and conservation easement land acquisitions are assumed to occur evenly through time over the course of the permit term, keeping pace with the actual rate of development impacts. Land costs will likely increase over time; mechanisms for addressing these increases are described in Section 7.3.

7.2.3 Habitat Restoration and Enhancement

Initial habitat restoration and enhancement over the 30-year HCP is estimated to cost a total $10,740,622 ($358,021 annually; Table 7.1). The County estimates a cost of $500/acre/year for the first five years after acquisition for habitat restoration and enhancement at New Reserves, based on a range of $300-$750/acre for the first three to nine years experienced by recent prairie habitat enhancement projects in Thurston County. It assumed that initial restoration and enhancement costs on Working Lands Easements will be half of that on New Reserves, and that initial habitat restoration and enhancement costs on Existing Preserves will be 75% of that on New Reserves. This difference in costs is due to an assumed lower intensity of restoration on Working Lands Easements (and lower mitigation credit yield), and lower needs for restoration on Existing Preserves (also resulting in lower net mitigation credit yield). Initial habitat restoration and enhancement costs include, but are not limited to:

- Preparing Site Management Plans for HCP Conservation Lands, including prescriptions for application of herbicides and prescribed fire
• Site preparation, including mowing, prescribed fire, and removing invasive plants, which may require licensed herbicide applications, fire crews and insurance, necessary state permits, etc.

• Restoring native prairie vegetation, which will include native seeds and plant materials.

7.2.4 Conservation Land Management and Maintenance

HCP land management and maintenance costs (to occur after initial period of habitat restoration and enhancement) are estimated at a total of $31,897,188 ($1,060,178 annually; Table 7.1) for all Conservation Lands to be secured. That number is based on annual per acre maintenance costs of $300 (the midpoint of a range of $200-$500) and annual per acre management cost of $300 (midpoint of a range of $200-$600) after initial site enhancement has occurred (e.g., after five years). It is estimated that the long-term maintenance costs for Working Lands Easements are approximately 50% of the costs of maintaining New Reserves, and the long-term maintenance costs for Existing Preserves is 75% that of New Reserves, based on assumptions similar to those for restoration and enhancement costs as described above.

Conservation land management and maintenance will be required in perpetuity. The full cost of management and maintenance is based on establishing maintenance endowments, assuming 3.2% annual inflation, and an average of 8.5% rate of return over time. Per acre management costs are expected to decrease with economies of scale as the size and number of Conservation Lands gets larger. Costs related to management and maintenance activities could include:

• Costs related to land management staff
• Regular maintenance (mowing or prescribed fire, control of invasive species)
• Managing public access and information
• Monitoring and analyzing data on habitat quality and other performance standards
• Remedial measures needed to address site performance

Annual Compliance Reports during the permit term will include a status report of endowment fund(s), including receipts, disbursements, earnings, and balance.

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14 These costs are based on the average costs of five recent prairie habitat projects in Thurston County.
15 These estimates are based on actual experience of conservation endowment managers in Thurston County.
7.3 Conservation Program Funding Sources and Assurances

This section describes methods for assembling the estimated $4,171,966/year needed to implement the Conservation Program. Funding to implement the Conservation Program will come from sources in two primary categories (Table 7.3):

- **Mitigation Fees.** These include a Participation Agreement applicant’s Mitigation Fees and the costs paid by Thurston County to mitigate debits from its own Covered Activities (e.g., transportation projects).

- **Other Local Funding.** This will include contributions from Conservation Futures (funded from property tax). Other possible local sources of local funding could be identified during the permit term.

Several alternative funding sources were explored as part of this financial analysis. Those sources were determined not to be feasible or preferred at the time the HCP was submitted, but could be revisited over time.

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Revenue</th>
<th>Percent of Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation Fee</td>
<td>$3,671,966</td>
<td>88%</td>
</tr>
<tr>
<td>Conservation Futures</td>
<td>$500,000</td>
<td>12%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$4,171,966</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

7.3.1 Mitigation Fees

The County plans to use the Voluntary Agreement sections in Washington code (RCW 82.02) to implement a Fee In Lieu of land dedication (Mitigation Fee). Participation Agreement applicants can choose to pay a mitigation fee in lieu of setting aside land to secure the needed mitigation credits required to offset debits (see Section 6.5 for review of mechanisms for mitigation).

