Grant County
PUBLIC UTILITY DISTRICT

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December 22, 2020

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12
888 First Street NE
Washington, DC 20426

RE: Priest Rapids Hydroelectric Project P-2114-203
License Article 409 Wildlife Habitat Management Plan Update

Dear Secretary Bose,

Please find enclosed an update to Public Utility District No. 2 of Grant County, Washington's (Grant PUD's) Wildlife Habitat Management Plan (WHMP), consistent with the requirements of Article 409 of the Priest Rapids Hydroelectric Project License.

On October 12, 2009, Grant PUD submitted its original WHMP to the Federal Energy Regulatory Commission (FERC). On August 31, 2010, FERC issued an Order approving the WHMP[1], requiring the WHMP to be updated, at a minimum, of every five years. Per the August 31, 2010 approving Order, the enclosed WHMP update includes a summary of the habitat improvement measures implemented during the previous five years and measures projected to be implemented in the next five years.

FERC requires the WHMP update to be developed after consultation with the U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management, U.S. Bureau of Reclamation (USBR), Washington Department of Fish and Wildlife (WDFW), Department of Natural Resources, Washington Recreation and Conservation Office, the Confederated Tribes and Bands of the Yakama Nation, and the Wanapum Band. The draft WHMP update was submitted to the stakeholders on November 12, 2020. Comments were received from WDFW and incorporated into the final report. WDFW comments can be reviewed in Appendix B.

[1] 132 FERC ¶ 62.142 (2010)

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FERC staff with any questions should contact Fish, Wildlife and Water Quality Manager, Tom Dresser, at 509-754-5088, Ext. 2312 or at tdresse@gcpud.org.

Sincerely,

Ross Hendrick

Ross Hendrick
Senior Manager – Environmental Affairs

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Priest Rapids Hydroelectric Project (FERC No. 2114)
Wildlife Habitat Management Plan
License Article 409

Public Utility District No. 2 of Grant County, Washington
P.O. Box 878
Ephrata, WA 98823

December 2020

Executive Summary

The Federal Energy Regulatory Commission (FERC) issued a license for the Priest Rapids Hydroelectric Project (FERC Project No. 2114 [Project]) on April 17, 2008. License Article 409 required Public Utility District No. 2 of Grant County, Washington (Grant PUD) to file, for FERC approval, a Wildlife Habitat Management Plan (WHMP) to protect and enhance wildlife habitats within the Project. Once approved, the plan was to be updated and filed, for FERC approval, a minimum, of every five years (FERC 2008). The original WHMP was filed with FERC in 2009 (GCPUD 2009) and received FERC approval in 2010. The second iteration of the WHMP was updated and implemented in 2015 and ran through 2020 (GCPUD 2015). This document serves as the required five-year update to the 2020 WHMP and will be valid through 2025.

The 2020 WHMP consists of seven components: (1) site specific wildlife habitat improvements, (2) fire suppression program, (3) list of Project-wide best management practices (BMPs) (4) waterfowl and raptor habitat management, (5) Habitat Management Emphasis Areas in which specific management objectives will benefit target species, (6) incorporation of an adaptive management process and (7) an agency consultation and reporting schedule.

The 2020 WHMP will continue to implement the components listed above. Four locations have been identified for continued site-specific improvement in the 2020 WHMP: Buckshot Wildlife Area, Burkett Lake, the Airstrip Site and Sunland Estates.

A fire suppression fund is available, which can be used to maintain wildlife habitat within the Project, rehabilitate lands subject to wildfire, and reduce fuel loads to prevent wildfire on Project lands and adjoining wildlife areas.

BMPs that will be considered for all Project-wide activities are: maintain healthy riparian plant communities, mitigate for unavoidable loss to wildlife habitat, prevent wind erosion, utilize native seed sources, avoid exotic and non-native species, mechanically remove non-native vegetation, hand pulling of non-native vegetation, use biological non-native vegetation control methods and enhance large woody debris recruitment.

Species-specific management will primarily be conducted through the establishment, promotion and preservation of the Habitat Management Emphasis Areas found throughout the Project. Those areas are: Cliffs, Talus Slopes, Riparian Zones, Sand Dunes, Shrub-Steppe and Waterfowl Concentration and Wetlands.

Grant PUD will continue to implement its waterfowl and raptor habitat programs that consist of constructing, installing, maintaining and monitoring 48 wood duck nesting boxes, 40 duck nesting cylinders, 10 goose nesting tubs and maintain a minimum of 12 raptor roosting and perching platforms. If some of these efforts are deemed unsuccessful or unnecessary in the future, Grant PUD will use adaptive management with stakeholders to establish alternative management actions that will benefit waterfowl and raptor habitat.

An adaptive management process has been established to help Grant PUD achieve objectives and complete meaningful habitat restoration. Engagement from key stakeholders will remain critical to the adaptive management process.

Table of Contents

List of Figures

List of Tables

List of Appendices

List of Abbreviations

BLM	United States Bureau of Land Management
BMPs	Best Management Practices
BOR	United States Bureau of Reclamation
Corps	Department of the Army Corps of Engineers
Ecology	Washington Department of Ecology
FERC	Federal Regulatory Energy Commission
GPS	Global Positioning System
Grant PUD (also GCPUD)	Public Utility District No. 2 of Grant County, Washington
HBTI	Habitat Based Terrestrial Inventory
HPA	Hydraulic Project Approval
IPM	Integrated Pest Management
JARPA	Joint Aquatic Resources Permit Application
License	Priest Rapids Project License No. 2114 (123 FERC 61,049)
MA	Management Area
PHS	Priority Habitats and Species
Project	Priest Rapids Project
TVMP	Total Vegetation Management Program
USFWS	United States Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WHMP	Wildlife Habitat Management Plan
WNHP	Washington Natural Heritage Program
WRCO	Washington Recreation and Conservation Office
WSPRC	Washington State Parks and Recreation Commission
WQC	401 Water Quality Certification

1.0 Introduction

Public Utility District No. 2 of Grant County, Washington (Grant PUD) owns and operates two large hydroelectric dams on the Columbia River. The dams, Wanapum and Priest Rapids, their associated reservoirs, and adjacent shorelines and uplands, are collectively known as the Priest Rapids Project (Project). The Project is operated under the terms and conditions of a license issued by the Federal Energy Regulatory Commission (Project No. 2114). Grant PUD currently operates the Project to meet local, state, and regional power needs and, with the federal and state resource management agencies and other operators, to provide protection and enhancement for a range of resources within and downstream of the Project.

FERC issued a license for the Project on April 17, 2008[1]. License Article 409 required Grant PUD to file, for FERC approval, a Wildlife Habitat Management Plan (WHMP) to protect and enhance wildlife habitats within the Project. Once approved, the plan is to be updated and filed, for FERC approval, a minimum of every five years (FERC 2008).

The initial WHMP was submitted to FERC on October 12, 2009, consistent with requirements of Article 409 of the Priest Rapids Hydroelectric Project License. FERC approved the WHMP on August 31, 2010[2]. The original WHMP consisted of three main components: wildlife habitat improvements that were done through site- and species-specific management, development of a fire suppression program and defined an agency consultation and reporting schedule. The 2015 WHMP used collaboration with key stakeholders to make updates that included the addition of Sunland Estates to the site-specific management locations, Habitat Management Emphasis Areas were established in order to benefit target species and a list of BMP's was expanded upon that would provide guidance for management actions Project-wide. The 2020 WHMP has continued to use the collaborative process to refine and build upon these previous management actions.

The 2020 WHMP consists of seven components: (1) site specific wildlife habitat improvements, (2) fire suppression program, (3) list of Project-wide best management practices (BMPs) (4) waterfowl and raptor habitat management, (5) Habitat Management Emphasis Areas in which specific management objectives will benefit target species, (6) incorporation of an adaptive management process and (7) an agency consultation and reporting schedule.

1.1 Article 409 License Requirement – Wildlife Habitat Management Plan

Article 409 required Grant PUD to file, for FERC approval, a WHMP to protect and enhance wildlife habitats within the Project. The WHMP was to be prepared after consultation with the United States Fish and Wildlife Service (USFWS), the United States Bureau of Land Management (BLM), the United States Bureau of Reclamation (BOR), the Washington Department of Fish and Wildlife (WDFW), the Washington Department of Natural Resources (DNR), the Washington Recreation and Conservation Office (WRCO), Confederated Tribes and Bands of the Yakima Nation and the Wanapum Band. The WHMP was to include three main components: 1) wildlife habitat improvements; 2) fire suppression; and 3) an agency consultation and reporting schedule.

Additional requirements of Article 409 were to include: "(1) a detailed description of the habitat improvement measures that will be implemented over the first five years of the License,

[1] 123 FERC ¶ 61,049 (2008)
[2] 132 FERC ¶ 62,142 (2010)

including the methods to be used; (2) a detailed description of the location where the improvements will occur, including maps and drawings; (3) a description of any annual or periodic maintenance and monitoring needed to ensure the success of the measures; and (4) a detailed implementation schedule." Article 409 states that wildlife habitat projects that occur within and immediately adjacent to the project boundary should be given priority. Article 409 also states that the WHMP include management of noxious weeds on project lands.

Waterfowl requirements included "…provisions and a schedule for continued installation, monitoring and maintenance of 48 wood duck nest boxes; 12 raptor nesting, roosting and perching structures; and 50 waterfowl nesting platforms (duck nesting tubes and goose nesting tubs) around the project shoreline within the project boundary."

Lastly, Article 409 requires that the WHMP be updated and filed for Commission approval, at a minimum, every five years after approval of the plan. The updated plan is to include a summary of the habitat improvement measures implemented during the previous five years and measures projected to be implemented in the next five years.

1.2 WHMP Purpose and Intended Use

The WHMP was developed to implement the requirements of Article 409. These requirements were specific to implementation of required objectives and often had short time frames for implementation. The 2015 WHMP built on this foundation and identified an additional site for specific management actions as well as the addition of BMP's to be used Project-wide. The 2015 WHMP also used the adaptive management process to benefit specific wildlife species throughout the Project by focusing on preserving, enhancing and restoring Priority Habitats. The 2020 WHMP looks to continue habitat enhancements Project-wide and will continue to rely on an adaptive management process to be successful. This process is on-going to achieve management objectives.

The WHMP is a guidance document that provides both long- and short-term objectives to meet defined habitat enhancement goals. This WHMP should be considered a living document. Collaboration and communication with key stakeholders is anticipated to enable learning and to revise objectives through an adaptive management process.

1.3 WHMP Coordination with Other License Articles and Requirements

Article 409 specifically requires that both development and implementation of the WHMP be coordinated with the development and implementation of the Recreation Resources Management Plan (Article 418) and Shoreline Management Plan (Article 419), to ensure that public access controls and site rehabilitation measures are addressed and consistent with project and adjoining public land management goals and objectives.

In addition, the work that Grant PUD completes to remain compliant with several other License Articles directly benefits wildlife or wildlife habitat. Examples include the Wildlife Habitat Monitoring and Information and Education Program (Article 410); the Transmission Line Avian Collision Program (Article 411); the Rare, Threatened, or Endangered Plant Monitoring Program (Article 413); the Bald Eagle Perch/Roosting Protection Program (Article 414); the Historic Properties Management Plan (Article 416) and the Memorandum of Agreement between Grant PUD and the Wanapum Band (Article 417).

1.4 Priest Rapids Project Boundary

The Project boundary extends from river mile (RM) 395, approximately two miles downstream of Priest Rapids Dam, to a point approximately 0.5 mi downstream of Rock Island Dam at RM 453 of the Columbia River. The Project area encompasses lands immediately adjacent to the Project reservoirs and other Project lands. Reservoirs associated with Wanapum and Priest Rapids dams span some 58 miles of the Columbia River. The Wanapum Reservoir is 38 miles long and has a surface area of approximately 14,680 acres. A total of ten tributaries; Johnson, Skookumchuck, Whisky Dick, Sand Hollow, Quilomene, Trinidad, Tarpiscan, Colockum, Douglas, and Brushy creeks - flow into Wanapum reservoir. The Priest Rapids Reservoir is 18 miles long and has a surface area of approximately 7,725 acres. Two tributaries, Crab and Hanson creeks, flow into Priest Rapids reservoir. The remaining 2 miles of the Project is located below Priest Rapids dam. Jackson Slough enters the reservoir below Priest Rapids Dam.

The Project is located in the Columbia Basin, one of the driest regions in Washington State. Undisturbed sites in this area are characterized by a mosaic of arid-land shrubs and perennial bunchgrasses, a vegetation type known as “shrub-steppe.” The Project also includes a number of other cover types, including wetlands, riparian areas, cobble bars, talus slopes, cliffs, inland dunes, and agricultural lands (GCPUD 2003).

The Project (Figure 1) extends approximately 58 miles along the Columbia River and includes both Wanapum and Priest Rapids reservoirs and the tailrace below Priest Rapids Dam. The City of Rock Island is upstream of the Project, while the Hanford Reach National Monument borders the downstream end. The Project includes lands along the shoreline that generally extend outward an average of 100 to 150 feet from full pool elevation. In a few instances the Project boundary extends 2,000 feet or more from full pool to capture Project features such as portions of the Buckshot Wildlife Area (one of the Project recreation sites), a portion of the Yakima Training Center, Burkett Lake Recreation Area and the lower five miles of Crab Creek. Downstream from the Priest Rapids Dam, the Project Boundary extends about 1 mile along the west bank and 2 miles along the east bank. All existing Project facilities, including Wanapum and Priest Rapids dams and powerhouses, reservoirs, a fish hatchery, the Wanapum Indian Village, and numerous recreation sites, are located within the Project. The transmission line right-of-way boundary for the Project ranges from 100 to 500 feet in width, although the majority of the transmission lines are outside the Project boundary.

