Critical Area Report Fish and Wildlife Habitat Conservation Areas



Preas Parcel City of College Place Washington (This Page Intentionally Left Blank)

Critical Area Report Fish and Wildlife Habitat Conservation Areas Preas Parcel City of College Place, Washington

Submitted By

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Submitted To

Dan Preas 842 SE Vintage Way College Place, Washington

May 2019

Disclaimer

This report provides detailed assessment of Fish and Wildlife Habitat Conservation Critical Areas, and discussion of Wetlands, as defined in the City of College Place Code of Ordinances, Chapter 18.10.600, the Washington Department of Fish and Wildlife Priority Habitats and Species, and Endangered Species Act-listed species and Critical Habitat under the jurisdiction of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, relative to the Parcel proposed for development of a singlefamily residential subdivision. This report was developed using the best available science and does not include assessment of any other Critical Area (i.e. Frequently Flooded Areas, Seismic Hazard Areas, Geologically Hazardous Areas, Erosion Hazard Areas, Critical Aquifer Recharge Areas) as the author is not qualified to assess these areas per the City of College Place Code of Ordinances definition of a "qualified professional".

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Executive Summary

Dan Preas (Applicant) proposes to annex into the City of College Place (City) municipal boundaries a 4.79-acre (1.93 hectare) Parcel of Walla Walla County property landlocked by the City. The surrounding land use is urban and residential development with intermittent greenspaces, such as nearby Lion's Park.

The Applicant is proposing residential development of single-family homes with two alternative plans, one including 10 homes, the other including 11 homes. The homes would be connected to City utilities.

Lot development area for the 10-home alternative is generally approximately 75 feet by 110 feet (22.8 by 33.5 meters), and 75 feet by 100 feet (22.8 by 30.5 meters) for the 11-home alternative, with the lots to the south of the development being somewhat larger for both plans. Lots would be categorized as "interior" per City Code of Ordinances (Code), Title 17.06.440. The area to be developed within each lot would meet the minimum lot size per City Code, Title 17.42.020, although lot sizes would actually be larger including a 35-foot (10.7 meter) riparian buffer and additional undeveloped area.

To satisfy the Critical Area Report requirements of the City Code, Title 18, an assessment of the Applicant's Parcel was conducted using a "valid scientific process" as defined by the City Code for Fish and Wildlife Habitat Critical Areas, with discussion of Wetlands. Peer-reviewed literature was consulted, data were collected at specific locations as defined with a global positioning system, vegetation structure and composition were noted, and state and federal fish and wildlife species and habitats of concern were identified and discussed. Data were collected with these priorities in mind in a replicable, stepwise process.

Species protected under the Endangered Species Act that either presently occur or occurred historically in Walla Walla County are yellow-billed cuckoo, bull trout, and steelhead. Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) include neotropical migratory songbirds, ferruginous hawks, steelhead, rainbow trout, instream habitat, riparian habitat, and wetlands.

Based on review of the City Code and the Garrison Creek corridor habitat assessment within the Parcel proposed for development, it is clear that the WDFW PHS and Walla Walla County-imposed 35-foot (10.7 meter) riparian buffer to protect Fish and Wildlife Habitat Critical Areas is required, and sufficient for the extent and condition of the available habitat and Wetlands. There are some valuable native plant species on the Parcel, but extensive invasive herbaceous species limit the overall buffer quality. Mature, native tree species such as white alder provide adequate stream shade. In addition, chokecherry and willow saplings present a shrub canopy layer, all of which provides the stream with energy inputs, and nesting and foraging opportunity for songbirds and bats.

Following Performance Standards (City Code, Title 18.10.640) and other best management practices (BMP) during construction, impacts would be significantly reduced, and likely avoided altogether. No modification to habitat within the 35-foot (10.7 meter) riparian buffer would occur during construction. The riparian buffer boundary would be treated as the lot boundary, imposing an additional 20-foot (6.1 meter) structural setback between any structure and the edge of the riparian buffer, effectively creating a 55-foot (16.7 meter) riparian buffer. Erosion and runoff BMPs would reduce any potential sediment entering Garrison Creek to an insignificant level. The addition of impervious surfaces from development would be surrounded by maintained lawn and the riparian buffer, as well as the undeveloped east side of Garrison Creek serving as nutrient buffers.

Based on the above considerations, the existing habitat suitability and preference by state and federal species of concern would preclude many of the species from being present in the Garrison Creek corridor. The presence of the 35-foot (10.7 meter) riparian buffer and additional 20-foot (6.1 meter) structural setback would maintain the existing habitat suitability and wetland integrity. Therefore, construction would have no effect on bull trout, steelhead, rainbow trout, or ferruginous hawks or their habitats or wetlands, and insignificant effects on songbirds from ambient noise disturbance. No habitat or wetland mitigation should be required for the proposed development.

This report was drafted using the best available science and repeatable methods by a Certified Fisheries Professional with 20 years' experience in fish and wildlife science, including wetland experience. Wetlands and indicator plant species are discussed in the context of presence, impacts (or lack thereof) and buffers, but wetland soil tests and delineation, or other Critical Areas were not evaluated as a part of this report, consistent with author qualifications, defined by the City Code.

Should the City have any questions or further data requirements, the author, Brad Trumbo, may be contacted at 540-246-2598, or at <u>bradly.trumbo@gmail.com</u>.

Date_____

Bradly A. Trumbo Certified Fisheries Professional Fish and Wildlife Biologist

Date_____

Dan Preas Applicant and Client

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Acronyms and Abbreviations

Applicant	Dan Preas, Parcel Owner
°C	Degrees Celsius
City	City of College Place
Code	City of College Place Code of Ordinance
DPS	Distinct Populating Segment
ESA	Endangered Species Act
°F	Degrees Fahrenheit
GPS	Global Positioning System
MCFCP	Mill Creek Flood Control Project
MCR	Middle Columbia River
NMFS	National Marine Fisheries Service
NWI	National Wetlands Inventory
OHM	Ordinary High-Water Mark
PHS	Priority Habitats and Species
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife

1. Introduction

The purpose of this report is to satisfy the requirements of the City of College Place (City) Code of Ordinances (Code) regarding the evaluation of the existing condition and potential impacts on Fish and Wildlife Habitat Conservation Critical Areas relative to proposed land development. This report addresses the Parcel proposed for subdivision, owned by Dan Preas (Applicant) of 842 SE Vintage Way, College Place, WA.