On a per project basis, Thurston County will also pay the same mitigation fees to secure mitigation credits to offset county Covered Activities. Mitigation fees will be proportional to the impact of the project.

*Calculation of Mitigation Fee/Mitigation Credit Cost*

Mitigation fees are driven by impact extent and credit costs. Credit costs will differ by Covered Species and Service Area. Each Covered Species and Service Area has a specific blend of Conservation Objectives (e.g., credit generation from New Reserves, Working Lands Easements, and Existing Preserves) that drives total expense, and resulting credit costs.

The cost per mitigation credit for each Covered Species or Service Area was calculated using the following steps:
Sum the costs described in Section 7.2 (Program administration, land acquisition, habitat restoration and enhancement, land management and maintenance) for the projected blend of Conservation Objectives identified for each Covered Species or Service Area (see Table 5.1). Conservation Program administration costs were allocated to Covered Species and Service Areas in proportion to the number of acres of Conservation Lands to be acquired (see (1) Table 6.3) for the Covered Species or Service Area relative to the rest of the Conservation Program.

Reduce the values calculated in (1) by the anticipated funding from local sources (e.g., Conservation Futures – see Section 7.3.2). The reduction will be proportional to the number of acres of Conservation Lands acquired (New Reserves or Working Lands Easements) for the Covered Species or Service Area (see (2) Table 6.3) relative to the rest of the Conservation Program.

(3) Divide the value calculated in (2) by the total number of mitigation credits to be generated per Covered Species or Service Area (see Table 5.1).

Estimated mitigation credit costs for each Covered Species and Service Area to be used in Year 1 of the HCP are included in Table 7.4.

**Collection of Mitigation Fees**

All Mitigation Fees paid by County permit applicants or from County activities will be placed into a separate, single account administered by the County. Records of all fee payments collected will be kept by the County and provided to USFWS in the Annual Compliance Report and made available to the public.

**Adjustment of Mitigation Fees**

The dynamic nature of the costs associated with Conservation Program implementation, including costs for land acquisition, habitat restoration, enhancement, maintenance and management, requires a flexible approach to funding through time. To ensure that the Mitigation Fees are adequately covering their share of Conservation Program costs, the County will review Mitigation Fees by March 15 of years 2, 3, 6, 10, 15, 20, and 25, where year 1 is the first full calendar year of Conservation Program implementation. Updated fee schedules will be provided to USFWS in the County’s Annual Compliance Report. This schedule was developed to balance the need for frequent assessments with the need to accumulate enough data on which to base a meaningful assessment.

The cost review process will include a review of both actual costs and the underlying assumptions that were developed as part of this original funding analysis. If Mitigation Fees are found to be lower than needed to offset the Mitigation Fee share of actual costs, that Mitigation Fee will be increased. If Mitigation Fees are found to be higher than needed to offset the Mitigation Fee share of actual costs, Mitigation Fees will be reduced.
Table 7.4 Estimated mitigation fees (cost per mitigation credit) for the initiation of the HCP.