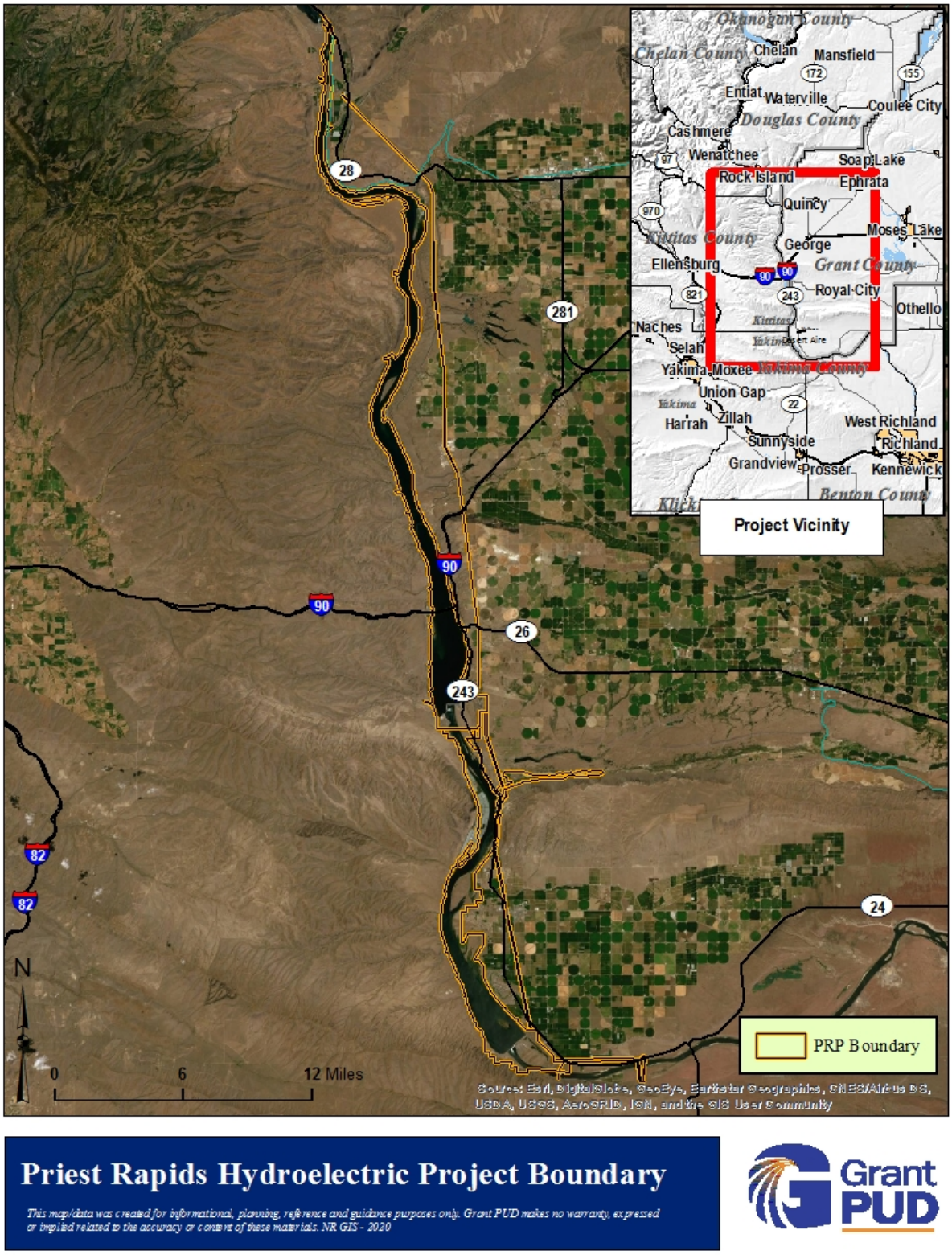

Figure 1 Priest Rapids Hydroelectric Project (FERC No. 2114) Boundary

The Project boundary consists of lands necessary for the safe operation and maintenance of the Project and other purposes such as: recreation, shoreline control, and protection of environmental resources. The Project encompasses about 35,097 acres. Of the area encompassed by the Project, 22,188 acres (63 %) is water. The 12,909 acres of land within the Project are owned by Grant PUD, state, federal, county, and private entities (Table 1).

Table 1 Land ownership in the Priest Rapids Project.

Ownership	Area (acres)	Percent of Project Area (%)
Grant PUD	4,831	36
Federal[1]	3,366	26
State[2]	2,668	20
County	11	<1
Private	2,224	17
Total	**13,100**	**100**

1. Federal ownership includes: Bureau of Reclamation, U.S. Bureau of Land Management, U.S. Army, United States Fish and Wildlife Service, U.S. Department of Energy, and Bonneville Power Administration. These are total acreages that also include federal lands not subject to Section 24 of the Federal Power Act and therefore differ from what is detailed in the most recently approved Exhibit A for the Priest Rapids Project License.
2. State ownership includes: WDFW, WDNR, and Washington State Parks.

2.0 Project Area Habitat Inventory

Most of the landscape in the Project vicinity is undeveloped and consists of large expanses of relatively undisturbed native habitats, particularly along the west side of Priest Rapids and Wanapum reservoirs where much of the land is in federal or state ownership. Land adjacent to over half the length of the west side of Priest Rapids reservoir is owned and managed by the U.S. Army as part of the Yakima Training Center. Most of the west side of Wanapum reservoir is state-owned and is managed by the WDFW, Washington Department of Natural Resources (WDNR), and Washington State Parks and Recreation Commission (WSPRC). Portions of the WDFW managed Quilomene, Colockum, and Whiskey Dick Wildlife Areas border the west side of Wanapum reservoir. The east side of the Project includes agricultural lands and a number of residential/resort communities including: Crescent Bar, Sunland Estates, Beverly, and Desert Aire. Ownership on the east side of the Project is a mixture of private, state, and federal ownership. Public lands that are managed specifically for fish and wildlife include the Quincy and Lower Crab Creek wildlife areas. The lands along the east side of the Project are within the area covered by the Columbia Basin Project, a large federal water project managed by the BOR which provides the water for all the irrigated agriculture east of the Project. This water is delivered by a system of canals, laterals, drains, and waste ways. Irrigation returns from the Columbia Basin Project supplement flows in many of the area's creeks.

2.1 Habitat Based Terrestrial Inventory

The Project was the subject of a Habitat Based Terrestrial Inventory (HBTI) (DES 2000). The HBTI was required to address data gaps regarding existing terrestrial resources on Project lands and was used in the information package for the Priest Rapids Project relicensing process. During the HBTI, botanical and wildlife studies were conducted to: 1) characterize the distribution, habitat preferences, and other aspects of federal and state listed plant and animal species in the Project; 2) provide detailed descriptions of previously defined riparian and wetland cover types in the Project; 3) list and describe all wildlife known to occur or potentially occurring in the Project and their habitat preferences; and 4) describe terrestrial wildlife habitats, their spatial characteristics, and the use of the Project as a wildlife corridor.

Wildlife investigations began with field observations of habitat structure and complexity in major tributaries, wetlands, islands, and inlets in the Project. Habitat data were compiled along with incidental observations, observations listed in the Grant PUD wildlife sightings database, and the scientific literature to describe the Project and its associated wildlife resources. Descriptions of important riparian habitats, particularly the perennial tributaries to the Columbia River, are provided in the HBTI final report (DES 2000). Over 280 species of wildlife (mammals, birds, reptiles, and amphibians) and their distributions are described. The known or potentially occurring Washington State or federally listed wildlife species are discussed in detail, along with their habitat preferences and relevant management concerns.

Botanical field inventories were conducted in all riparian and non-aquatic cover types and supplemented with existing plan surveys and published checklists. Over 250 species of vascular plants are listed as known or potentially occurring in the five riparian and wetland cover types previously defined for the Project. These plants were screened with the ethnobotanical literature to compile a list of Culturally Important Plants; this screened list was provided as an appendix to the HBTI final report.

Twenty-seven state or federally listed plant species known to occur or having the potential to occur in the Project are described, along with their habitat preferences, known distributions, and relevant management concerns. To supplement the published data, a subset of the 55 rare plant occurrences were revisited and described. Seven previously unknown rare plant occurrences were identified during these efforts (DES 2000).

Grant PUD uses the HBTI data to describe and locate known habitats in the Project area, and as a baseline for continued rare plant and habitat monitoring surveys.

2.2 WDFW Priority Habitats

The WDFW publishes a Priority Habitats and Species List (PHS) (WDFW 2015) that is a catalog of habitats and species considered to be priorities for conservation and management. Priority species require protective measures for their perpetuation due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance. Priority species include State Endangered, Threatened, Sensitive, and Candidate species; animal aggregations considered vulnerable; and those species of recreational, commercial, or tribal importance that are vulnerable.

A priority habitat is a habitat type with unique or significant value to many species. According to WDFW, an area identified and mapped as priority habitat has one or more of the following attributes: comparatively high fish and wildlife density or species diversity; important fish or

wildlife breeding or seasonal habitat; movement corridors; habitats of limited availability; high vulnerability to alteration; or contains unique or dependent species.

A priority habitat may be described and designated by a unique vegetation type or by a dominant plant species (e.g., oak woodlands, juniper savannah), a successional stage (e.g., old growth and mature forests) and/or a specific habitat feature or structure (e.g., talus slopes, caves, snags) of key value to fish and wildlife.

There are seven habitat types within the Project that are currently on the PHS list:

1). Cliffs
2). Talus Slopes
3). Riparian Zones
4). Sand Dunes
5). Shrub-Steppe
6). Waterfowl Concentrations, and
7). Wetlands

Maps showing the locations of these habitat types are presented in Appendix A (Priority Habitats and Species Maps) and summaries of priority habitats and priority species with the Project are provided in Appendix B and Appendix C, respectively.

3.0 Wildlife Habitat Management

The 2009 WHMP (GCPUD 2009) provided three types of wildlife habitat enhancement objectives or management recommendations: general project-wide enhancement measures or best management practices (BMPs); site-specific habitat management, and; species-specific habitat management. The 2015 WHMP, through a collaborative process with stakeholders, re-defined the species-specific objectives and recommendations to be habitat based with associated target species (Section 3.1). The sections below provide a summary of these objectives or recommendations, a description of actions completed to date where applicable, and describes objectives for future management of these areas.

3.1 Project Wide Goals, Enhancement Measures and Best Management Practices

3.1.1 Wildlife Habitat Management Overarching Goals Summary

The over-arching goal for wildlife habitat management within the Project is to protect functioning wildlife habitat areas and enhance degraded wildlife habitat as part of restoration and mitigation projects within Site-Specific Habitat Management Areas, and to work collaboratively with stakeholders to improve management methods through the adaptive management process of refining objectives and management actions based on lessons learned.

For the 2020 WHMP, Site-Specific Habitat Management Areas where enhancement and restoration of degraded habitats will occur include Buckshot Wildlife Area, Burkett Lake, Airstrip, and Sunland Estates. Section 3.3 provides a summary of objectives and proposed management actions for these areas. In addition, restoration and mitigation for permitted actions will occur at recreation sites and other sites as they are proposed, incorporating wildlife habitat management goals and objectives.

As described in the introduction above, Grant PUD used a collaborative process to help refine or define key habitat management objectives for the 2020 WHMP. This process provided a means

for consensus-based decision making on several key elements of the WHMP, and allowed the discussion, identification, and refinement of the 2020 WHMP objectives that are being carried forward.

During implementation of the 2020 WHMP, Grant PUD will work collaboratively with WDFW and other stakeholders, meeting on an annual basis, to discuss lessons learned and develop appropriate revisions to management actions with the intent of increasing effectiveness of preservation, restoration or monitoring measures. In addition, Grant PUD and WDFW will jointly investigate and identify areas of the Project more appropriate for development (e.g., recreation) and those rare and high-quality areas suitable for preservation, collaborate on management actions where appropriate and share lessons learned from projects implemented independently.

3.1.2 Project Wide Best Management Practices Summary and Implementation

Grant PUD will utilize the following best management practices (BMPs) for habitat improvement measures, when appropriate, to enhance the value of wildlife habitat within the Project. These BMPs will be implemented on restoration or enhancement project sites and will be recommended by fish and wildlife staff for incorporation into other Project actions, as appropriate, through the Natural and Cultural Resource Review Process (NCRRP) – an internal project review process. Thus, consistent with state and federal permitting processes, Grant PUD will avoid, minimize and mitigate for effects of Project actions on wildlife habitat.

3.1.2.1 Maintain Healthy Riparian Plant Communities

Maintaining a streamside riparian vegetation zone with a complexity of woody and herbaceous riparian plants provides multiple benefits. Maintaining healthy riparian plant communities provides shade to maintain cool water temperatures; filters sediment, nutrients, and other pollutants from upland sources; retains sediment, nutrients and other pollutants deposited during high flow events; preserves off-channel habitats frequently used by rearing fish (remnant channels, pocket pools); provides for recruitment of large woody debris; provides detritus and primary food production; and protects upland areas where channels tend to migrate (USACE 2004).

Throughout the term of the 2015 WHMP Grant PUD has installed, monitored and maintained over 13,000 riparian plantings throughout the Project. Planting locations are located at: Priest Rapids Recreation Area, Airstrip, Vantage Boat Launch, Rocky Coulee, Sand Hollow, Rattlesnake Cove, West Bar, Frenchman Coulee, Crescent Bar, Columbia Cliffs and Apricot Orchard. Many of these plantings have been watered through the growing season using a Grant PUD designed Remote Watering System (Figure 2). This system provides water to individual plants through a gravity fed drip system that is solar operated. This enhances the development of a taproot and increases each plants ability to be self-sustaining after irrigation has been weened.

Figure 2 Grant PUD designed Remote Watering System

To the extent possible, Grant PUD has avoided and will continue to avoid clearing riparian vegetation to support other land uses. Where recreation or capital improvement projects are proposed, Grant PUD Fish and Wildlife staff will work with Project managers to avoid and minimize impacts to riparian areas. Where impacts to riparian vegetation are unavoidable, Grant PUD will mitigate for these impacts in accordance with local, state, and/or federal regulatory requirements.