Per City Code, "[t]he purpose of [Title 18 of the Code] is to designate and classify ecologically sensitive and hazardous areas and to protect these areas and their functions and values, while also balancing the planning goals within the [Growth Management Act], with a special emphasis on reducing urban sprawl, encouraging the availability of affordable housing options, promoting diverse economic development, protecting the reasonable use and economic viability of private property, and enhancing natural resource industries."

Per City Code, Title 18, development on or near to "Critical Areas" must include protective measures. A Critical Area is defined as "...any of the following areas or ecosystems: aquifer recharge areas, fish and wildlife habitat conservation areas, frequently flooded areas, geologically hazardous areas, and wetlands, as defined in RCW 36.70A and [Title 18 of the Code]." The requirements set forth by Title 18 "...shall apply to all lands, all land uses and development activity, and all structures and facilities in the city, whether or not a permit or authorization is required, and shall apply to every person, firm, partnership, corporation, group, governmental agency, or other entity that owns, leases, or administers land within the city."

1.1 Author Qualifications

Bradly A. Trumbo, author of this report, is presently a professional fish and wildlife biologist with expertise in fish and wildlife habitat management and restoration, fish passage, and environmental law compliance. Brad has 20 years of experience across four regions of the United States, beginning in 1999. He earned a Bachelor of Science in Natural Resources Management from the University of Connecticut, Storrs, Connecticut, in 2007, and a Master of Science in Biology/Aquatic Ecology from James Madison University, Harrisonburg, Virginia, in 2010. He also maintains American Fisheries Society, Certified Fisheries Professional (# 3503) status. Appendix A presents a detailed resume.

2. Development Plan

The Applicant proposes to annex into the City municipal boundaries a 4.79-acre (1.93 hectare) Parcel of Walla Walla County property landlocked by the City (Figures 1 - 2). The Parcel contains one existing residence and outbuilding. The surrounding land use is urban and residential development with intermittent greenspaces, such as nearby Lion's Park.

The Applicant is proposing residential development of single-family homes with two alternative plans, one including 10 homes (Figure 3), the other including 11 homes (Figure 4). The homes would be connected to City utilities per City Code, Title 17.

Lot development area for the 10-home alternative is generally approximately 75 feet by 110 feet (22.8 by 33.5 meters), and 75 feet by 100 feet (22.8 by 30.5 meters) for the 11-home alternative, with the lots to the south of the development being somewhat larger for both plans. Lots would be categorized as "interior" per City Code, Title 17.06.440. The area to be developed within each lot would meet the minimum lot size per City Code, Title 17.42.020, although lot sizes would actually be larger including a 35-foot (10.7 meter) riparian buffer and additional undeveloped area.

No development is proposed within 35 feet (10.7 meters) of Garrison Creek on the west, and no development on the east side of the creek (Figures 3 - 4). No riparian habitat is proposed to be removed during construction. Grading plans will include the current maintained grass area only, which is outside of the riparian corridor and 35-foot (10.7 meter) buffer.

The Applicant has not yet submitted an application to the City. The application, Stormwater Management Plan and Drainage and Grading Plan are currently pending the delivery of survey data.

Preas Critical Area Map



0.4mi

Figure 1. Location of the Applicant's Parcel within the City.



Figure 2. Overview of the Parcel proposed for annexation.



Figure 3. Ten-home development plan alternative. Note the west compass direction is actually north.

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Figure 4. Eleven-home development plan alternative. Note the west compass direction is actually north.

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3. Critical Areas Identification

This report fully addresses Fish and Wildlife Habitat Conservation Areas and presents findings on Wetlands in the vicinity of the proposed development. No other Critical Areas are discussed in detail.

Fish and Wildlife Habitat Conservation Areas are defined below, per City Code, as well as Fish Habitat. These definitions set the bounds of the assessment presented in the following sections. Applicable itemized considerations will be specifically addressed herein.

Fish and Wildlife Habitat Conservation Areas —Areas necessary for maintaining species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created as designated by WAC 365-190-080(5). These areas are guided by the Washington Department of Fish and Wildlife's (WDFW) Priority Habitats and Species (PHS) list and include the following:

- Areas with which state or federally designated endangered, threatened, and sensitive species have a primary association;
- Habitats of local importance, including but not limited to areas designated as priority habitat by the department of fish and wildlife, areas that provide important habitat for neotropical migratory songbirds, areas that provide important habitat for wintering birds of prey, and areas that provide unique habitats within the city;
- Naturally occurring ponds under 20 acres (8.1 hectares) and their submerged aquatic beds that provide fish or wildlife habitat, including those artificial ponds intentionally created from dry areas in order to mitigate impacts to ponds;
- Waters of the state, including lakes, rivers, ponds, streams, inland waters, underground waters, salt waters and all other surface waters and watercourses within the jurisdiction of the State of Washington;
- Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity;
- State natural area preserves and natural resource conservation areas; and
- Land essential for preserving connections between habitat blocks and open spaces.

Fish Habitat —Habitat that is used by fish at any life stage at any time of the year, including potential habitat likely to be used by fish that could be recovered by restoration or management and includes off-channel habitat.

3.1 Assessment Description

The assessment of the Applicant's Parcel using a "valid scientific process" as defined by the City Code. Peer-reviewed literature was consulted, data were collected at specific locations as defined by global positioning system (GPS), vegetation structure and composition were identified, and state and federal species and habitats of concern were

identified. Data were collected with the above Critical Area priorities in mind in the following replicable, stepwise process.

- 1. Obtain preliminary development alternatives and any other pertinent information from the Applicant.
- 2. Develop a broad sense of the Parcel location and surrounding landscape and habitat potential. Using aerial imagery, the Parcel was evaluated at a high level for its current condition (within the period of imagery collection).
- 3. Search the National Wetlands Inventory (NWI) for potential wetlands on or near the Parcel.
- 4. Obtain Walla Walla County species list from WDFW.
- 5. Obtain 2018 Critical Area maps for Walla Walla County.
- 6. Obtain 2018 WDFW PHS maps for Walla Walla County.
- 7. Identify local Endangered Species Act (ESA) listed fish and wildlife species and their designated Critical Habitat within the vicinity of the project.
- 8. Conduct a site visit to document the following:
 - a. Extent of the present riparian corridor habitat using a GPS unit.
 - b. Inventory plant species and notable habitat features.
 - c. Identify wetland indicator plant species within the Parcel.
 - d. Document fish and wildlife species incidental to the habitat assessment.
 - e. Note any other features of the Parcel, surrounding land use, and corridor enhancement potential that would contribute to the logic behind this assessment.