<table>
<thead>
<tr>
<th>Species/Service Area</th>
<th>YPG N</th>
<th>YPG E</th>
<th>YPG S</th>
<th>OPG</th>
<th>TPG</th>
<th>TCB</th>
<th>OVS</th>
<th>OSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation Credits Needed</td>
<td>1357</td>
<td>1043</td>
<td>1346</td>
<td>632</td>
<td>178</td>
<td>16</td>
<td>25</td>
<td>618</td>
</tr>
<tr>
<td>Total Estimated Expense (All)</td>
<td>$31,003,121</td>
<td>$20,570,281</td>
<td>$23,199,518</td>
<td>$33,973,698</td>
<td>$2,774,118</td>
<td>$611,622</td>
<td>$669,835</td>
<td>$12,356,798</td>
</tr>
<tr>
<td>Conservation Futures Offset of Acquisition Costs</td>
<td>$3,564,159</td>
<td>$2,697,886</td>
<td>$3,483,056</td>
<td>$1,660,121</td>
<td>$482,503</td>
<td>$0</td>
<td>$150,698</td>
<td>$2,961,576</td>
</tr>
<tr>
<td>Estimated Cost/Credit</td>
<td>$20,215</td>
<td>$17,137</td>
<td>$14,644</td>
<td>$51,111</td>
<td>$12,910</td>
<td>$38,054</td>
<td>$20,636</td>
<td>$15,203</td>
</tr>
</tbody>
</table>
Timing of Mitigation Fee Payment
Mitigation Fees are required to be paid before any development activity is permitted. For Covered Activities that do not require land use permits fees must be paid before the Covered Activity is performed. Participation Agreements are issued at the time Mitigation Fees are paid as long as all other steps in the process to obtain incidental take coverage are completed (described in Section 6.3). Mitigation fees for development will be proportional to the functional value of the habitat proposed for impact as well as the total area of impact (see Section 4.2 Quantifying habitat value and area).

7.3.2 Local Funding
Currently anticipated local funding sources that will support the Conservation Program are described below. Additional local funding sources may be developed and implemented over the course of the HCP.

Conservation Futures
Conservation Futures funds are generated by a County property tax and are restricted to use for capital improvements (e.g., land acquisition). The County anticipates $500,000/year available in Conservation Futures revenue for the HCP. These funds can be used to acquire New Reserves or Working Lands Easements.

7.3.3 Funding Adequacy
Funding sources will meet all expected costs of the Conservation Program. This section discusses some contingencies in case costs are higher than expected.

Costs could be higher than anticipated if some of the following conditions occur:

- Long-term management costs grow (e.g., new invasive species)
- Endowment returns are lower than expected (e.g., prolonged, low rates on invested endowment monies)
- Land acquisition prices increase significantly.

In the event these conditions cause HCP costs to increase significantly, the County will:

- Consider raising Mitigation fees to cover some or all additional costs
- Consider reduction of take authorization limits, Covered Activities, or permit duration
- Develop alternative strategies for long-term funding
- Consider slowing or stopping local permit issuance under the HCP until additional funding is secured.
7.3.4 Additional Sources of Funding for Conservation

The U.S. Congress and the State of Washington have determined that conserving species and their natural habitats is an issue of both national and state importance. Federal and state agencies will continue to fulfill their responsibilities for conservation in Thurston County during the HCP permit term. Their actions may include assisting local governments and property owners to assemble, manage, and monitor lands to conserve species. While this will not contribute to the mitigation required for this HCP, such conservation may contribute to recovery of listed species in Thurston County, result in fewer impacts from Covered Activities (as lands are put into conservation) and reduce or avoid the need to list additional species as threatened or endangered.
Chapter 8  Alternatives

An HCP is required to describe “what alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized” (ESA §10(a)(2)(A)(iii)).

The only alternative that would completely avoid impacts to the Covered Species would be to not complete the Covered Activities where the Covered Species may occur. Thurston County has decided not to select this alternative since it would strongly limit economic growth, development, and sustainability within the County and inhibit maintenance of County transportation infrastructure.

The Covered Activities are otherwise lawful activities, and the County developed this HCP and will apply for an ITP so that these activities may be conducted over the term of the requested permit.

There are no final plans or construction timelines for the majority of the proposed Covered Activities at this time. The County anticipates that some Covered Activities will be able to be completed in a manner that will avoid impacts to listed species or their habitats, however there is no way to know at the current time how each activity will eventually be completed throughout the County.

To facilitate the greatest flexibility, the County has proposed Conservation Measures intended to mitigate for the incidental take of Covered Species and their habitats where Covered Activities are completed, with the understanding that impacts will be avoided to the extent possible.
Chapter 9  References


Giebelhaus, Roger. Thurston County Public Works, Personal Communication (Phone conversation to discuss herbicide use in County Right-of-way), June 2015.


Thomas, Ted. USFWS. Personal Communication (phone call to discuss and establish HCP covered butterfly species dispersal distances), April 2015.