3.1.2.2 Mitigate for Unavoidable Loss to Wildlife Habitat

As part of the WHMP, Grant PUD will continue to mitigate for any future unavoidable loss to wildlife habitat within the Project boundary, as described below. Unavoidable loss to wildlife habitat could be part of future Grant PUD projects, authorized non-project uses by private parties on Grant PUD Project lands, and unauthorized non-project uses by private parties (e.g. encroachments) on Grant PUD Project lands.

Grant PUD in collaboration with stakeholders have established mitigation ratios that are meant to address the loss of a functioning, irreplaceable or unique habitat. These mitigation ratios will be used where permitting process do not supersede.

As part of this 2020 WHMP update, Grant PUD will continue to implement the following mitigation approaches:

1. For impacts within the Project boundary that are within 200 feet of and/or below the OHWM, Grant PUD will follow federal, state, and local regulations and applicable mitigation requirements (these shall take priority over Item 2 below).
    a. The WHMP is not intended to address aquatic (in-water) impacts, and thus mitigation for aquatic impacts shall be determined via applicable federal, state, and local regulations. Such regulations include, but are not limited to those

addressed under the Joint Aquatic Resources Permit Application (JARPA): Department of the Army Corps of Engineers (Corps) Section 404 of the Clean Water Act and Section 10 of the River and Harbors Act, Washington Department of Ecology (Ecology) 401 Water Quality Certification (WQC), WDFW Hydraulic Project Approval (HPA), WDNR Aquatic Use Authorization. Local regulations and conditions that supersede this section of the WHMP include building, clearing, grading, filling, substantial development, conditional use permits and associated programs under the local government managed growth management and shoreline management acts.

2. For projects (or project impacts) in upland areas within the Project that (a) are not addressed through federal, state, and/or local regulations and (b) impact **functional** habitat that is either **unique** or **irreplaceable** habitat, a 2:1 mitigation ratio shall be applied to account for the loss of functional habitat that has some unique or irreplaceable wildlife habitat value.
3. For projects (or project impacts) in upland areas within the Project that (a) are not addressed through federal, state, and/or local regulations and (b) impact **functional habitat that has both unique** and **irreplaceable** habitat, a 3:1 mitigation ratio shall be applied to account for the loss of functional, unique, and irreplaceable wildlife habitat.

For the purposes of this WHMP, the following definitions are provided as it relates to Items 2 and 3 above:

Functional Habitat: Ecological area comprised of native and desirable plants, or like habitat feature (e.g. hibernaculum) that may be inhabited by a particular species of animal or plant. Functional habitat may provide cover (e.g. from predators, weather, etc.), shade, nesting/denning, and/or food source for animals.

Unique Habitat: Functional habitat that occurs within area(s) inhabited by state or federally listed priority species; this is typically defined either by USFWS, WDFW, or the Washington Natural Heritage Program (WNHP).

Irreplaceable Habitat: Functional habitat that is either (a) defined by USFWS or WNHP to have listed plant species (to be confirmed by site surveys) or (b) is exclusive to the area (e.g. the only large trees in the immediate area that contains mostly shrub-steppe habitat).

As stated above, the wildlife habitat must meet all three of these definitions to require the 3:1 mitigation ratio (if not already dictated per local, state, or federal ratios (see Item 1 above)). Similarly, the wildlife habitat must meet two of the three definitions (functional and either unique or irreplaceable) to require the 2:1 mitigation ratio (if not already dictated per local, state, or federal ratios). If only the functional habitat definition is met wildlife habitat shall be mitigated at a ratio or 1:1. If all three are not met, then by definition there is no habitat impact to be mitigated. Grant PUD may, at its discretion, elect to establish functional habitat through establishment of native vegetation.

A qualified Grant PUD biologist or qualified professional retained by Grant PUD will implement the following steps for determining if a site meets the functional, unique, and irreplaceable habitat definitions:

1. Check USFWS/WNHP database for listed plant and animal species occurrences and check WDFW PHS database. If PHS is located near the project area, conduct site survey

(per step 2a below) to determine proximity to project impacts and determine potential affects to the concerning species.

2. Conduct site survey to determine:
    a. Proximity of listed plant/animal species and/or PHS (if determined to occur near the project, per Step 1 above) to project impact area.
    b. If there is functional habitat, unique habitat and/or irreplaceable habitat at the site necessitating mitigation.
    c. If PHS species or habitats are found, collect PHS information for submittal to WDFW.
3. If mitigation per the WHMP is required, Grant PUD will develop a mitigation plan specific to the site that addresses mitigation ratio and justification, incorporates native vegetation that is appropriate for the site in question and includes success criteria specific to the mitigation plan for the site.
4. Grant PUD will share mitigation plans and actions with stakeholders through annual stakeholder WHMP meetings.

3.1.2.3 Prevent Wind Erosion

In areas with high winds and erodible soils, wind-born movement of soil can cause several issues. Detached sediment may be stored where it can be secondarily transported by water, or it may deposit directly in surface waters. Plants, especially grasses, have difficulty establishing in areas of high soil mobility.

Over the last five years Grant PUD has used various methods to prevent wind erosion. At Burkett Lake staff installed 6,000 native upland shrub and grass plantings in an effort to prevent wind erosion and restore native shrub-steppe vegetation. Grant PUD has also used drill-seeding of a native grass/shrub mix at several locations to effectively stabilize the soil from wind erosion. Some of the locations that received drill seeding in the last five years are: Airstrip, Sunland Estates, Jackson Creek Fish Camp, Crab Creek and Burkett Lake.

Methods such as tree plantings or placing downed logs or other biomass can decrease wind shear on the soil surface and reduce the mass of soil removed by the wind. Windbreaks or drift fences are effective tools that can be implemented to benefit wildlife habitat by keeping soils on site, which allows productivity to be maintained. Windbreaks also help reduce the deposition of wind-blown sediment into surface waters (USACE 2004). Grant PUD will assess potential wind erosion issues at restoration sites, and if appropriate will incorporate wind erosion prevention BMPs.

3.1.2.4 Utilize Native Seed Sources

The sourcing of local native seeds ensures grasses and plants are adapted to local climate and soil chemistry, which leads to increased survival. Only native plants will be used for habitat restoration. In addition, tree and shrub cuttings selected for all projects should also be obtained from local sources, preferably near the planting site. When implementing restoration projects, Grant PUD will attempt to secure seeds and plants from a local native seed grower, and/or will collect native seeds or cuttings within the Project for a source for restoration.

Grant PUD has only used native local seed sources at restoration sites over the term of 2015 WHMP. Much of the upland grass/shrub seed mix that is used throughout the Project has been purchased through Benson Farms Inc. that is local to Grant County. Another local source that has provided Grant PUD with much of the riparian plants is Derby Canyon Natives, located in Peshastin, Washington.

3.1.2.5 Avoid Exotic or Non-Native Species

Although non-native plants can have positive stabilizing influence on a disturbed site, they can also overtake native species. Negative effects include increased maintenance problems, a reduction in plant diversity, increased disease and pest problems, and detrimental secondary effects on coexisting plants and wildlife (USACE 2004). Grant PUD will avoid the use of exotic species in all habitat restoration, rehabilitation, and establishment projects.

Over the term of the 2015 WHMP Grant PUD has only planted native vegetation at all restoration sites Project-wide. Grant PUD has also aggressively targeted exotic and non-native vegetation for removal throughout the Project. Future restoration plantings will continue to be from native stock exclusively.

3.1.2.6 Mechanically Remove Non-Native Vegetation

Mechanical removal of non-native vegetation typically involves the use of tractors or other heavy machinery equipped with a blade, mower, or other device to remove vegetation. While the degree of disturbance depends on the type of equipment used, mechanical removal breaks the surface of the soil and can remove some or all the parts of plants, including roots. Mechanical removal can be carried out over large areas or can be confined to smaller areas. Vegetation is sometimes removed in strips rather than clearing all areas (known as contouring or furrowing). Mechanical vegetation removal is generally highly efficient and does not involve chemicals (USACE 2004). Grant PUD may, when conditions dictate and after any necessary environmental and cultural resources review and regulatory permitting, mechanically remove undesirable vegetation from the Project using these methods.

During the term of the 2015 WHMP, Grant PUD has used mechanical methods to remove non-native vegetation throughout the Project. Some examples are the use of a tow-behind mower that is pulled by a tractor to reduce Russian thistle (*Salsola tragus*) and Kochia (*Bassia scoparia*) at Columbia Siding and Airstrip. Grant PUD has also used a tow-behind harrower at multiple locations including Burkett Lake, Moran Slough and Airstrip prior to drill-seeding. This is done to break up compacted soil and disrupt the root structure of non-native vegetation such as Russian thistle. Grant PUD Environmental Affairs staff uses various other mechanical removal methods, such as chainsaws and weed eaters, routinely Project-wide to target non-native vegetation for removal on a smaller scale.

3.1.2.7 Hand Pulling of Non-Native Vegetation

Hand pulling of vegetation can be effective on small areas targeted for plant control, and on areas sensitive to chemical or mechanical treatment. Grant PUD will, when appropriate, utilize hand pulling of vegetation as a form of plant control.

Grant PUD has used hand pulling of non-native vegetation at all planting restoration sites. Hand pulling has also been used as a primary method for reducing non-native vegetation that is growing near known rare, threatened or endangered (RTE) vegetation or culturally significant locations.

3.1.2.8 Use Biological Non-Native Vegetation Control Methods

Biological control of vegetation involves the use of disease, insects, other parasites, and desirable plants to inhibit growth and spreading of unwanted vegetation. Insect adults or larvae can be used to attack seed heads, stems, or flowers of target plants. In many cases, host-specific species of insects can be found. Bacteria, viruses, fungi, and other microbes can also be used to control vegetation, but these techniques are mostly experimental at this time (USACE 2004). Grant PUD has used and will continue to use biological control methods when and where appropriate and feasible.

Over the last five years Grant PUD has conducted biological control on noxious weeds at multiple locations throughout the Project. In 2016, Grant PUD targeted Dalmatian Toadflax (*Linaria dalmatica*) and released the Stem-boring Weevil *(Mecinus janthinus)* onto Beverly Islands which host the rare plant northern wormwood (*Artemisia campestris)* directly downstream of Wanapum Dam. In 2019, Grant PUD targeted Purple Loosestrife (*Lythrum salicaria*) releasing 250 Loosestrife Weevil (*Hylobius transversovittatus)* onto an island along the northern end of the Priest Rapids Recreation Area. Additionally, in 2019, 250 Loosestrife beetles *(Galerucella spp.)* were released at the Wanapum Switchyard. In 2020, an additional 500 Loosestrife beetles were released at the Wanapum Switchyard at a newly found Ute-ladies tresses (*Spiranthes diluvialis*) population was found.

3.1.2.9 Enhance Large Woody Debris Recruitment

This technique is utilized to enhance the natural recruitment of streamside trees with the potential of becoming large woody debris. Approaches include: planting trees in floodplains and riparian areas; riparian harvest restrictions on individually marked trees, trees leaning toward or over streams, or other appropriate restrictions; falling select trees to bridge across streams; girdling select trees with strong potential as large woody debris; and selective harvest of trees to increase size of remaining trees (USACE 2004). Grant PUD, in the management of restoration areas, will implement the above methods as appropriate to enhance the potential for large woody debris recruitment.

Over the last five years Grant PUD has successfully recruited a significant amount of LWD throughout the Project. Techniques used have been planting trees in riparian zones, restricting the harvest of trees in riparian zones and preserving natural recruitment.

Hundreds of native trees have been installed, monitored and maintained Project-wide at all the riparian restoration and mitigation sites. Some examples of this are the 100 Black Cottonwood (*Populus trichocarpa*) that were installed at West Bar in 2019 and the 180 that have been installed at Airstrip over the last four years.

Grant PUD has managed all properties to restrict the harvest of native tree species in riparian zones throughout the term of the 2015 WHMP. Staff has worked to educate private landowners on the value and importance of LWD recruitment and preservation on all PUD owned properties. Fires in 2018 and windstorms over the last five years have created an opportunity for many areas within the Project to increase the amount of LWD. Examples of this can be found at Airstrip, Sunland and The Cove.

3.1.3 Fire Suppression Program Summary and Implementation

3.1.3.1 Goals and Objectives

Within the past 20 years, several catastrophic wildfires have burned large portions of natural areas near the Project. In 2000, more than 100,000 acres of the Hanford Site burned, killing large tracts of big sagebrush and antelope bitterbrush. Similarly, in 2013, a wildfire burned approximately 60,000 acres overlapping the 105,662 acre Colockum Wildlife Area. Numerous smaller fires occur annually, endangering property and often reducing wildlife habitat quality. The main causes of wildfires in this region are lightning strikes and human causes (campfires, target shooting, or illegal discharge of fireworks).WDFW is particularly concerned with fires on the State Wildlife Areas, which border Project reservoirs and receive a great deal of recreational use. Overland access to several of these areas is difficult, creating challenges for fire control.

Article 409 required Grant PUD to develop and implement a fire suppression program to maintain wildlife habitat in the Project, rehabilitate lands subject to wildfire, and to reduce fuel loads to prevent wildfire on Project lands and adjoining Wildlife Areas. More specifically, Article 409 required Grant PUD to:

1). Assist the WDFW in fire suppression efforts at Colockum, Quilomene, Quincy, Whiskey Dick, Priest Rapids, Crab Creek, and Buckshot Wildlife Areas;
2). Provide signage for key locations (West Bar and Quilomene Bay, and at marinas), that describe the hazards and costs of wildfire; and
3). Undertake rehabilitation efforts, such as planting sagebrush in recently burned areas, remove cheatgrass in selected areas, and replanting with perennial grasses to reduce fuel load.