The Critical Area assessment was based on the above data, proposed development alternatives, environmental Performance Standards (per the City Code), the existing conditions, and professional judgement relative to the potential effects of the proposed development of the Parcel itself and in the context of the surrounding residential area and historic habitat disturbance.

3.2 Assessment Assumptions

The following assumptions were applied to this Critical Area assessment.

- 1. The final development plans will not differ significantly from those considered in this report.
- 2. The final Stormwater Management Plan, Drainage and Grading Plan, and associated actions will be sufficient to retain any sediment in the event of runoff during construction.
- 3. The construction contractor will implement Performance Standards (best management practices) as required by the City Code.
- 4. The construction contractor will adhere to all required buffers.
- 5. No fill would be placed within required buffers.
- 6. Garrison Creek will not sustain any salmonid (salmon, trout, steelhead) lifehistory form.

- 7. Garrison Creek will remain heavily regulated and screened off at the Mill Creek Division Works, operated by the U.S. Army Corps of Engineers, where Garrison Creek diverges from Yellowhawk Creek, blocking upstream and downstream migration of fishes in perpetuity at the point of.
- 8. Future homeowners will respect habitat buffers identified in this report.
- 9. The urban and residential development spanning the length of Garrison Creek will remain in perpetuity without retroactive structural offset requirements or mitigative habitat restoration.
- 10. The City has relevant, recent Critical Area Reports for other Critical Areas not addressed herein, applicable to the Parcel, as it lies within the same Critical Areas as the immediate surrounding residential development.
- 11. The City has appropriate Code for environmental protection standards for the prevention of chemical spills during construction.

4. Environmental Baseline

The environmental baseline presents the historic and existing conditions of the Parcel and surrounding area, and considers habitat suitability for the extent of Garrison Creek and its corridor for fish and wildlife.

According to Marshall (2013), the City was aptly named and formed in 1892 around the newly founded Walla Walla College, now Walla Walla University. The present 2.6 square-mile (6.7 square kilometers) City area was originally shrub-steppe habitat. The initial 40 acres (16.2 hectares) for Walla Walla University were donated by Dr. Nelson Blalock, who had moved to the area to farm wheat.

The City was incorporated in 1946 and experienced post-World War II growth, and by 1951, the City had nearly doubled in size. In the 1960s, the college grew tremendously, with the City growing another 20 percent in the 1970s. The City has grown approximately 40 percent again since the 1970s to approximately 9,000 residents. The former shrub-steppe landscape has been cleared, cultivated, and developed for more than a century. With water being a limiting factor for planting and communities, development along creeks has been a historic trend, as well as flood risk management since the 1930s in the broader Walla Walla area.

The Applicant's Parcel largely envelopes Garrison Creek, a distributary of Mill Creek with flow regulated by the U.S. Army Corps of Engineers as part of the Mill Creek Flood Control Project (MCFCP). The primary purpose of the MCFCP is to reduce the risk of flooding to the city of Walla Walla and adjacent downstream areas bordering Mill Creek, Yellowhawk Creek, and Garrison Creek, which flow to the west (USACE 2018). Garrison Creek flow is regulated to less than 10 cubic feet per second at all times (USFWS 2007).

As a highly regulated waterway, Garrison Creek is a silt-bottom slough. Within the Parcel boundaries, it has mild meanders and is largely characterized by runs and steep banks. A lack of floodplain connectivity reduces the type, size, and amount of energy

inputs, but typical fall deciduous tree senescence likely contributes an acceptable amount of energy to sustain aquatic invertebrates as a food source for fish and wildlife.

Due to the lack of flow and instream habitat complexity, summer water temperature is expected to exceed 70 degrees Fahrenheit [(°F) 21 degrees Celsius (°C)], which has been largely accepted as a general maximum thermal threshold for salmonids, but the present vegetation structure on the Parcel provides shade. Additional wildlife benefits are provided by the narrow Garrison Creek corridor within the Parcel and are discussed below.

4.1 Data Collection and Results

Using a GPS unit, point data were collected approximately every 50 – 100 feet (15.2 – 30.5 meters) by walking the outer boundary of the existing riparian corridor (Figure 5). Distance between points varied with relative change in habitat or terrain to capture the appropriate extent of the riparian corridor and vegetation structure. A small bridge exists between points 1 and 7. The gap between points 7 and 8 spans the edge of an existing shed along the creek.

A number of native and invasive plant species were identified with patchiness throughout the riparian corridor. Table 1 presents the full list of plant species identified, segregated into native and invasive species. Wetland indicator status is presented in Table 1 for these species as well. Indicator status is defined as follows.

- Obligate Wetland Almost always occur in wetlands
- Facultative Wetland Usually occur in wetlands, but may occur in non-wetlands
- Facultative Occur in wetlands and non-wetlands
- Facultative Upland Usually occur in non-wetlands, but may occur in wetlands
- Obligate Upland Almost never occur in wetland

Note that wetland indicator status does not confirmation the presence of a wetland. If a Facultative Wetland species is noted 10 feet (3 meters) from the creek, this does not mean the emergent wetland extends this far upland.

Preas Critical Area Map



100ft

Figure 5. Data collection points and approximate location of Garrison Creek in the riparian corridor. Note that the aerial imagery predates the habitat data collection effort and may not represent the present condition.

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Woody Species								
Common Name	Scientific Name	Wetland Indicator						
Black Locust	Robinia pseudoacacia	Facultative Upland						
Black Walnut	Juglans nigra	Upland						
Black Willow	Salix nigra	Facultative Wetland						
Blue Elderberry*	Sambucus cerulea	Facultative Upland						
Chokecherry*	Prunus virginiana	Facultative						
Ornamental Cherry	Prunus spp.							
Ornamental Crab Apple	Malus spp.							
Himalayan Blackberry	Rubus armeniacus	Facultative						
Redosier Dogwood*	Cornus sericea	Facultative Wetland						
Silver Maple	Acer saccharinum	Facultative						
White Alder*	Alnus rhombifolia	Facultative Wetland						
Herbaceous Species								
Common Name	Scientific Name	Wetland Indicator						
Bur Chervil	Anthriscus caucalis							
Canada Thistle	Cirsium arvense	Facultative Upland						
Common Dandelion	Taraxacum officinale	Facultative Upland						
Field Horsetail*	Equisetum arvense	Facultative						
Forget-Me-Not (Stickseed)	Hackelia floribunda	Facultative Upland						
Hairy Whitetop	Lepidium appelianum	Upland						
Jewelweed	Impatiens capensis	Facultative Wetland						
March Marigold	Caltha palustris	Obligate						
Purple Deadnettel	Lamium purpureum							
Reed Canary Grass	Phalaris arundinacea	Facultative Wetland						
Rough Bedstraw	Galium asprellum							
Tall Fescue	Festuca arundinacea	Facultative Upland						
Yellow Flag Iris	Iris pseudacorus	Obligate						
* Native Species								

Table 1. List of plant species identified during habitat assessment and associated wetland indicator status.