Thurston County. Unknown year. Regional Road Maintenance Guidelines.


Chapter 10  Glossary

Action: An activity or program of any kind authorized, funded, or carried out, in whole or in part, by a federal agency in the United States.

Adaptive management: A cyclical process whereby managers treat actions as experiments from which they improve management actions.

Biological Goal: What the Conservation Program will accomplish by the end of the incidental take permit duration.

Buffer: Distance outside the footprint that defines the area indirectly impacted by an activity.

Candidate species: Candidate species are plants and animals for which the U.S. Fish and Wildlife Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

Community: A group of interacting plants and animals inhabiting a particular area.

Compliance monitoring: An evaluation of whether the process did what it said it would accomplish.

Conservation: As defined by Section 3 of the ESA, to use and the use of all methods and procedures necessary to bring any endangered or threatened species to the point at which the measures provided are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resource management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, regulated taking.

Conservation measure: A specific conservation tool employed in a specific location. May include, but is not limited to, habitat acquisition and habitat restoration.

Conservation Objective: Benchmarks by which to measure progress in achieving Biological Goals for each Covered Species, across temporal and spatial scales.

Consultation: The process required of a federal agency under Section 7 of the ESA when any activity authorized, carried out, or conducted by that agency may affect a listed species or designated critical habitat. Consultation is with the U.S. Fish and Wildlife Service (or National Marine Fisheries Service) and may be formal or informal.

Covered Activity: These are activities that are included in the HCP and covered for incidental take by the incidental take permit.
**Covered Species**: These are species that are included in the HCP and covered for incidental take by the incidental take permit.

**Credits**: Quantified, verified, and tradable units of environmental benefit from conservation or restoration action. Credits equate to one functional acre for a given Covered Species.

**Critical Areas Ordinance**: Is a set of regulations that govern how land is developed in environmentally sensitive areas and in areas where development would pose a threat to humans or wildlife. Critical areas include important fish and wildlife habitat areas (prairies, rivers, streams); wetlands; aquifer recharge areas; frequently flooded areas; and geologically hazardous areas. The state Growth Management Act (Chapter 36.70A RCW) requires protection of these areas.

**Critical habitat**: Specific areas within the geographic area occupied by the species on which are found those physical and biological features essential to the conservation of the species and which may require special management considerations or protection.

**Debits**: Quantified, verified, and tradable units of environmental impact, calculated as the difference between the functional scores of the pre-project and anticipated post-project conditions. Debits equate to one functional acre of impact for a given Covered Species.

**Delist**: To remove a plant or animal species from the list of endangered or threatened species.

**Ecology**: The study of the inter-relationship among organisms and between organisms and between all aspects, living and nonliving, of their environment.

**Ecoregion**: A relatively large land and water area containing geographically distinct assemblages of natural communities, with approximate boundaries. These communities share a large majority of their species, dynamics, and environmental conditions, and function together effectively as a conservation unit at the continental and global scales.

**Ecosystem**: A discrete unit that consists of living and nonliving parts, interacting to form a stable system.

**Effectiveness Monitoring**: Monitoring to determine whether the restoration or enhancement techniques are meeting the management objective.

**Endangered species**: Those species threatened with extinction throughout all, or a significant portion, of their range. Species can be listed as endangered or threatened for a number of reasons, including disease or predation. Natural or human factors affecting chances for survival: over utilization for commercial, scientific, or recreational purposes, or current or threatened destruction of habitat or range.

**Federal Register**: The official daily publication for actions taken by the Federal government, such as rules, proposed rules, and Notices of Federal agencies and/organizations, as well as Executive Orders and other Presidential documents.

**Graminoids**: Grasses, sedges, and rushes.

**Habitat**: The living place of a species or community characterized by its physical or biotic properties.
**Habitat Conservation Plan (HCP):** HCPs are planning documents required as part of an application for an incidental take permit. They describe the anticipated effects of the proposed taking; how those impacts will be minimized, or mitigated; and how the HCP is to be funded. HCPs can apply to both listed and nonlisted species, including those that are candidates or have been proposed for listing.