3.1.3.2 Management Action Summary

Grant PUD entered into a cooperative service agreement with WDFW to provide funds to assist WDFW with fire suppression efforts within and adjacent to the Project. Grant PUD is making annual contributions to the fund in the not-to-exceed amount of $40,000 per year. Funds from this account are to be used for: (1) revegetating burned areas, (2) revegetating areas known to burn frequently, with species carrying lesser fuel loads, (3) creating fire breaks in appropriate locations, and (4) paying for firefighting activities. The WDFW will submit a report to Grant PUD on or before February 15 of each year detailing the previous year's expenses and summarizing all fire protection activities.

In 2018, Grant PUD had multiple fires damage land in and adjacent to the Project. After accessing the damage and consulting with stakeholders a plan was developed to restore affected areas back to native vegetation. BFI was contracted to drill-seed a native seed mix (Table 2) at three locations: Jackson Creek Fish Camp, Crab Creek and Airstrip (Figure 3). Approximately 50 acres of upland habitat was drill seeded at Airstrip, 45 acres at Jackson Creek Fish Camp and 8 acres near the mouth of Crab Creek.

Table 2 Native seed mix used for drill seeding following 2018 wildfires.

Mix %	Species	% Purity
38.2	Bluebunch Wheatgrass-Wahluke	99.68
15.2	Indian Ricegrass-Nezpar	99.76
6.1	Bottlebrush Squirreltail-Yakama	99.43
7.8	Sandberg Bluegrass-Frenchman	99.99
24.4	Thickspike Wheatgrass- Schwendimar	97.85
6.3	Needle and Threadgrass-Columbia Basin	98.21
2	Sand Dropseed-Pasco	99.72

Figure 3 Map illustrating locations of fire restoration efforts following 2018 wildfires.

Increasing regulatory and informational signage throughout the Project was identified as an area of focus in the 2015 WHMP. Over the last five years Grant PUD has worked to ensure that informational signage is present at all the PUD maintained recreation sites that illustrates safe campfire and burning practices. Along with this Grant PUD installed temporary signage at these sites informing the public when a burn ban is in effect.

In 2019, Grant PUD worked with WDFW to establish locations for the installation of restrictive signage and boulder barriers at three specified areas along Crab Creek and one location near Royal City (Figure 4). These areas have seen a large amount of unauthorized access over the years that degrades native habitat and increases the risk of fire activities. Grant PUD installed the signage in 2019 (Figure 5) and is committed to monitoring and maintaining it over the term of 2020 WHMP.

Figure 4 Example of boulder barrier placed along Crab Creek.

Figure 5 Example of signage installed along with boulder barriers.

Grant PUD has been managing several locations throughout the Project in an effort to reduce non-native vegetation such as cheat grass, Russian thistle, kochia and Russian olive and restore viable native vegetation. Notable areas that received treatments over the last five years are Airstrip, Jackson Creek Fish Camp, Burkett Lake and Columbia Siding. This shift from annual invasive and non-native species to perennial grasses and forbs will reduce fuel loads and provide increased fire resistance.

3.1.3.3 Continuing or New Actions

Grant PUD looks to continue the cooperative service agreement with WDFW and placing educational signage at high-use areas within the Project to assist with fire prevention and suppression efforts. Education is a critical component of fire prevention and will include on-site signage and off-site information. Two types of signs are envisioned for the Project: regulatory and informational. Regulatory signs will post state and county regulations, and any land management restrictions that apply to the site (e.g., fires are prohibited from April 15-October 15; fires permitted only within designated fire rings; vehicles not permitted off designated roads). These signs will be posted at boat access points and heavily used recreation sites. Grant PUD

River Patrol crews provide assessment and monitoring along the river and provides notification to appropriate enforcement entities.

Realizing that using the funding for actual suppression may not always provide the best benefit for wildlife, WDFW and Grant PUD will work closely to identify opportunities to apply the funding on potential projects that are appropriate. The West Bar area of the Colockum Wildlife Area (adjacent to Wanapum Reservoir) is a crucial area for fire-related habitat enhancement activities that provides benefits to multiple species. Other areas of focus for Grant PUD and WDFW are the Quilomene area, as well as locations where several creeks or drainages enter the Columbia River within the Project. Grant PUD will continue to incorporate native plants and grasses into restoration projects and target treatment of invasive species within the Project. This will enhance fire suppression efforts by removing or replacing species with high fuel loads with native, fire-resistant species.

3.1.4 Noxious Weed Management and Control

3.1.4.1 Goals and Objectives

The goal of weed control within the Project, is to maintain and improve the habitat for wildlife, meet legal obligations (e.g., control Class A noxious weeds), provide good stewardship, and prevent the spread of noxious weeds from adjacent private lands to Grant PUD-owned lands. Weed control activities to be performed under the 2020 WHMP will be focused at the four Site-Specific Habitat Management Areas (e.g., Buckshot Wildlife Area, Burkett Lake Recreation Area, Airstrip and Sunland Estates), at mitigation sites, and at targeted locations (e.g., encroachment areas).

State law (RCW 17.15) requires that Grant PUD use integrated pest management (IPM), defined as a coordinated decision-making process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet programmatic pest management objectives, to accomplish weed control.

3.1.4.2 Weed Species of Concern

Noxious weed management will target, but will not be limited to, the species listed below.

- Bull Thistle (Cirsium vulgare)
- Canada Thistle (Cirsium arvense)
- Dalmatian Toadflax (Linaria dalmatica ssp.)
- Diffuse Knapweed (Centaurea diffusa)
- Kochia (Kochia scoparia)
- Perennial Pepperweed (Lepidium latifolium)
- Phragmites (Phragmites australis)
- Puncturvine (Tribulus terrestris)
- Purple Loosestrife (Lythrum salicaria)
- Rush Skeletonweed (Chondrilla juncea)
- Russian Knapweed (Acroptilon repens)

- Russian olive (Elaeagnus angustifolia)
- Russian Thistle (Salsola iberica)
- Spotted Knapweed (Centaurea biebersteini)
- White Top (Hoary Cress) (Cardaria draba)
- Yellow Flag Iris (Iris pseudacorus)

New Species of Concern

- Flowering Rush (Butomus umbellatus)

3.1.4.3 Continuing or New Actions

As part of the 2020 WHMP under Article 409, Grant PUD will continue noxious weed management at the four Site-Specific Habitat Management Areas (e.g., Buckshot Wildlife Area, Burkett Lake Recreation Area, Airstrip and Sunland Estates) and at mitigation sites. Additional weed management efforts will be undertaken as necessary on restoration or habitat enhancement projects to ensure native plant survival.

3.2 Habitat Management Emphasis Areas and Associated Species

The 2009 WHMP included general management recommendations for priority habitats, as well as for a set of priority species. In discussions with agency stakeholders, it was determined that the best management approach for Grant PUD to provide benefits to individual species was by enhancing and protecting core habitats.

Sections 3.2.1 to 3.2.5 below provide descriptions of these key habitats (Habitat Management Emphasis Areas) and Table 3 below summarizes the management objectives and associated target species for each Habitat Management Emphasis Area.

It is important to note that the Habitat Management Emphasis Areas are not specific to the description or location of WDFW Priority Habitats but are areas within the Project that meet the descriptions below and/or provide core habitat to associated target species. By implementing protection and/or enhancement measures within these Habitat Management Emphasis Areas, Grant PUD will be providing an increase in habitat value for specific species associated with that habitat. For example, any new project proposals within the Project area will be subject to Grant PUD Fish and Wildlife staff review through the NCRRP for consistency with the management objectives outlined in Table 3 below, and Fish and Wildlife staff will recommend actions to avoid, protect, and/or mitigate/enhance wildlife habitat as part of the project proposal.

3.2.1 Cliffs and Talus Slopes

Cliffs are topographic features greater than 7.6 meters (25 feet) high and occurring below 1,524 meters (5,000 feet). Talus slopes, often associated with cliffs in the Project Area, are homogenous areas of rock rubble ranging in average size from 0.15 - 2.0 m (0.5 - 6.5 ft). Within the Project, basalt cliffs and associated talus slopes occur in many locations adjacent to the Columbia River. Cliffs are a habitat feature regularly and/or traditionally used by a group of animals for resting, escape, hibernation, breeding, or rearing young.

Figure 6 Typical Cliff and Talus Habitat Within the Project Area.

3.2.2 Riparian Habitat

According to WDFW, riparian areas are transitional between terrestrial and aquatic ecosystems and are distinguished by gradients in biophysical conditions, ecological processes, and biota. They are areas through which surface and subsurface hydrology connect waterbodies with their adjacent uplands. They include those portions of terrestrial ecosystems that significantly influence exchanges of energy and matter with aquatic ecosystems (i.e., a zone of influence).

The width of riparian zones may vary, from just a few feet in some places to several feet in riparian forested areas. In riparian systems, the vegetation, water tables, soils, microclimate, and wildlife inhabitants of terrestrial ecosystems are often influenced by perennial or intermittent water. Simultaneously, adjacent vegetation, nutrient and sediment loading, terrestrial wildlife, as well as organic and inorganic debris influence the biological and physical properties of the aquatic ecosystem. Riparian habitat includes the entire extent of the floodplain and riparian areas of wetlands that are directly connected to stream courses or other freshwater.

Riparian habitats typically extend only a short distance from an aquatic area, and thus constitute a relatively small proportion of the habitats within a given area. However, the presence of favorable growing conditions for plants and a pronounced edge effect tend to make riparian zones unusually productive despite the relatively small area they occupy. Riparian habitats support a wide variety of wildlife species; approximately 85 percent of Washington's wildlife species use riparian habitats at some time during their life cycle (Knutson and Naef 1997). Some of the reasons that riparian habitats are so important to wildlife include: 1) the presence of water for drinking, bathing, or reproduction (amphibians); 2) high vegetation biomass; 3) structurally diverse habitats; 4) the presence of edge habitats; 5) the presence of cool, shaded, and humid microclimates; 6) escape cover in areas where habitats are otherwise much more open, and 7) readily usable corridors for migration and travel (Thomas et al.1979). Riparian areas are equally attractive to human enterprises, including recreation, residential development, timber harvest, agriculture, and grazing. Management of riparian habitats for wildlife poses unique challenges when other potential uses conflict with wildlife use (Knutson and Naef 1997).

For Grant PUD management purposes, riparian habitat also includes those areas adjacent to aquatic systems that may not provide cover or other habitat function but do provide movement corridors for many species between more suitable habitats. Riparian habitat also includes cobble bars or other aquatic shoreline areas that may be exposed during times of lower water elevations, and islands within the Columbia River.

Figure 7 Typical Riparian Habitat Within the Project Area.

3.2.3 Sand Dunes/Inland Dunes

“This habitat occurs in Washington’s arid lands as wind-blown sand deposits entrained after the sandy sediments were eroded and sorted by fluvial processes, primarily in the Columbia and Snake rivers. Inundation of the (Priest Rapids) Project removed many of the fluvial processes and source sand bars, which historically emerged, became dry, and were eroded by wind during low water. Reworking of these deposits by wind produced widespread sand fields. The source sand for dunes is also by sand that was transported and deposited during Missoula Floods (Draut 2012)."

Sand dunes support vegetation if wind stress is not too great. Although dune vegetation tends to be variable, dunes often consist of plants that are also common to shrub-steppe, such as antelope bitterbrush, rabbitbrush and snow buckwheat. However, some plants are more restricted to sand dune, such as, Indian Ricegrass (*Achnatherum hymenoides*), Lemon Scurf pea (*Psoralidium lanceolatum*), Veiny Dock (*Rumex venosus*) and Gray Cryptantha (*Cryptantha leucophaea*). The vegetation cover is related to annual rainfall totals and evapotranspiration rates. The mobility of sand dunes is related to the power of the wind, while a dune’s mobility becomes inhibited as vegetation cover increases. Long periods of increased precipitation and persistent presence of vegetation may lead to a sand surface covered by litter and/or cryptobiotic crust. These same factors also can initiate soil formation and can lead to partial or complete dune stabilization. Periods of drought will result in conditions unfavorable to vegetation and can reinitiate the mobility of sands. Other factors can have major influences on dune vegetation (e.g., livestock grazing, off-road vehicle use).

There are several identified dune areas within the Project, including Wanapum, Beverly, Sand Hollow, Frenchman Coulee, Quilomene, and Sentinel Butte (WDFW 2015). These include dunes of all functional stages and include a wide range of vegetation community types and qualities. Rare plant species such as gray cryptantha and northern wormwood are associated with dunes.

Figure 8 Typical Dune Habitat Within the Project Area.

3.2.4 Shrub/Steppe

WDFW defines shrub/steppe habitat as non-forested vegetation consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs. Although Big sagebrush (*Artemisia tridentata*) is the most widespread shrub/steppe shrub, other dominant (or co-dominant) shrubs include antelope bitterbrush (*Purshia tridentata*), threetip sagebrush (*A. tripartita*), scabland sagebrush (*A. rigida*), and dwarf sagebrush (*A. arbuscula*). Dominant bunchgrasses include (but are not limited to) Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass (*Poa secunda*), Thurber's needlegrass (*Achnatherum thurberianum*), and Needle-and-Thread (*Hesperostipa comata*).

In areas with greater precipitation or on soils with higher moisture-holding capacity, shrub-steppe can also support a dense layer of forbs (i.e., broadleaf herbaceous flora). Shrub-steppe contains various habitat features, including diverse topography, riparian areas, and canyons. Another important component is habitat quality (i.e., degree to which a tract resembles a site potential natural community), which may be influenced by soil condition and erosion; and the distribution, coverage, and vigor of native shrubs, forbs, and grasses. Sites with less disturbed soils often have a layer of algae, mosses, or lichens. At some more disturbed sites, non-natives such as Cheatgrass (*Bromus tectorum*) or Crested Wheatgrass (*Agropyron cristatum*) may be co-dominant species. Fire disturbance is an ecological component of shrub/steppe. Shrub/steppe disturbed by fire may lack the aforementioned vegetative components during periods of post-fire recovery.

In the Project, shrub/steppe is a critical habitat that occupies much of the area above (and often within) the riparian zone. This includes varied topographic features like draws, canyons, slopes, and benches.