Vegetation Structure

Terrestrial vegetation structure included three distinct layers: herbaceous (ground layer), shrub-canopy (shrubs, saplings, and understory trees), and canopy (mature trees). The herbaceous layer was comprised largely of invasive species to include the lawn or pasture grass, tall fescue, Himalayan blackberry, and broadleaf weeds like dandelion and purple deadnettle. Canopy cover ranged from approximately 50-100 percent among data collection points, but was 100 percent over Garrison Creek throughout the Parcel.

The shrub-canopy layer was comprised of chokecherry and willow saplings, a few smaller black locust and black walnut, and redosier dogwood in some areas. The canopy layer was comprised of large, mature black willow, white alder, and a few black locust. The area between points 8 - 11 (Figure 5) provided excellent native species cover in the shrub-canopy and canopy layers with dense chokecherry and large white alder (Figure 6). Redosier dogwood and blue elderberry were identified between points 13 - 16 (Figures 5, 7, and 8).

Stream and wetland vegetation were minimal and varied. The northeast corner between points 1 – 3 has a gently sloped bank with a mix of Canada thistle and field horsetail, a facultative wetland indicator, meaning it can occur basically anywhere (Figures 5, 9, and 10). This is the largest contiguous area of facultative indicator plants and the only observed occurrence of field horsetail. Additional wetland plants observed include yellow-flag iris (wetland obligate), which occurred only below the ordinary high-water mark [OHM (Figure 11)], and reed canary grass (facultative wetland), which occurred in multiple, small patches around the OHM, both species characteristic of their indicator status.



Figure 6. Large, native white alder canopy trees and chokecherry shrub-canopy between data points 8 - 11.



Figure 7. Native redosier dogwood between data points 13 – 16.



Figure 8. Native blue elderberry between data points 13 – 16.



Figure 9. Area of native field horsetail and invasive Canada thistle between data points 1 - 3.



Figure 10. Native field horsetail between data points 1 - 3.



Figure 11. Yellow flag iris growing below the OHM in Garrison Creek.

Habitat Quality

While the Garrison Creek corridor within the Parcel is comprised of many invasive plant species, the occurrence of native species and the habitat they provide is moderately suitable. The native species within the specific areas identified above provide a variety of habitat opportunities.

Large canopy trees like the white alder and cottonwood (*Populus trichocarpa*) provide unique opportunity for cavity-nesting songbirds (Sedwick and Knopf 1986) and bat roosting (Humphrey 1975; Hayes and Adam 1996; Swystun et al. 2007) as limbs die back and fall, exposing cracks in the bark and hollow heartwood areas that have decayed over time. Additionally, exposed, decayed wood and bark provide insect forage for songbirds.

Similarly, the shrub-canopy layer provides nesting and foraging opportunities for species relying on the lower shrubs along waterbodies, such as yellow warbler (*Setophaga petechia*). As aquatic insects hatch from the creek, they are likely to fly up into the surrounding shrub layer where they may provide forage for birds. Soft soils and leaf litter from woody vegetation support a variety of insect forage for songbirds as well [e.g. American robin (*Turdus migratorius*) and spotted towhee (*Pipilo maculatus*)]. While many nut and fruit tree varieties on the Parcel are non-native, they do provide songbird and small mammal food sources.

Finally, the vegetation structure provides quality shade and energy sources for Garrison Creek. Little in-stream structure is present, but several undercuts below tree roots provide potential fish refugia, as well as low-growing, overhanging vegetation (Figure

12). Terrestrial plant inputs provide energy for aquatic macroinvertebrates, as well as terrestrial insect forage for fish. While summer temperature, regulated flow, and silty substrate are unsuitable for salmonids, other native fishes may occupy Garrison Creek.



Figure 12. Example of vegetation overhanging the creek and wood and roots, providing terrestrial food and cover for fishes.

5. Fish, Wildlife, and Habitat Inventory

Data collection on the presence of ESA-listed species and Critical Habitats, and WDFW PHS returned several occurrences overlapping with the Parcel as described below. Critical Areas identified in the bulleted list in Section 3 as defined in the City Code that apply to the Parcel are as follows and captured in context below: 1) Areas with which state or federally designated endangered, threatened, and sensitive species have a primary association; 2) Habitats of local importance, including but not limited to areas designated as priority habitat by WDFW, areas that provide important habitat for neotropical migratory songbirds, areas that provide important habitat for wintering birds of prey, and areas that provide unique habitats within the city; 3) Waters of the state, including lakes, rivers, ponds, streams, inland waters, underground waters, salt waters

and all other surface waters and watercourses within the jurisdiction of the State of Washington.

5.1 ESA-listed Species and Critical Habitat

A query made with the U.S. Fish and Wildlife Service (USFWS), 21 April 2019, suggests that ESA-listed Threatened bull trout (*Salvelinus confluentus*) and Threatened western yellow-billed cuckoo (*Coccyzus americanus*) are associated with Garrison Creek and the City (Table 2). Additionally, ESA-listed Threatened Middle-Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) under the jurisdiction of the National Marine Fisheries Service (NMFS) occupy the Walla Walla Basin and Mill Creek and are assumed to be associated with Garrison Creek (Table 2). While the USFWS query returned no Critical Habitat occurrences, Garrison Creek is assumed MCR steelhead Critical Habitat.

Species	Listing Status and Reference	Critical Habitat
Middle Columbia River Steelhead (<i>Oncorhynchus</i> <i>mykiss</i>)	Threatened 01/05/06 71 FR 834	Designated 07/10/00 65 FR 42422
Bull Trout (Salvelinus confluentus)	Threatened 06/10/98 63 FR 31647	Designated 09/02/05 – 70 FR 56211; 10/18/10 – 75 FR 63898
Western Yellow-Billed Cuckoo (Coccyzus americanus)	Threatened 10/3/14 79 FR 59991	None 11/12/2014 79 FR 67154

Table 2. ESA-listed species, species status, listing dates, and Critical Habitat designations with associated Federal Register publications.