**Harass:** To intentionally or negligently, through act or omission, create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns such as breeding, feeding, and sheltering.

**Harm:** To perform an act that kills or injures wildlife; may include significant modification of habitat or degradation when it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.

**Historic range:** The geographic area where a species was known to or believed to occur within historic time.

**Host plant:** A particular plant species required of butterflies during egg laying and for food during the larvae and pupae life stage.

**Impacts:** Impacts may be negative or positive. Negative impacts are ecological stresses to a species and the source of that stress. Positive impacts are impacts whose net effect is beneficial to the species, and may include such activities as mowing or burning.

**Incidental take:** Take that results from, but is not the purpose of, carrying out an otherwise lawful activity.

**Incidental take permit:** A Permit issued under section 10(a)(1)(B) of the ESA to a non-federal party undertaking an otherwise lawful project that might result in the “take” of a threatened or endangered species. An application for an incidental take Permit is subject to certain requirements, including preparation of habitat conservation plan.

**Indirect effect:** An effect caused by a proposed action taking place later in time than the action, but is still reasonably certain to occur (Section 7 of ESA).

**Larvae:** the active immature form of an insect, especially one that differs greatly from the adult and forms the stage between egg and pupa, e.g., a caterpillar.

**Listed species:** A species, subspecies, or distinct population segment that has been added to the federal list of endangered and threatened wildlife and plants.

**Mitigation:** The offset of an environmental impact on a covered species with a compensatory environmental benefit for the covered species, typically generated through ecological protection, restoration, or enhancement and verified through a crediting program.

**Monitoring:** Repeated measurements carried out in a consistent manner so that observations are comparable over time.
**Native species:** Those species present in part or all of a specified range without direct or indirect human intervention, growing within their native range and natural dispersal potential.

**Nectar Plant:** A particular plant species required of adult butterflies for food/energy.

**Non-native species:** Those species present in a specified region only as a direct or indirect result of human activity.

**Participation Agreement:** This is a document issued by Thurston County that enrolls a landowner into the HCP for purposes of obtaining coverage under the county’s incidental take permit.

**Persons:** Includes individuals, corporations, partnerships, limited liability corporations, limited liability partnerships.

**Petition:** A formal request from an interested individual or organization to list, reclassify, or delist a species, or to revise critical habitat for a listed species.

**Prairie Habitat Assessment Methodology:** A tool to help standardize a method for mitigating impacts to prairie ecosystems through Thurston County’s *Critical Areas Ordinance*.

**Population:** A group of individuals of a species living in certain areas maintaining some degree of reproductive isolation.

**Potential Occupancy:** A parameter that ranges from zero to one that models the likelihood for occupation of a habitat type by a target prairie-associated species.

**Range:** The geographic area a species is known to or believed to occupy.

**Recovery:** A reduction of the risk of extinction to the point that, based upon best available science, it is reasonably sure that the species will remain secure into the foreseeable future.

**Recovery plan:** A document drafted by U.S. Fish and Wildlife Service serving as a guide for activities to be undertaken by federal, state, or private entities in helping to recover and conserve endangered and threatened species.

**Secured:** Habitat of local populations are (1) owned or managed by a government agency or private conservation organization identifying maintenance of the species and its habitat as the primary management objective for the site, or (2) private land is protected by a long term or permanent conservation easement committing the landowner to conservation of the species.

**Species:** A group of organisms resembling one another, and includes subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate, fish, or wildlife that interbreeds when mature.

**Subspecies:** A taxonomic rank below species, usually recognizing individuals with certain heritable characteristics distinct from other subspecies of a species.
Take: To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct; may include significant habitat modification or degradation if it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, and sheltering.

Terms and conditions: Required actions described in an incidental take permit under section 10 or Incidental Take Statement intended to implement the Reasonable and Prudent Measures under section 7.

Threatened species: A species that is likely to become endangered in the foreseeable future.

Viable: A viable population has a sufficient number of individuals, reproduction by those individuals, and habitat conditions to persist over time.

Watershed: An area of land draining to a common point.