Figure 9 Typical Shrub/Steppe Habitat Within the Project Area.

3.2.5 Wetlands

Wetlands are transitional areas between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have one or more of the following attributes: the land supports, at least periodically, predominantly hydrophytic plants; substrate is predominantly undrained hydric soils; and/or the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

Wetlands within the Project are critical for waterfowl and other wildlife. Cattail and bulrush fringe marsh and lacustrine wetlands in backwater areas of the Columbia River, Moran Slough, and Burkett Lake provides habitat for upland game, ducks and nongame birds. Associated waterfowl concentrations are bald eagle foraging areas. In addition, many islands in the Project contain palustrine emergent or scrub-shrub wetlands that are not connected via surface water but provide seasonal water and habitat for a variety of species.

Figure 10 Typical Wetland Habitat Within the Project Area.

Table 3 below provides a list of objectives for each of the Habitat Management Emphasis Areas. Target species are those that are provided specific benefit from habitat management within these emphasis areas.

Table 3 Habitat Management Emphasis Areas, Objectives, and Target Species

Habitat Management Emphasis Area	Management Objectives	Target Species
Cliffs and Talus slopes	• Avoid removal or disturbance of talus slopes and cliffs. • Provide and maintain disturbance free areas of cliff and talus habitat during critical life history phases such as nesting, lambing, and wintering. This management objective should include access to and from adjacent shrub or grassland areas. • Protect any known hibernaculum for reptile species and bats.	Bighorn Sheep (*Ovis canadensis*) Chukar (*Alectoris chukar*) Golden Eagle (*Aquila chrysaetos*) Mule Deer (*Odocoileus hemionus*) Striped Whipsnake (*Coluber taeniatus*) Western Long-eared Bat (*Myotis evotis*)

Habitat Management Emphasis Area	Management Objectives	Target Species
		Peregrine Falcon (*Falco peregrinus*) Prairie Falcon (Falco mexicanus)
Riparian Areas	• Avoid or minimize removal of established native riparian vegetation. • Where removal is unavoidable, replace riparian trees and shrubs at ratios consistent with Section 3.1.2.2. • Minimize total removal of dead riparian vegetation. Provide snag and perch habitat and allow development of cavities, stand decadence, and LWD recruitment. • Prevent damage from beaver by wrapping trees with protective wire or lethal removal of beaver if necessary and in accordance with the Article 414 (Eagle Management Plan) • Develop and implement eagle nest protection management plans when nesting is identified in the Project Area, in accordance with the Article 414 (Eagle Management Plan)	Bald Eagle (*Haliaeetus leucocephalus*) Mule Deer (*Odocoileus hemionus*) Rocky Mountain Elk (*Cervus elaphus*) Wood Duck (*Aix sponsa*) Migratory Birds
Inland Dunes	• Work with local enforcement entities to prohibit off-road vehicle use in dune areas within the Project. • Allow natural processes, such as dune migration and stabilization, to occur.	Black-tailed Jackrabbit (*Lepus californicus*) Ord's Kangaroo Rat (*Dipodymus ordii*) Sagebrush Lizard (*Sceloporus graciosus*)
Shrub/Steppe/ Grassland	• Avoid or minimize removal of established high-quality shrub/steppe habitat.	American Badger (*Taxidea taxus*) Black-tailed Jackrabbit (*Lepus californicus*)

Habitat Management Emphasis Area	Management Objectives	Target Species
	• Where removal is unavoidable, replace at ratios consistent with Section 3.1.2.2. • Collaborate with WDFW in the identification of high-value shrub/steppe habitat in which species-specific enhancements or protections should occur. These include winter ranges and fawning/calving areas.	Burrowing Owl (*Athene cunicularia*) Chukar (*Alectoris chukar*) Loggerhead Shrike (*Lanius ludovicianus*) Mule Deer (*Odocoileus hemionus*) Pygmy Rabbit (*Brachylagus idahoensis*) Ring-necked Pheasant (*Phasianus colchicus*) Sagebrush Lizard (*Sceloporus graciosus*) Greater Sage-grouse (*Centrocercus urophasianus*) Sagebrush Sparrow (*Artemisiospiza nevadensis*), formerly (*Amphispiza belli*) Striped Whipsnake (*Coluber taeniatus*) Rocky Mountain Elk (*Cervus elaphus*) Sage Thrasher (*Oreoscoptes montanus)*
Wetlands	• Avoid or minimize disturbance to wetlands. • Avoid or minimize removal of wetland vegetation. • Where removal is unavoidable, replace wetland vegetation at ratios consistent with Section 3.1.2.2 that increases the wildlife habitat function by adding vegetation for vertical	American White Pelican (*Pelecanus erythrorhynchos*) Common Loon (*Gavia immer*) Northern Leopard Frog (*Lithobates pipiens*) Waterfowl

Habitat Management Emphasis Area	Management Objectives	Target Species
	stratification where conditions and opportunity allow. • Continue the aquatic invasive species removal to improve the function and value of wetland habitat as part of wetland enhancement projects.	

3.3 Site Specific Habitat Management Areas

In addition to general Project-wide management and Management Emphasis Areas described above, Grant PUD identified three key areas for intensive wildlife habitat improvement efforts in the 2009 WHMP: (1) Buckshot Wildlife Area, (2) Burkett Lake, and (3) the Airstrip Site. In the 2015 WHMP update, Grant PUD added Sunland Estates to the site-specific management areas list. These areas were chosen due to their potential to provide improved ecological quality and diversity, increased habitat for key indicator wildlife species, and the opportunity for public use compatible with the ecological quality, diversity, and carrying capacity for key wildlife species goals.

Since 2015, many habitat improvements have occurred at each of these sites. This WHMP update summarizes those activities and describes future planned actions. Grant PUD will continue to manage and improve these four sites in accordance with BMPs that have been established in this document.

3.3.1 Buckshot Wildlife Area

Buckshot Wildlife Area is a WDFW/Grant PUD co-managed site located on Priest Rapids reservoir near Mattawa (Figure 14). Previous facilities at this site were a two-lane concrete boat ramp, a large unimproved parking area, and numerous dispersed-use campsites. As part of the Recreation Resource Management Plan (RRMP), a capital improvement project was completed in 2013 which installed a vault toilet, informational kiosk, new parking lot gravel, an ADA parking spot, and an ADA-accessible waterfowl blind and trail on the north end of the site.

The WDFW utilizes the site as a ring-necked pheasant release area, smallmouth bass (*Micropterus dolomieu*) fishing area and a waterfowl hunting area. Overall use is relatively low, predominately comprised of local anglers and hunters; however, there is a large contingent of local farm workers who camp at the facility's dispersed-use sites. There is a posted three-day limit on camping. Popular activities at this site include camping, fishing, and hunting.

3.3.1.1 Goals and Objectives

The overall goal for the Buckshot Wildlife Area is to create better site conditions for riparian and upland bird species and wildlife habitat diversity while minimizing damage from public use. In order to achieve this goal, the 2015 WHMP continued to implement the identified specific objectives summarized below.

- Control Noxious Weeds
    - Aggressively target purple loosestrife (*Lythrum salicaria*) for removal.
- Manage Public Access
    - Restrict access to the main access road via State Route 243 that extends to the boat launch. Prohibit access to all other access roads by using gates or large boulders.
    - Maintain the boulder barrier that was installed in order to reduce the size of the parking lot (3.5 acres) to match documented recreational use.
- Enhance Native Habitat
    - Monitor and maintain the previous restoration efforts at the decommissioned portion of the parking lot in order to promote natural habitat.

3.3.1.2 Management Actions Summary

The intent of this section is to summarize some of the management actions that have been completed at the Buckshot Wildlife Area.

- Control Noxious Weeds
    - The management of Purple loosestrife has continued to be a top priority throughout this location. During the term of the 2015 WHMP, Grant PUD aggressively targeted local populations for removal using herbicide. Herbicide has been applied by internal as well as contracted staff on an annual basis. The population of Purple loosestrife has been significantly reduced throughout the Buckshot area as a result of these herbicide applications and has allowed for the recovery of native vegetation, such as Hardstem bulrush (*Schoenoplectus acutus*).
- Manage Public Access (Recreation Resources Management Plan, Article 418)
    - In 2013, Grant PUD placed large rock boulders along the access road and along the new southern boundary of the parking area (total of 1 mile of boulders). The boulder barrier starts at the intersection of Road U SW and Road 26 SW and extends along the north side of the access road to the boat launch (Figure 11). The barrier consists of boulders approximately 3 feet in diameter weighing from 1,800 to 2,400 pounds placed 5 feet-on-center. Boulders were placed across the existing parking area to reduce the size of the existing parking lot by approximately 70 percent. The south side of the access road is privately owned and so could not be rocked, however a barb-wire fence along the south side of the road currently restricts access. Throughout the term of the 2015 WHMP Grant PUD monitored and maintained these boulder barriers to ensure they were not altered and remained effective.
    - Fires that occurred in 2018 destroyed the previously constructed ADA accessible wildlife viewing and hunting platform that was located on the northern portion of the property. Reconstruction efforts are set to take place in November of 2020 that will build a new structure and restore access.

- Grant PUD monitored and maintained access for authorized vehicles through the two steel entry gates that were installed at the northeast and southeast corners of the parking area as part of the WHMP (Figure 12). Activities included the removal of illegally dumped items and abandoned cars.
- The above listed actions have restricted vehicle access to most of the Buckshot Wildlife Area, protecting the habitat from human disturbance and excessive dumping. The boulder fence has prevented vehicles from driving beyond the access road and parking area, making law enforcement patrolling easier (illegal activities continue to be a problem at this area) and reducing impacts from vehicles on the environment.

Figure 11 Buckshot Boulder Placement

Figure 12 Buckshot: Gate and Closed Parking Area.

- Enhance Native Habitat
    - Grant PUD in conjunction with WDFW utilize herbicide application as well as hand pulling of noxious weeds in and around the previous parking lot restoration site. The 2.4-acre section of property is now occupied primarily by native bunch grasses and upland shrubs (Figure 13).

Figure 13 Parking lot restoration site in 2020.

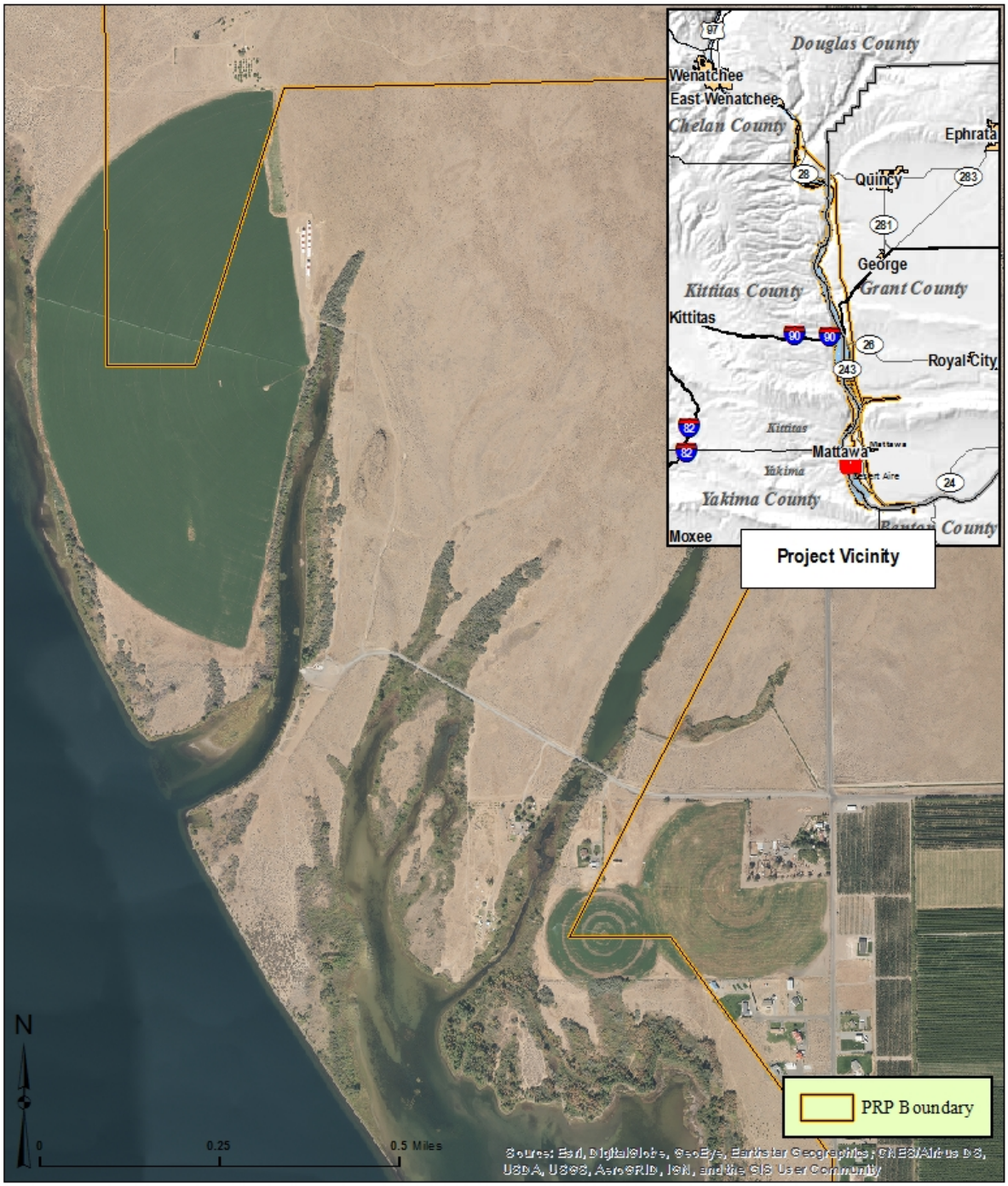

Figure 14 Buckshot Wildlife Area.

3.3.1.3 Continuing or New Actions

Many of the management objectives planned for the Buckshot Wildlife Area have been implemented or achieved. The following activities will continue or are planned for the site.