Middle Columbia River Steelhead

On March 25, 1999, NMFS listed MCR steelhead Threatened under the ESA. The listing was updated on April 14, 2014. Protective regulations for MCR steelhead were issued under the ESA, Section 4(d), June 28, 2005 [70 Federal Register (FR) 37160].

The spawning range of the MCR steelhead Distinct Population Segment (DPS) extends over an area of approximately 35,000 square miles (90,650 square kilometers) in the Columbia plateau of eastern Washington and eastern Oregon (Figure 13). The MCR steelhead DPS includes all naturally-spawning populations in streams within their range, which extends from above Wind River in Washington and Hood River in Oregon, upstream to and including the Yakima River in Washington, but excluding steelhead from the Snake River Basin (64 FR 14517). As defined, the MCR steelhead DPS does not include the resident form (rainbow trout), which co-occur with these steelhead populations.

Steelhead typically smolt at 2 years, and spend one to two years in saltwater before reentering freshwater. Adults may reenter freshwater up to a year before spawning. Steelhead originating upstream of The Dalles Dam are termed summer-run fish (Reisenbichler et al. 1992) which enter the Columbia River from June through August. Adult steelhead ascend mainstem rivers and tributaries throughout the winter, spawning in late winter and early spring.



Figure 13. Distribution map of Middle Columbia River steelhead.

Walla Walla Basin steelhead are most likely to spawn between February and June, with incubation typically between April and July. Fry emergence typically occurs between May and mid-July. Steelhead exhibit a complex life history, and can be either anadromous (migratory) or freshwater residents, and can yield offspring of the opposite form.

Steelhead prefer a temperature range between $50 - 55.4^{\circ}F$ ($10 - 13^{\circ}C$), while the upper lethal limit for steelhead is $75^{\circ}F$ [23.9°C (Spence et al. 1996)].

Bull Trout

The USFWS listed bull trout as a Threatened species on June 10, 1998, and they are currently listed as threatened throughout their range in the United States. In the Columbia River Basin, bull trout historically were found in about 60 percent of the basin, but now occur in less than half of their historic range (Idaho Conservation League 2019). Populations remain in portions of Oregon, Washington, Idaho, Montana, and Nevada.

Bull trout require water temperatures below 59°F [15°C for juvenile and adult survival (Wydoski and Whitney 2003)]; therefore, their populations are located largely in the upper headwaters such as the Mill Creek Watershed and South Fork Walla Walla River (Figure 14). Individual bull trout may exhibit resident or migratory life history strategies. Habitat components influencing bull trout distribution and abundance include water temperature, cover, channel form and stability, valley form, spawning and rearing substrates, and migratory corridors (with resting habitat). All life history stages of bull trout are associated with complex forms of cover, including large woody debris, undercut banks, boulders, and deep pools.

The Walla Walla Basin is comprised of five local bull trout populations within two core areas. Two local populations are located in the Walla Walla River Sub-basin (Walla Walla River Core Area). Each local population in the Walla Walla Basin has a resident and migratory (fluvial) component (Anglin et al. 2012). Fish exhibiting the fluvial life history trait will migrate to larger streams or rivers as early as the subadult stage.

Evidence in Barrows et al. (2016) suggests that Walla Walla Basin bull trout migrate into the mainstem Columbia River where they overwinter and return to the headwaters seeking thermal refuge and spawning in the fall; September being the peak spawning month. Both subadult and adult bull trout use the lower Walla Walla River and Mill Creek during the fall, winter, and spring for rearing and overwintering (Anglin et al. 2012).

Juvenile bull trout rear from one to four years before migrating downstream to mainstem river habitats as subadults. Bull trout normally reach maturity in four to seven years and may live longer than 12 years.



Figure 14. Walla Walla Basin bull trout distribution. FMO is defined as foraging, migration, and overwintering habitat.

Bull trout are opportunistic feeders. Their diet requirements vary depending on their size and life history strategy. Resident and juvenile bull trout prey on insects, zooplankton, and small fish. Adult migratory bull trout mainly eat other fish. Adult spawning, egg incubation, alevin, and fry emergence do not occur in Garrison Creek as spawning occurs many miles upstream in areas suited for bull trout spawning.

Yellow-Billed Cuckoo

Western yellow-billed cuckoo was listed as Threatened under the ESA in October, 2014. Critical habitat was also proposed for designation in August 2014, but not in Washington.

The yellow-billed cuckoo is a medium-sized brown bird, about 12 inches (30.5 centimeters) long and weighing approximately 2 ounces (56.7 grams). The bird's most notable physical features are a long, boldly-patterned, black and white tail, and an elongated, down-curved bill that is yellow on the bottom.

Although many species of cuckoos are brood parasites (laying their eggs in other birds' nests), the yellow-billed cuckoo usually builds its own nest and raises its own young. The cuckoo has a distinct call. The call is a series of clucks becoming slower and

running down the scale at the end. The yellow-billed cuckoo is sometimes called the raincrow or stormcrow, because it often calls before a rainstorm.

Yellow-billed cuckoo are riparian forest obligates, making forested riparian and wetland habitats critical to their persistence; however, there is some debate over their preferred vegetation structure. Buffington et al. (1997) suggest they prefer mid- and late-successional stands over early-successional, while Hughes (1999) directly and completely contradicts this, stating that yellow-billed cuckoo prefer early-successional stands. One point of consistency is that in the western U.S., yellow-billed cuckoo nesting is strongly associated with large [(usually exceeding 99 acres, or 40 hectares in size), wide [over 328.1 feet (100 m)] patches of low to mid-elevation riparian habitat dominated by cottonwood, willow, and a mix of other species (Halterman 1991; Wiles and Kalasz 2017).

5.2 State PHS

Priority Habitats and Species are considered priorities for conservation and management. Priority species require protective measures for their persistence due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance. Priority habitats are those habitat types or elements with unique or significant value to a diverse assemblage of species. A priority habitat may consist of a unique vegetation type or dominant plant species, a described successional stage, or a specific structural element.