- Continue noxious weed control, including targeting Purple loosestrife in riparian areas and upland weeds in the restored parking lot.
- Investigate the need or potential for managing vegetation at the newly installed Grant PUD disabled access wildlife viewing and hunting blind. Grant PUD and WDFW will collaborate on any necessary vegetation management actions to increase the effectiveness of the blind.
- Investigate additional restoration/enhancement opportunities on this property, much of which is designated as priority habitat for pheasants, with the intent of managing for upland bird species and wildlife diversity.

3.3.2 Burkett Lake

Burkett Lake is a man-made 36.8 acre lake located near the town of Beverly between Lower Crab Creek Road (Road 17 SW) and Crab Creek (Figure 17), just less than a mile east of the Priest Rapids reservoir. The lake and property, consisting of two parcels, is owned by Grant PUD. In addition to the lake, which is located within the Project area, Grant PUD owns approximately 63 acres of land surrounding the lake. This property is bordered by both federal (ROW land to the east) and private property (lands to the south, north, and west). The far western and southern portions of the site are not within the Project area.

The lake was originally a series of small wetland areas excavated to create a lake for private recreation and other activities, particularly water skiing. Water for the lake is supplied by a canal with irrigation return from Nunnally Lake and agricultural lands to the north and east. Burkett Lake is the lowest most water body in a chain of water bodies within the Crab Creek corridor. Crab Creek flows east to west along the base of the Saddle Mountain Ridge to the Priest Rapids reservoir. The Lower Crab Creek Wildlife Area, managed by WDFW, lies east of Burkett Lake. The wetlands and riparian areas within the Crab Creek corridor provide a diverse array of habitats for many species of wildlife, especially birds.

The WDFW considers the corridor an important waterfowl habitat area. The shoreline of the lake is vegetated (willow and rush) with an irregular and sinuous edge, providing habitat for many aquatic and terrestrial wildlife species. Beyond the shoreline the surrounding sandy uplands support native shrub-steppe communities. Invasive and/or noxious plant species have become established on the site (e.g., Phragmites). Grant PUD has implemented a noxious weed control program that includes removal, chemical treatment and burning.

3.3.2.1 Goals and Objectives

The overall goals for the Burkett Lake area are to create better habitat conditions for riparian and upland bird species and wildlife diversity and to enhance, manage and maintain the property for nature-based day-use recreation and education and interpretation activities. In order to achieve these goals, the 2015 WHMP continued to implement and build upon the identified specific objectives summarized below.

- Wildlife Habitat Enhancements

- Install and maintain beaver guards to protect trees from beaver-caused damage.
- Manage, monitor, and treat noxious weeds on the property.
- Replant suitable segments of the landscape with native plants or species that are beneficial to wildlife. Replanting of native plants will be designed and conducted in a manner forming a series of different successional zones (riparian, shrub-steppe, etc.) at the property.

- Public Use Enhancements (Recreation Resources Management Plan, Article 418)
  - Develop and maintain a barrier-free dock or pier.
  - Construct a foot trail that meanders through the different zones with kiosks placed along the trail that informs hikers of the presence and importance of the existing habitats.

3.3.2.2 Management Actions Summary

The intent of this section is to summarize some of the management actions that have been completed at Burkett Lake throughout the term of the 2015 WHMP.

- Wildlife Habitat Enhancements
  - Maintained tree wrappings to prevent beaver damage.
  - Annual noxious weed control. Aggressively targeted Purple loosestrife, Russian thistle and Phragmites (*Phragmites australis*) for removal. Methods included chemical application, Mechanical removal and hand pulling.
  - Continued to spray and remove Russian olive regrowth
  - Drill seeded a second application of native grass/shrub mix along the NW portion of the property in 2016.
  - Installed 6,000 total upland shrub and grass plantings throughout the southern portion of the property in an effort to increase shrub-steppe habitat and provide soil stabilization.

- Public Use Enhancements (Recreation Resources Management Plan, Article 418)
  - Completed Phase 2 Recreation improvements on the west side of the lake that include day use parking, ADA vault toilet, accessible fishing pier, interpretive kiosk, picnic tables, boulder barriers and pedestrian multi-use trails (Figure 15-Figure 16).

Figure 15 Fishing Pier located at Burkett Lake.

Figure 16 Day use parking and boulder barrier installed along NW section of Burkett Lake.

Figure 17 Burkett Lake and Vicinity.

3.3.2.3 Continuing or New Actions

Many of the management objectives planned for the Burkett Lake area are in process. Grant PUD will work with stakeholders and continue working toward the overall goal of habitat enhancement at the site. The following activities will continue or are planned for the Burkett Lake Property as part of the 2020 WHMP.

- Continue noxious weed monitoring and control across the upland and aquatic areas of the site to allow native vegetation to establish.
- Continue habitat enhancements through native plant installation. Focus should be on providing successional stages adjacent to Burkett Lake through the planting of riparian trees and shrubs.
- Continue to maintain and enhance shrub-steppe habitat throughout the southern portion of the property. This will be done through the reduction of noxious weeds and installation of additional plug plantings as needed.
- Continue to protect trees from beaver damage.
- Collaborate with WDFW on additional waterfowl habitat enhancement measures.

3.3.3 Airstrip

The Airstrip property is located east of Huntzinger Road near Vantage in Kittitas County (Section 29 and 30, Township 17N, Range 23E, W.M.) (Figure 21). The approximately 80 acre property was acquired in 1961 and was previously used for agriculture (e.g., pasture, grazing, orchards). A single asphalt-surfaced airstrip is located in the upper west section of the property that was deemed abandoned by the U.S. Department of Transportation Federal Aviation Administration in February 2003.

The previous adjacent landowner leased the Airstrip site from Grant PUD until 2010 for horse grazing. This grazing caused a major increase in noxious weeds that Grant PUD has been aggressively targeting. Grant PUD has used chemical treatments, mowing, harrowing, drill seeding, revegetation plantings and bio-control over the term of this report in an effort to restore native wildlife habitat. The predominant invasive weeds identified and treated with chemical applications were Purple loosestrife, Russian thistle, kochia, Pepperweed, puncturevine, and Diffuse knapweed. Grant PUD staff has focused a significant amount of effort and resources though chemical herbicide application and mechanical control methods to decrease the populations of these noxious weeds.

Article 418 required completion of a capital facilities assessment, in consultation with USFWS and WDFW, to determine if the Airstrip Site shall be further developed. Early conceptual plans for public recreation in this area included the possibility of RV/tent campsites, dispersed walk-in campsites, group campsites, a boat launch, areas for day use and picnicking, a swimming area, trails, restrooms with showers, vault toilets and habitat enhancement. This evaluation was completed and as of the date of this plan update, there are no plans for recreational development of the site by Grant PUD. The land adjacent to Airstrip property has recently been purchased and construction is under way to install a 108-parcel residential community, 40 town home units, a 40-unit condo and a 16-acre vineyard (Figure 22).

3.3.3.1 Goals and Objectives

The overall goal at the Airstrip site in the 2015 WHMP was to enhance the natural landscape and increase the wildlife habitat value.

- Wildlife Habitat Enhancements
    - Procure legal access to the site to facilitate habitat improvement, maintenance, and monitoring and to allow for potential recreational opportunity in the future.
    - Continue monitoring for beaver damage and maintain existing exclusion tree wrappings
    - Continue noxious weed management program.
    - implement drill-seeding efforts on approximately 50 acres of upland habitat following fires in 2018
    - Plant appropriate native species to enhance and restore the riparian function and upland habitat at the site.

3.3.3.2 Management Actions Summary

The intent of this section is to summarize some of the management actions that have been completed at the Airstrip site under the 2015 WHMP.

- Grant PUD acquired a new lease to use the Ellensburg Boat Club access road to facilitate implementation of wildlife habitat management actions at the site.
- Access to the site for recreational use remains from boat only (e.g., skiffs pull onshore to hunt waterfowl).
- Following fires that burned much of the Airstrip property in 2018, Grant PUD staff removed what was left of the wooden fence that bordered the property to the West. This fence was originally installed to restrict adjacent livestock from entering the property.
- Grant PUD installed nearly 1,500 riparian plantings at a location along the southern portion of the property in 2017. In 2019, Grant PUD staff installed 1,200 riparian plantings near the northern section of the inland slough. To aid in watering these plantings Grant PUD developed and installed a remote watering system that provides drip irrigation at specified times to individual plants. This allows for the development of a taproot and decreases the number of weeds surrounding the plants that would come from traditional broadcast watering (Figure 18-Figure 19).
- Grant PUD staff provides maintenance to all the riparian restoration plantings on a weekly basis throughout the growing season (April – October). This includes ensuring irrigation is functioning properly, providing mechanical weed control, applying herbicide if necessary, monitoring for damage to vegetation and conducting replanting efforts if warranted.
- Following wildfires in 2018 that burned much of the eastern shore and upland portions of Airstrip, Grant PUD contracted with BFI to conduct restoration efforts. Those efforts consist of harrowing and drill seeding a native grass mix through approximately 50 acres of upland habitat and the continued applications of herbicide to allow restoration efforts to be effective.

- Grant PUD has used the fires that burned through the area in 2018 as an opportunity to recruit additional LWD and nesting snags (Figure 20).

Figure 18 Riparian restoration site with Remote Watering System at Airstrip.

Figure 19 Riparian plantings along eastern boundary of the slough.

Figure 20 Recruitment of LWD along western edge of Airstrip.

Figure 21 Airstrip Site Arial Map.

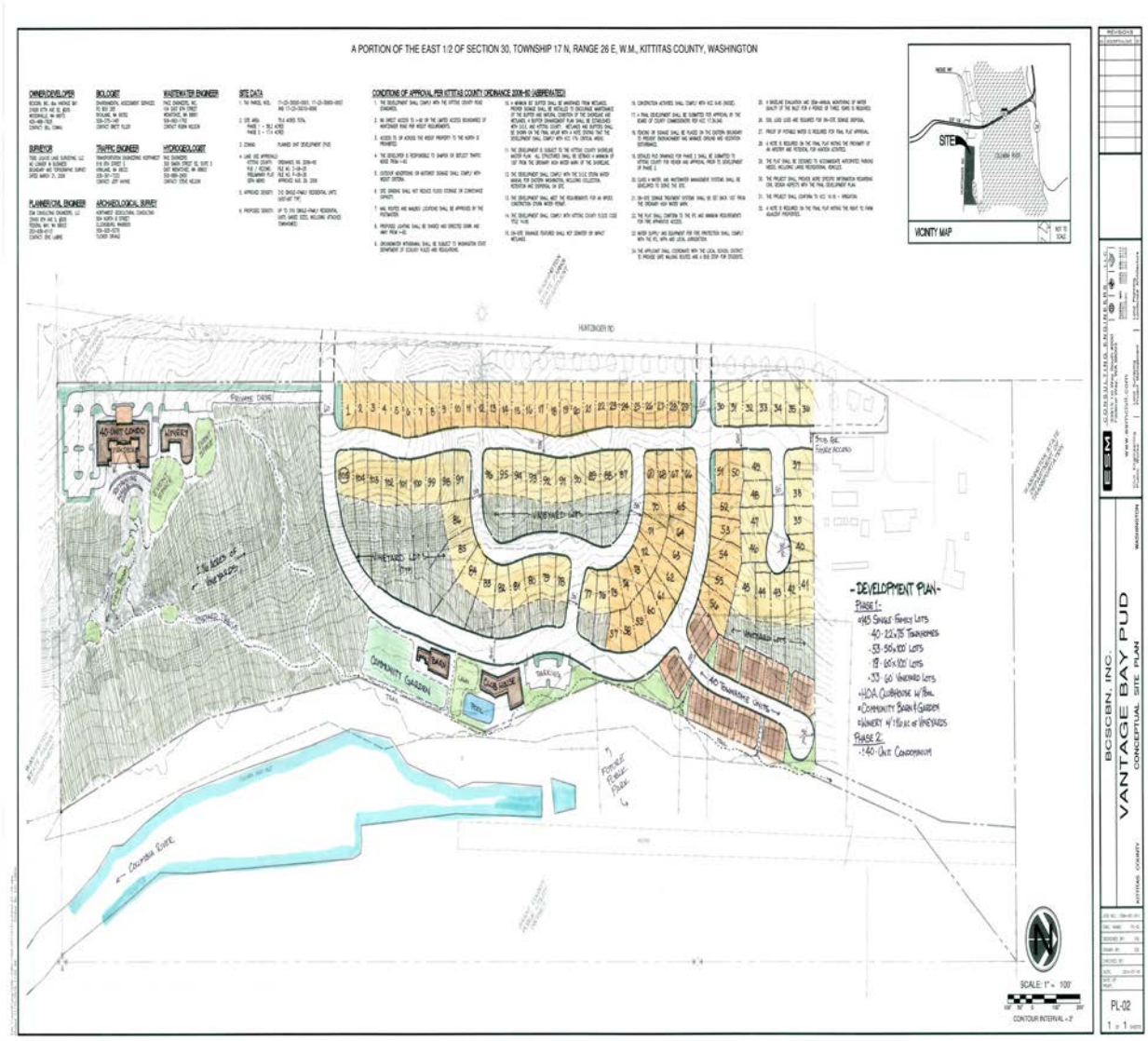

Figure 22 Development plans for the property adjacent to Airstrip.

3.3.3.3 Continuing or New Actions

The Airstrip site remains an area with high potential for habitat enhancements. The following actions are planned for continued improvements at the site.

- Continue a noxious weed monitoring and treatment program.
- Enhance and establish native shrub/steppe and bunch grass habitats on the site. Grant PUD will continue to monitor the drill-seeded area and provide herbicide treatment as necessary. Once grasses have established Grant PUD will focus on promoting a viable shrub population on site through plug plantings and native seed dispersal.
- Continue to provide maintenance to existing riparian plantings locations including irrigation, weed control and replanting if necessary.
- Grant PUD will continue to closely monitor construction on the adjacent development. Grant PUD staff will install signage along the western border that delineates the property

boundary and illustrates the importance of sustaining wildlife habitat on site. If it is determined that the residents of the development are impacting habitat negatively, Grant PUD will collaborate with stakeholders on the installation of a fence.