The WDFW lists freshwater wetlands, instream, and riparian habitats as PHS in Walla Walla County. In Addition, WDFW lists ferruginous hawk (*Buteo regalis*), steelhead, and rainbow trout as PHS in the vicinity of the proposed development (Figure 15). While steelhead/rainbow trout are discussed above in the ESA section, ferruginous hawk habitat and behaviors are summarized in Richardson et al. (2004). They are obligate grassland or desert shrub nesters that frequent shrub-steppe habitat in the channeled scablands, as well as juniper-savannah areas of the Columbia Basin. Most nests are found in areas with a high proportion of grassland, shrubland, and juniper forest and a low proportion of wheat cropland.

Ferruginous hawks are sensitive to disturbance; pairs may abandon nests even when mildly disturbed during nest building or incubation (1 March through 31 May). They tend to nest farther from human habitats than other closely related species.

Ferruginous hawks prey largely on small- to medium-sized mammals, such as pocket gophers. Their home ranges average approximately 2.7 square miles (6.9 square kilometers) but may vary with the availability of food and suitable habitat.



Figure 15. WDFW-listed PHS coinciding with the proposed development site. The purple dot to the left of the species list represents the development site (open area to the left of the dot) and Garrison Creek.

5.3 Neotropical Migratory Songbird Habitat

Neotropical migratory songbirds are those birds that spend summers and breed in the United States and Canada, and overwinter in Mexico, Central America, South America or the Caribbean islands (Audubon Society 2019a; Smithsonian 2019). There are 340 species of neotropical migratory bird species, several of which the USFWS has identified within the vicinity of the City: Olive-sided Flycatcher (*Contopus cooperi*); Golden Eagle (*Aquila chrysaetos*); Brewer's Sparrow (*Spizella breweri*); and Lewis's Woodpecker (*Melanerpes lewis*). In addition to the neotropical migratory birds, the USFWS has identified the Tricolored Blackbird (Agelaius tricolor) as birds of conservation concern within the area (Appendix B).

These species may occupy a variety of habitats within the vicinity of the City; however, Lewis's woodpecker (Cornell 2019) and the olive-sided flycatcher (Audubon Society 2019) seek coniferous forest and higher elevation. The tricolored blackbird is not likely to occur in the area based on estimated distribution (Cornell 2019). Brewer's sparrow (Cornell 2019) and golden eagles (Audubon Society 2019b) associate with shrubsteppe and plains habitats in surrounding areas, but are not likely found within the City.

A wide variety of other songbird species occupy the City limits, some of which benefit from the edge habitats created by the Garrison Creek corridor and urban landscaping. Ornamental fruiting trees such as crabapple provide a staple food source for the American robin as these summer insectivores turn frugivores during the winter months. Similarly, ornamental and native varieties of mountain ash (*Sorbus spp.*) provide cedar waxwings (*Bombycilla cedrorum*) with a winter food source. Finally, ornamental flowering plants also provide a variety of benefits to pollinator insects and hummingbirds (*Trochilidae spp.*).

While no white-tailed deer (*Odocoileus virginianus*) sign was identified during the site visit, white-tails adapt to and thrive in urban edge habitats utilizing corridors such as Garrison Creek for food, shelter, and migration areas.

5.4 Wetlands

This report does not include a complete wetland assessment or delineation, but the National Wetlands Inventory identifies the entirety of Garrison Creek as an emergent wetland, consistent with the author's site description and plant identification (Figure 16). As mentioned above, wetland indicator species such as jewelweed and yellow flag iris occur in association with Garrison Creek within the Parcel. None of the species identified as "obligate wetland" or "facultative wetland" indicators occurred greater than 3.3 feet (1 meter) from the OHM.

Wetlands would not be disturbed by development. Development would be limited to the west side of Garrison Creek (Figures 3 - 4) and outside of the riparian area. Further discussion of wetland avoidance and protective buffers is presented below.

5.5 Habitat Conservation Areas and Buffers

Given ferruginous hawks are extremely unlikely to nest in an urban environment (Richardson et al. 2004), the only Fish and Wildlife Habitat Conservation Area within 200 feet (61 meters) of the proposed development site is the Walla Walla County (2018) and WDFW (1997)-specified 35-foot (10.7 meter) buffer along Garrison Creek to maintain a riparian corridor for fish and wildlife (see Table 8, waterway code 3a, in City Code Title 18.10.650). Retaining a vegetated riparian buffer would increase shade and reduce stream temperature, reduce impervious surface, filter sediments and other pollutants, contribute to terrestrial food sources, recruit large woody debris (WDFW 2009), and protect wetlands.

Figure 17 represents the 35-foot (10.7 meter) riparian buffer around the centerline of Garrison Creek. A Professional Wetland Scientist has not conducted a wetland assessment or delineation; however, based on the author's experience and professional judgement of the present condition of the wetland, the 35-foot (10.7 meter) riparian buffer is sufficient to protect Garrison Creek wetlands within the Parcel (see Table 4 in City Code Title 18.10.340).

Figure 17 also presents an additional 20-foot (6.1 meter) buffer to show the nearest extent to the 35-foot (10.7 meter) buffer boundary that a structure may be built on a lot. While lots would extend to the Parcel boundary on the east side of Garrison Creek, the 35-foot (10.7 meter) riparian buffer is being treated as the lot boundary for development purposes. This represents a total of 55 feet (16.7 meters) from the stream to the edge of a structure on the west side of Garrison Creek. No development would occur on the east side of Garrison Creek. Therefore, fish and wildlife, and wetland areas would be further protected from development and runoff.

It should be noted that Garrison Creek is roughly sketched on the map based on the GPS point data collected, and did not agree perfectly with available digital maps; therefore, buffer boundaries are approximate.

The buffers presented in Figure 17 represent Fish and Wildlife Conservation Area buffers only; however, as noted above, the author finds these buffers appropriate to protect the Garrison Creek emergent wetlands.



Figure 16. National Wetlands Inventory identification Garrison Creek as an emergent wetland within the Applicant's Parcel.

Preas Critical Area Map



100ft

Figure 17. Approximate 35-foot (10.7 meter) Fish and Wildlife Conservation Area buffer (blue polygon) required by WDFW PHS, and 55-foot (16.7 meter) buffer (orange polygon) representing the additional 20-foot (6.1 meter) structure setback from the 35-foot (10.7 meter) buffer edge. These polygons are rough estimates calculated in ArcMap. Buffers would be surveyed on the ground prior to development and sufficient to protect Garrison Creek emergent wetlands.