- Continue to establish and promote LWD on site.
- Coordinate with Grant PUD Lands and Recreation staff regarding assessment for future recreational development. Ensure any future development is planned with wildlife habitat protection as an objective.

3.3.4 Sunland Estates

The Grant PUD fee-owned shoreline property at Sunland Estates was acquired in 1965 for the purpose of operating the Priest Rapids Hydroelectric Project. Additionally, Grant PUD owns a vacant residential lot adjacent to the shoreline. This property, legally described as Lot 51, Block 11, Sunland Estates Division No. 2, was donated to Grant PUD in 2001 and is currently used for Grant PUD maintenance and access. Adjacent to the Grant PUD-owned shoreline is the Sunland Estates recreational/residential community, consisting of approximately 540 lots, 143 of which are immediately adjacent to Grant PUD property. There are 435 developed residential/ recreational homes, approximately 10 percent of which are occupied on a year-round basis.

Grant PUD manages the land between the ordinary high-water mark and the Sunland Estates development. The width of this ownership varies from 75 feet to nearly 500 feet along the Wanapum Reservoir shoreline (Figure 23). Over the last several decades, private use of Grant PUD land has occurred through the installation of irrigated lawns and landscapes, hardscapes, and trails, amongst other developments. Under Grant PUD's Shoreline Management Plan for the Priest Rapids Hydroelectric Project and Grant PUD Commission Resolution 8709, approved non-project uses must not create barriers to public access and avoid the appearance of private property. As of July 1, 2015, all previous permits for non-Project uses of Grant PUD-owned lands at Sunland Estates were revoked. Therefore, plantings and developments not meeting these criteria will be removed, and land will be restored to native vegetation.

Two distinct habitat zones currently occur within Grant PUD ownership around Sunland Estates: shrub-steppe and riparian. Shrub-steppe habitat occurs above the influence of the Wanapum Reservoir in upland areas, while riparian habitat occurs along the reservoir. A transitional area between these two zones is largely absent, except in areas with supplemental irrigation. The mature riparian and shrub/steppe habitats are relatively intact, interspersed with irrigated lawns, foot trails, and other impacted areas from neighboring private landowners. Overall species diversity in the intact shrub/steppe habitat is high, with antelope bitterbrush the dominant shrub. Mule deer, Chukar, and cottontail rabbits are documented within this area. Grant PUD conducts annual noxious weed control on the property, and though noxious weeds are present, the prevalence is relatively low.

In 2015, Grant PUD began restoring native habitat along portions of the shoreline. Actions included reclaiming irrigated lawns with trees, shrubs, grasses, and forbs, re-establishing a functioning riparian area, and removing and restoring to native habitat many footpaths and trails. Firewise principles have been used in the restoration such as the use of lower-growing grasses and forbs within 50-75 feet of the private/public property boundary, removal of resinous and flammable trees and shrubs within 50-75 feet of the private/public property boundary, and thinning of existing dense stands of vegetation with 50-75 feet of private property.

3.3.4.1 Goals and Objectives

Goals outlined in the 2015 WHMP included that areas of the shoreline adjacent to Sunland Estates will be re-established with native riparian and shrub/steppe habitats and include the protection and enhancement of existing intact habitats, and provide for public use compatible with habitat goals.

- Re-establish and enhance wildlife habitat
    - Restore areas of irrigated lawn to native shrub-steppe and riparian habitats through installation of native shrubs, grasses, and trees.
    - Restore degraded riparian habitats through installation of native shrubs, trees, and emergent species.
    - Remove and restore some footpaths and trails.
    - Enhance existing shrub/steppe habitat.
    - Establish Grant PUD maintenance access.

3.3.4.2 Sunland Management Actions

In order to accomplish the goals and objectives at the Sunland Estates site, the following management actions were conducted during the term of the 2015 WHMP.

- Beginning in fall of 2015 and continuing throughout the term of the 2015 WHMP Grant PUD began removing encroaching lawns, unauthorized walking paths and trails that had encroached onto PUD property.
- Revegetation of encroached areas began in 2016 and consisted of drill seeding a native grass mix and plug plantings. Additionally, revegetation plantings were selected and installed in accordance with fire-wise principles.
- Public access has been restored through lot 51 located at the north end of the community (Figure 25).
- Herbicide applications targeting noxious weeds have been applied annually.
- Grant PUD has worked with the private homeowners to recruit LWD and nesting snags when possible.
- Grant PUD wrapped a number of trees to prevent against beaver damage in 2016.
- Grant PUD has worked with the local residents and recreational public to illustrate the importance of increasing and maintaining sustainable wildlife habitat at Sunland. Methods used have been in person conversations, town hall meetings and email.

3.3.4.3 Continuing or New Actions

- Continue to work with landowners and the public to maintain and promote viable wildlife habitat.
- Continue to target noxious weeds for removal though herbicide applications.
- Continue to recruit LWD and nesting snags as opportunities arise.

- Monitor beaver activity around the area to determine if additional tree wrapping is necessary.
- Maintain a fire wise buffer of 30ft between Grant PUD property and private homeowners.
- Continue to replant and enhance native vegetation as further encroachments are removed.

Figure 23 Sunland Estates Aerial Map.

Figure 24 Sunland Estates restored shoreline area.

Figure 25 Public access point at Lot 51 at Sunland Estates.

3.4 Waterfowl and Raptor Habitat Management

Article 409 required that Grant PUD include in this plan provisions and a schedule for continued installation, monitoring and maintenance of 48 wood duck nest boxes; 12 raptor nesting, roosting and perching structures; and 50 waterfowl nesting platforms (mallard nest baskets and goose nesting tubs) around the Project shoreline. Goals and objectives for species-specific

improvements and actions were identified in the 2015 WHMP. The following sections summarize the goals and objectives for each species-specific objective, describe the actions and results from the past five years, and provide a proposal for continuing or new actions.

3.4.1 Wood Duck Nest Boxes

In eastern Washington, wood duck numbers and distribution are limited by a scarcity of large trees that contain suitable nest cavities near water. However, wood ducks are common in eastern Washington, along waterways with large cottonwood groves. They are most abundant along the Yakima, Wenatchee, Okanogan, Walla Walla, Pend Oreille, and Little Spokane rivers. Wood ducks are relatively abundant along portions of the Columbia River near Richland, Wenatchee, and Brewster. The forested lowlands in many areas of northeastern Washington are also used by nesting wood ducks. Riparian habitat development along some impoundments and nest box programs resulted in the expansion of wood duck nesting in eastern Washington into areas where they previously had few nesting opportunities.

As their name implies, wood ducks are closely associated with habitats containing wooded areas near water. Ideally, the trees in those wooded areas should be big enough to have developed cavities of suitable size for wood duck nesting. In nature, wood ducks select nest cavities in a variety of trees. Deciduous trees are good cavity producers and are more commonly used than coniferous trees. In Washington, cottonwood trees provide many natural nest sites. Cottonwoods are relatively fast-growing large trees prone to decay and cavity formation. They also thrive near water where wood ducks are likely to seek nest sites.

When natural nesting cavities are lacking, man-made nest boxes can be an adequate substitute. The goal of this program is to enhance resident wood duck populations through the placement and maintenance of nest boxes. According to the 2015 WHMP, Wood duck nest boxes were to be installed along Priest Rapids reservoir, Wanapum reservoir, Burkett Lake, and Crab Creek following the guidelines suggested by Fielder (2000). Nest boxes were to be installed either on large diameter trees or artificial posts placed in or near back water habitats.

3.4.1.1 Goals and Objectives

The goal of the wood duck nest box program is to provide, maintain, and monitor 48 wood duck nest boxes in suitable locations within the Project to increase available nesting habitat.

3.4.1.2 Management Actions to Date

48 nest boxes were constructed and installed in 2009-2010. Locations of nest boxes were recorded with GPS (See Figure 26). Boxes were placed on trees (e.g., cottonwood, elm and Russian olive) and railroad trestles above the water or within 50 feet of the water (Figure 27 and Figure 28). In general, boxes were installed from 8 to 15 feet above the ground.

Faceplates were fastened over the existing opening of each nest box to reduce raccoon predation. However, Northern flickers were observed to have bored holes in the side of the boxes, and therefore faceplates were removed after one year.

Nest boxes were maintained prior to each nesting season during the term of the 2015 WHMP. Some nest boxes were damaged or displaced during off-seasons and were replaced during the maintenance period, sometimes in alternate locations.

In addition to wood ducks, nest boxes have been used by starlings, kestrels, northern flickers, and screech owls.

3.4.1.3 Continuing or New Actions

Continue annual maintenance and monitoring of wood duck boxes throughout the Project.

Analyze the use and success data of wood ducks and other species using the boxes. If warranted, investigate the removal or relocation of boxes to enhance nesting use and success.

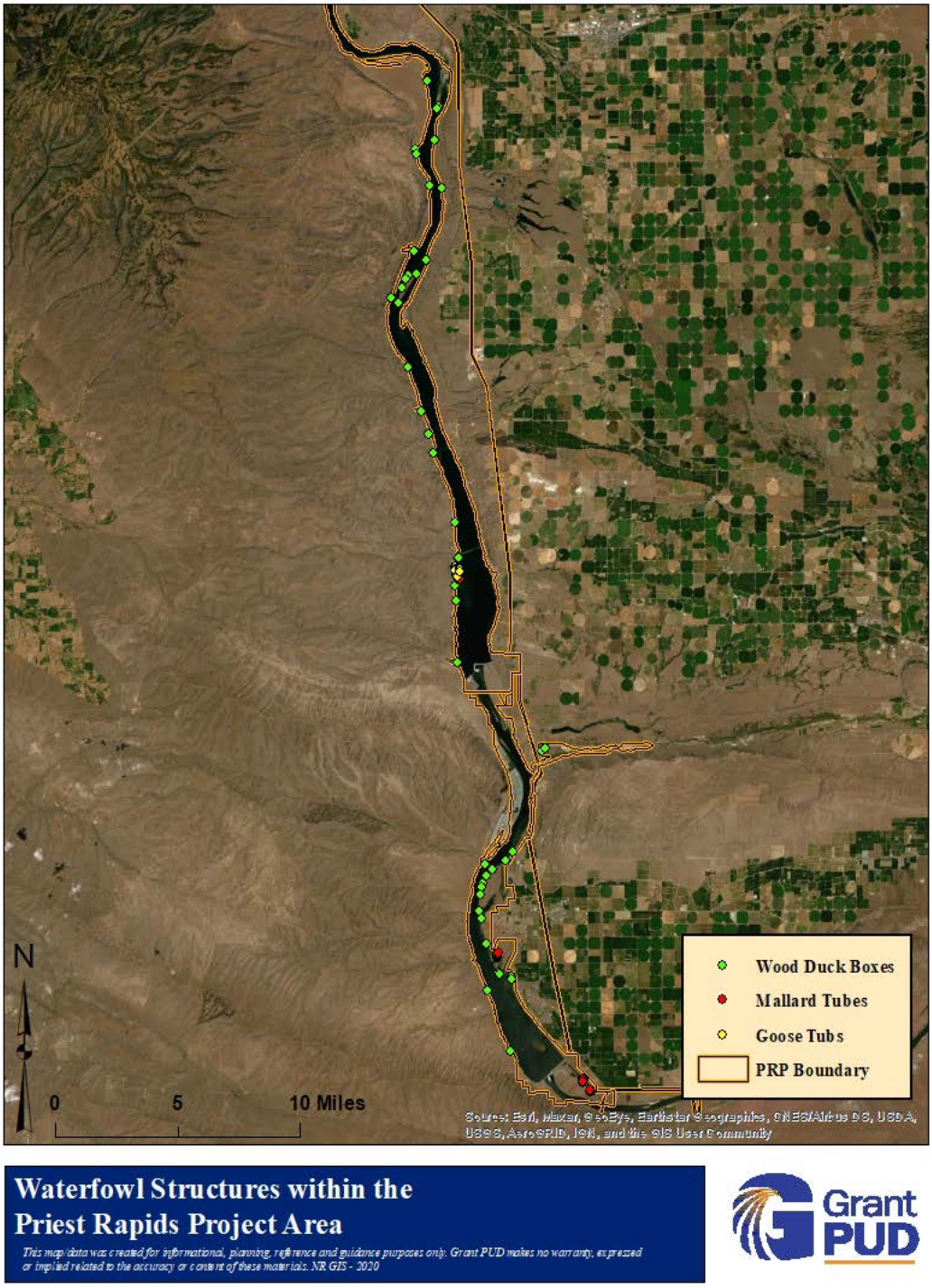

Figure 26 Wood duck box locations.

Figure 27 Wood duck in nest box.

Figure 28 Wood duck box in Project area.

3.4.2 Raptor Nesting, Roosting, and Perching Structures

A requirement of Article 409 specific to raptor nesting, roosting, and perching is to install, monitor, and maintain 12 raptor nesting, roosting and perching structures. Nine man-made perch and roosting poles were in place within the Project when the WHMP was written (2009), and an additional eight platforms were installed in trees throughout the Project in 2010 and 2011.

Additional habitat improvements for raptors are covered under License Article 414.

3.4.2.1 Management Actions to Date

Grant PUD has worked to add additional platforms at select locations throughout the term of the 2015 WHMP. An example of this can be found near Stratford where a perch pole and platform were installed to provide alternative habitat to Osprey (*Pandion haliaetus*) that frequent the area (Figure 29).

In addition to the existing perch structures found throughout the Project, Grant PUD has worked to install hundreds of potential perch trees as part of riparian restoration plantings. Some areas that received perch tree plantings over the last five years are: Airstrip, Sand Hollow, Rocky Coulee, Vantage Boat Launch, Crescent Bar and West bar.