CRITICAL AREA REPORT: DAN PREAS

6. Development Impacts and Impact Avoidance

This section considers fish and wildlife species and habitat presence and importance presented above in Section 5 relative to any potential development impacts from physical disturbance to species or habitat. Impacts may be avoided or minimized by adhering to the envrionmental Performance Standards per the Code, also discussed in this section. Wetlands were determined sufficiently protected by the buffers defined in Section 5.5 and not discussed here.

6.1 Project-Specific Impacts

Noise Disturbance and Songbirds

The operation of heavy equipment when grading lots and compacting pads for homes can deter terrestrial species from occupying the Garrison Creek corridor within the vicinity of the Parcel. It is likely that initial disturbance could cause songbird avoidance of the area, but birds have been shown to habituate to noise disturbance over time, changing call frequency (duration and pitch) and predator avoidance techniques (Brumm and Todt 2002; Brumm 2004; Kirschel et al. 2009; Blumstein 2014). Some birds like yellow-billed cuckoo are highly sensitive to human disturbance and avoid the disturbance altogether, moving to adjacent suitable habitat areas.

Songbirds (Passerines) and hummingbirds present within the urban landscape are likely generally habituated to high levels of ambient noise, and would be unlikely disturbed by construction activities beyond the baseline condition, particularly after the initial day or two of equipment operation, and given the riparian buffer. Peak nesting occurs between April and August for most songbirds and the City of Portland (2017) recommends a 30-foot (9.1 meter) nest buffer for songbirds and hummingbirds, which would be in effect during construction encompassed by the 35-foot (10.7 meter) riparian buffer. The effects of disturbance would be insignificant.

Yellow-billed cuckoo have not been documented in southeast Washington for decades. Furthermore, their obligation to large, wide tracts of cottonwood riparian forest makes the Garrison Creek corridor entirely unsuitable for yellow-billed cuckoo. They are unlikely to inhabit the area. Therefore, disturbance and development would have no effect on yellow-billed cuckoo.

According to Richardson et al. (2004), ferruginous hawks avoid human disturbance and nest at significantly greater distances from humans than other related raptor species. This consideration, coupled with their shrub-steppe and pastureland habitat preference suggests that ferruginous hawks would not occur within the City. Therefore, disturbance and development would have no effect ferruginous hawks.

Erosion and Runoff

Construction would temporarily increase the amount of exposed, disturbed soil within the Parcel. Although the Stormwater and Grading Management Plans for the proposed

development are in preparation, the gentle slope of the Parcel and implementation of best management practices like the placement of silt fence and straw bales significantly reduce the risk of stormwater runoff during construction contributing a measurable sediment input to Garrison Creek.

While the addition of up to 11 more homes would increase potential runoff, the proposed development represents a fraction (0.34 percent) of the extensive urban development within the City, and along the entirety of Garrison Creek. Residential lawn and the 35-foot (10.7 meter) riparian buffer would allow stormwater to percolate into the soil and provide a nutrient buffer before any water would enter Garrison Creek.

Given the present, impacted condition of Garrison Creek and the shallow aquifer/water table, and the ability to effectively manage stormwater runoff during construction, construction disturbance and the additional impervious surface from the proposed development would have insignificant effects on instream, riparian, or wetland habitats.

Chemicals and Toxins

With the use of heavy equipment comes the potential for a fuel or lubricant spill. To minimize the risk of spills, all equipment fueling and maintenance should be conducted in specified staging areas at least 100 feet from Garrison Creek. Emergency spill kits containing absorbent mats should be available onsite. A spill is unlikely, but should one occur, preparedness will reduce the duration and impact.

Given the unlikely event and ease of preventing a chemical spill, the proposed development would have insignificant effects on instream, riparian, or wetland habitats. The City Code is assumed to provide additional appropriate best management practices to further minimize and avoid effects.

Effects on Fish

While Walla Walla County (2018) provides a map of bull trout migration corridors and steelhead "presumed presence" to include Garrison Creek within the City, Garrison Creek is wholly unsuitable for these species. Salmonids of all life history stages require cold water (particularly bull trout), gravel and cobble substrates, and a variety of habitat features to include side channels, floodplain connectivity, varying flow regime, and a relatively even riffle-run-pool sequence. Garrison Creek provides none of this. Of more importance, Garrison Creek is intentionally screened where it diverts from Yellowhawk Creek to prevent fish migration into the creek.

Summer steelhead of any life history stage entering Garrison Creek from the Walla Walla River are unlikely to be successful. It is possibile that rearing juveniles could enter from the Walla Walla River to find food sources and lower flows April-June; however, it is extremely unlikely that these fish would migrate upstream, particularly far enough to encounter the Parcel proposed for development.

Therefore, the propose development would have no effect on bull trout, steelhead, rainbow trout, or their suitable or designated critical habitats.

6.2 Cumulative Impacts

Considering the proposed development would comprise 0.34 percent of the overall developed area within the City, this action does not contribute a significant impact to habitat above the baseline or when considered with future development actions or land management actions within the present City footprint.

Based on professional judgement and assumptions presented in this report, mitigation would not be required for the proposed development. Per City Code, Title 18.10.105, "No mitigation shall be required for land that has ceased to function as, or otherwise fails to meet the definition of, a critical area or critical area buffer, as determined by a qualified professional, without regard to cause; provided that the applicant is not responsible for the loss or defunct status of the critical area in question through unlawful means."

The area of the Parcel proposed for development is currently open lawn or pasture grass that does not provide important fish or wildlife habitat. The 35-foot (10.7 meter) Fish and Wildlife Habitat Critical Area buffer would ensure that any suitable wetland, instream, or riparian habitat on the Parcel would remain intact and functioning.

6.3 Performance Standards

Environmental Performance Standards applicable to the proposed development are essentially best management practices identified in the City Code, Title 18.10.640. Performance Standards serve as impact avoidance and minimization measures. Those applicable to the proposed development and Parcel are described below. Additional Performance Standards that may apply can be found in City Code Title 17.51.