3.4.2.2 Continuing or New Actions

Grant PUD will inspect and maintain the existing raptor perching/roosting platforms to maintain a minimum of twelve platforms. Grant PUD will monitor usage of these platforms and provide an annual summary to stakeholders in the fall/winter annual meetings. Grant PUD will continue to install tree species as part of future riparian plantings throughout the Project.

Figure 29 Raptor platform placement.

3.4.3 Waterfowl Nesting Platforms

In an effort to improve waterfowl nesting success by increasing suitable nesting cover and decreasing predation, Grant PUD installed nesting structures for ducks and geese within the Project (Figure 30-Figure 31). Duck nest cylinders (wire fencing with mixed straw and hay) were installed on artificial posts placed in or near back water habitats. Nesting cylinders have been

constructed using straw, timothy hay and natural vegetation. Opening diameters of cylinders range from 10-15 inches on average.

Goose tubs are constructed using wooden barrels cut in half or black plastic totes that have a hole cut near the base to allow juveniles to leave. They are placed on poles or stumps positioned along the shoreline above the ordinary high water mark (OHWM) near suitable habitat and away from high-use recreation areas.

3.4.3.1 Goals and Objectives

Wildlife habitat management goals for waterfowl nesting for the 2015 WHMP plan were to build, install, monitor, and maintain 50 waterfowl nesting platforms around the Project.

Objectives developed to reach the above goal were as follows:

- Install 40 duck nesting cylinders and 10 goose nesting tubs.
- Install predator deterrents on all poles and structures supporting waterfowl nesting platforms if predation is identified and installment is feasible.

Duck nesting cylinders and goose tubs will be monitored during the nesting season and a summary of nesting activity will be included in the WHMP five-year report.

3.4.3.2 Management Actions to Date

Beginning in 2017 Grant PUD began installing the duck nesting cylinders on T-post mounts rather than previous tripod structures. This provided for more stability from shifting ice and wind and wave action.

Grant PUD crews begin inspection of nesting cylinders and goose tubs in January and make any necessary repairs and place stuffing inside nesting cylinders. Stuffing material has consisted of straw and timothy hay.

Predation has not been identified at these nest structures and predator deterrents have been determined to be unwarranted and/or unfeasible, and therefore, not installed. Most structures have available protection features (e.g., duck cylinders are places on metal posts that are in shallow water in order to minimize ground predators.)

Throughout the 2015 WHMP, Grant PUD documented very limited use of duck and goose nest structures.

3.4.3.3 Continuing or New Actions

Grant PUD will continue providing nest structures to increase nesting opportunity for waterfowl throughout the Project and will monitor structures for use and determine what adaptive management may be necessary to increase use or nesting success. Grant PUD will provide a summary of nesting structure occupancy to stakeholders in the fall/winter annual meetings. Grant PUD will continue to collaborate with agency stakeholders on potential alternative beneficial actions for waterfowl that can be undertaken if nesting structures remain underutilized. These actions may provide higher benefit to waterfowl habitat than providing nesting structures alone.

Figure 30 Nesting cylinder mounted on metal poles.

Figure 31 Goose nesting tub.

4.0 Stakeholder Coordination and Adaptive Management

The 2010 FERC order approving the WHMP states Grant PUD will host an annual meeting on or before December 31 of each year. To ensure success of the WHMP in meeting its objectives and coordination among other plans and as part of the adaptive management process described above, Grant PUD will meet with stakeholders twice per year – once in the spring, prior to

management activities, and again in the fall to present monitoring results. Grant PUD will also report on progress related to implementation of the measures required in the WHMP with the identified agencies and tribal stakeholders.

In addition to annual meetings, Grant PUD will coordinate with stakeholders through site-specific mitigation, project development and implementation. Grant PUD will coordinate with stakeholders on wildlife projects at featured sites like Airstrip where collaboration is essential to project development.

As required by Article 409, the WHMP will be updated and filed for Commission approval, at a minimum, of every five years after approval of this plan. The updated plan shall include a summary of the habitat improvement measures implemented during the previous five years and measures projected to be implemented in the next five years. This plan represents the third 5-year update.

FERC requires the WHMP shall be developed after consultation with the USFWS, BLM, BOR, WDFW, DNR, WRCO, the Confederated Tribes and Bands of the Yakama Nation, and the Wanapum Band. This group of agencies and tribes has participated on the 2020 WHMP Working Group. The consultation record associated with production of the 2020 WHMP includes notes from stakeholder meetings (Appendix A) and comments on the WHMP final draft (Appendix B). Comments were received from WDFW and incorporated into the final report.

List of Literature

Castelle, A. J., C. Conolly, M. Emers, E. D. Metz, S. Meyer, M. Witter, S. Mauermann, M. Bentley, D. Sheldon, and D. Dole. 1992. Wetland Mitigation Replacement Ratios: Defining Equivalency. Adolfson Associates, Inc., for Shorelands and Coastal Zone Management Program, Washington Department of Ecology, Olympia, Pub. No. 92-08.

Draut, A. E. 2012. Effects of River Regulation on Aeolian Landscapes, Colorado River, Southwestern USA, J. Geophys. Res., 117, F02022, DOI:10.1029/2011JF002329.

Duke Engineering & Services (DES). 2000. Final Report: Habitat Based Terrestrial Inventory Priest Rapids Project. Unpublished report to Public Utility District No. 2 of Grant County, WA.

Federal Energy Regulatory Commission. 2008. Order Issuing New License for the Public Utility No. 2 of Grant County, WA (Project No. 2114). April 17, 2008.

Fielder, P. C. 2000. Guidelines for managing wood duck nest boxes in Washington State. Washington Department of Fish and Wildlife, Olympia. 41 pp.

GCPUD (Public Utility District No. 2 of Grant County). 2003. Final License Application for New License, Priest Rapids Hydroelectric Project, FERC Project No. 2114. Ephrata, Washington.

GCPUD 2009. Priest Rapids Hydroelectric Project (FERC No. 2114), Wildlife Habitat Management Plan, License Article 409. October 2009. Ephrata, WA

Knutson, K. L., and V. L. Naef. 1997. Management Recommendations for Washington's Priority Habitats: Riparian. Washington Department of Fish and Wildlife, Olympia, WA, 181 pp.

Thomas, J.W., C. Maser, and J.E. Rodiek. 1979. Wildlife habitats in managed rangelands-the Great Basin of southeastern Oregon. Riparian Zones. USDA Forest Serv. Gen. Tech. Rep. PNW-80.

United Sates Army Corps of Engineers. 2004. Upper Salmon River Aquatic Ecosystem Restoration Challis, Idaho: Detailed Project Report and Environmental Assessment. Walla Walla District, Walla Walla, WA.WDFW 2015 (PHS)

Washington Department of Fish and Wildlife (WDFW). 2015. Priority Habitats and Species (PHS) Available online at: http://wdfw.wa.gov/conservation/phs/ Olympia, Washington.

Appendix A
Stakeholder Meeting Notes

2020 WHMP August 11th Meeting Notes/Comments on Microsoft Teams

Attendees

Mark Woodward (GCPUD), Joe LeMoine (GCPUD), Nate Dietrich (GCPUD), Melissa Babik (WDFW), Pete Lopushinsky (WDFW), Patrick Verhey (WDFW), Scott Downes (WDFW), Chad Eidson (WDFW), Emily Orling (BOR), Steve Lewis (USFWS)

Minutes

- Mark opened up the meeting with introductions and Team functions
- Joe presented on WHMP outline, history and reported on 2016-2020 WHMP Activities
- Scott D asked about the new Airstrip development and any plans for education about the Airstrip property – Mark to follow up and provide update at next meeting
- Patrick asked about the survival rates of the riparian trees at Airstrip regarding perch, roost and nesting. Joe stated that we have had good survival at the southern planting location and the 2019 plantings have been doing well so far this year.
- Scott D asked about Grant PUD's success of purple loosestrife control @ Buckshot. Nate replied that we have seen a significant decrease in the Purple loosestrife population since Environmental Affairs took on the spraying efforts beginning in 2017.
- Steve Lewis asked about any impacts from COVID on 2020 spraying activities. Mark explained that Grant took a 3-4 week break where staff was kept home until plans were developed to bring crews in safely. Crews have been working all summer performing weed control.
- Patrick wanted to know about how much of the fence at Airstrip was removed after the fire and if Grant plans to replace. He stated that he would like to see more than just carsonite posts to delineate Project boundary. Grant stated fence was destroyed and fire and deemed it wasn't necessary for replacement due to adjacent livestock no longer a threat. However, discussion occurred on the new development and the need to installing something to protect habitat.
- Melissa requested examples of hazard signage at boat launches. Nate will provide to group following the meeting.
- Patrick asked if Grant PUD had any future plans for potential recreation improvements at Airstrip. Mark will follow up with Shannon and get back to group at next meeting.
- Emily asked if plantings were performed internally. Grant responded that internal crews have been completed all planting and maintenance needs
- Melissa asked about vandalism at Sunland Estates affecting the restoration site. Grant PUD shared the history of the site and issues that they have been dealing with. The issue seems to be getting better as education continues to be shared with adjacent landowners.
- Patrick asked about plans/idea on recruitment of inland dune enhancements. Discussions occurred about the BMP "prevent wind erosion". More discussion to follow at future meetings.

- Emily asked for clarification about GCPUD seed inventories. Group agreed that updating that language to clear any confusion should occur in the next update.
- Melissa asked about seed mix information. Grant PUD committed to providing that information at next meeting, but mostly rely on BFI's recommendations based on site conditions.
- Melissa asked about update on waste management at Quilomene Sand Dune. Mark will follow up with Shannon and provide update to group at next meeting. Discussion occurred on water quality testing that was conducted. Pete provided an update that water quality tests didn't identify any issues at that area.
- Scott asked about plan for eagle nest at Cove. He shared it's the most successful nest in the state. Joe shared that it was successful again in 2020 and will continue to be managed per the recommended guidelines.
- Patrick asked about additional site-specific plans for the updated plan. No sites were identified by the group. Grant PUD proposed to continue enhancements at the sites identified in the Plan as there are additional items that can be performed at these sites. Joe suggested that focusing the Plan on BMPs and those BMPs should be used as a guideline Project-wide.
- Melissa asked if cattle were causing any issues at West Bar. Pete stated not at this moment and thought things should be better on that issue.
- Scott shared that he has been working with YTC on amphibious crossing training and wanted to make sure Grant PUD was included in the conversation. Grant PUD stated that they were aware.
- Grant PUD shared that they were having success in wood duck nesting boxes but have yet to find success at mallard nesting tubes and goose nesting tubs. Scott and Chad both stated they were having limited success with waterfowl structures. Scott suggested contacting WDFW Biologist Matt Wilson as a resource. Discussion occurred weather mallard nesting tubes and goose nesting tubs should continue to be in the WHMP. Discussion occurred on if there was a need in the Project for these. All agreed that nesting habitat for mallards and geese was adequate throughout the Project and was probably the reason for structures being unsuccessful.
- Next meeting scheduled for September 8, 2020 at 10:00 on Microsoft Teams. Mark to send out appointment.

Action Items

- Mark - Follow up with Shannon on potential future recreation at Airstrip
- Nate - Share with group GCPUD's hazard signage.
- Mark - Discuss with Tom & Shannon about Airstrip fencing for next WHMP to delineate the GCPUD boundary from the future development.
- Mark - Discuss with Shannon and get an update regarding waste management at Quilomene. (floating toilet)
- Patrick V - follow up with Matt Wilson WDFW's waterfowl Bio.
- Grant PUD to provide group with our native seed mixes from BFI.

Appendix B
WDFW Comments on WHMP

From: Downes, Scott G (DFW)
To: Deb Firestone
Cc: Verhey, Patrick M (DFW)
Subject: RE: Grant County PUD"s draft Wildlife Habitat Management Plan for Review & Comment
Date: Friday, November 13, 2020 3:54:37 PM

Deb,
Looks good. No content edits, but did have a few additional species that would like considered under target species for the various habitats: PHS is WDFW Priority Species and Habitats and SGCN is Species of Greatest Conservation Need for the WDFW State Wildlife Action Plan (SWAP).

--Cliff and Talus. Add both Prairie Falcon (PHS) and Peregrine Falcon (SGCN)
--Shrubsteppe. Add Sage Thrasher (PHS and SGCN)

Thanks!

Scott

Scott Downes
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From: Deb Firestone <Dfirest@gcpud.org>
Sent: Thursday, November 12, 2020 2:05 PM
To: Verhey, Patrick M (DFW) <Patrick.Verhey@dfw.wa.gov>; Downes, Scott G (DFW) <Scott.Downes@dfw.wa.gov>; Lewis, Stephen <Stephen_Lewis@fws.gov>; Lopushinsky, Pete (DFW) <Pete.Lopushinsky@dfw.wa.gov>; Babik, Melissa M (DFW) <Melissa.Babik@dfw.wa.gov>; Eidson, Chad A (DFW) <Chad.Eidson@dfw.wa.gov>; eorling@usbr.gov
Cc: Tom Dresser <TDresse@gcpud.org>; Chris Mott <Cmott@gcpud.org>; Mark Woodward <Mwoodwa@gcpud.org>; Joseph LeMoine <Jlemoine@gcpud.org>; Shannon Lowry <Slowry@gcpud.org>; Ross Hendrick <Rhendr1@gcpud.org>
Subject: Grant County PUD's draft Wildlife Habitat Management Plan for Review & Comment

Good afternoon,

Attached please find for your review and comment is Grant County PUD's Updated Wildlife Habitat Management Plan (WHMP). Under License Article 409 of the Federal Energy Regulatory Commission's license for Priest Rapids Project, Grant PUD is required to update this plan every five years.

Please provide your comments to me by December 12, 2020.

If you have questions regarding this draft updated WHMP, please contact Joseph LeMoine at Jlemoine@gcpud.org.

Thanks!

Deb Firestone

Regulatory Specialist II – Environmental Affairs

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Grant PUD

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