- A. Alterations Shall Not Degrade the Functions and Values of Habitat. A habitat conservation area may be altered only if the proposed alteration of the habitat or the mitigation proposed does not degrade the quantitative and qualitative functions and values of the habitat. All new structures and land alterations shall be prohibited from habitat conservation areas, except in accordance with this chapter.
- B. Mitigation plans and performance standards shall be developed consistent with Section 18.10.105 of this chapter.
- C. Non-Indigenous Species Shall Not be Introduced. No plant, wildlife, or fish species not indigenous to the region shall be introduced into a habitat conservation area unless authorized by a state or federal permit or approval.
- D. Contiguous Corridors are the Preferred Result from Mitigation. Mitigation sites shall try to achieve contiguous functioning habitat corridors in accordance with a mitigation plan that is part of the critical area report to minimize the isolating effects of development on habitat areas, so long as mitigation of aquatic habitat is located within the same aquatic ecosystem as the area disturbed.

- E. Approvals of Activities may be Conditioned. The director shall condition approvals of activities allowed within or adjacent to a habitat conservation area or its buffers, as necessary to minimize or mitigate any potential adverse impacts. Conditions shall be guided by best available science and may include:
 - 1. Establishment of buffer zones;
 - 2. Preservation of critically important native vegetation and/or habitat features such as snags and downed wood;
 - 3. Limitation of access to the habitat area, including fencing to deter unauthorized access;
 - 4. Seasonal restriction of construction activities;
 - 5. Establishment of a duration and timetable for periodic review of mitigation activities; and
 - 6. Requirement of a performance bond, when necessary, to ensure completion and success of proposed mitigation, pursuant to Section 18.10.120.
- F. Mitigation and Equivalent or Greater Biological Functions. Subject to Section 18.10.105 of this chapter, mitigation of alterations to habitat conservation areas shall achieve equivalent or greater biologic and hydrologic functions and shall include mitigation for adverse impacts upstream or downstream of the development proposal site. Mitigation shall address each function affected by the alteration to achieve functional equivalency or improvement on a per function basis.
- G. Approvals and the Best Available Science. Any approval of alterations or impacts to a habitat conservation area shall be guided by best available science.
- H. Buffers. (subitems not included here)
- I. Signs and Fencing of Habitat Conservation Areas.
 - 1. Temporary Markers. The outer perimeter of the habitat conservation area or buffer and the limits of those areas to be disturbed pursuant to an approved permit or authorization shall be marked in the field in such a way as to ensure that no unauthorized intrusion will occur and is subject to inspection by the director prior to the commencement of permitted activities. This temporary marking shall be maintained throughout construction and shall not be removed until permanent signs, if required, are in place.

7. Recommendations

Based on the development alternatives, the author cannot identify any significant impact or change in the existing wetland, instream, or riparian habitats from the proposed development. Therefore, the following recommendations are wholly discretionary on behalf of the Applicant and would promote ecosystem integrity by controlling invasive plant species.

- Planting native vegetation: Planting white alder, coyote willow (*Salix exigua*), and redosier dogwood whips along the OHM between October and March would allow these species to break dormancy and root quickly, adding valuable native riparian plant species to the Garrison Creek corridor. Whips can be cut from plants onsite and planted on 4-foot (1.2 meter) centers with hand tools or by pushing 3 to 4 feet (0.9 – 1.2 meters) into the soil to ensure the whips contact water. Whips should be approximately thumb size in diameter.
- 2. Control invasive plants within the Garrison Creek corridor: A wide variety of invasive plants were identified in the Parcel, likely resulting from the surrounding urban landscape. Hand removal of species like Canada thistle (in the rosette stage) and blackberry starts is most effective, and a permissible action without further review within the 35-foot (10.7 meter) riparian buffer per City Code, Title 18.10.085. While tall fescue is not a native grass species, maintaining the grass would encourage competition with invasive broadleaf weeds and blackberry.

8. References

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Appendix A

Resume

Bradly Trumbo Fish and Wildlife Biologist Certified Fisheries Professional Bradly A. Trumbo 905 McKay Alto Rd Waitsburg, WA 99361 (540) 246-2598 bradly.trumbo@gmail.com

EDUCATION

- James Madison University, Harrisonburg, Virginia Master of Science in Biology/Aquatic Ecology, December 18th, 2010
- University of Connecticut, Storrs, Connecticut Bachelor of Science in Natural Resources Management, May 6th, 2007

EXPERIENCE

US Army Corps of Engineers, Walla Walla District, Fish and Wildlife Biologist (0401), November 2015 to Present (GS 12); AND Wildlife Biologist (0486) May – September 2019 (GS12)

I serve as the Biology Team Leader for the Environmental Compliance Section and Wildlife Team Leader for the Walla Walla District. Duties include workload assignment and management among 5 Environmental Compliance Biologists and technical oversight for 4 Wildlife Biologists, serving as the Environmental Compliance technical point of contact for Endangered Species Act (ESA) matters, habitat restoration, and I am responsible for team quality control/quality assurance.

Habitat Duties (past and present)

- Facilitate the Clarkston Natural Resources Management (NRM) contract for managing the District's eastern HMUs 2016-2018.
- Monitor contractor progress, inspect plantings, and conduct on the ground HMU inspections to identify and locate noxious weeds for control.
- Develop habitat management plans, goals, processes, and timeframes for invasive species control, grassland reseeding, and tree and shrub restoration, including site selection and prioritization for NRM and Planning ecosystem restoration projects.
- Review treatment and implementation options for controlling invasive species such as Dreissenid mussels and noxious weeds.
- Review toxicology information to develop thresholds and analyze effects for aquatic and terrestrial pest management programs.
- Plan stream and riparian native plant, habitat, and ecosystem restoration projects to benefit native and ESA-listed plants, fish, and wildlife.
- Facilitate a \$3.9 million contract for the final Lower Snake River Fish and Wildlife Compensation Plan habitat planting.
- Serve as Team Lead and mentor fellow biologists on projects such as watershed studies and ecosystem restoration.

- Develop planting, mitigation, and adaptive management and monitoring plans for restoration projects.
- Conduct wetland assessments, delineations, and draft associated reports.

Research Duties

- Draft study designs, review research proposals, and supervise research to evaluate fish passage and other projects as needed.
- Provide critical review of policy documents, draft research proposals, research results, data, and reports and manuscripts for publication from contractors and fellow biologists.
- Conduct literature reviews and statistical exploration/analyses of data to draft research study designs, technical reports, and manuscripts for publication, and deliver technical presentations to a variety of professional and public, multidisciplinary audiences.
- Inspect for and implement biological design criteria as defined by the Corps and the National Marine Fisheries Service (NMFS) policies for salmonid and lamprey passage improvements to fish passage structures, pre- and post-construction.
- Directly collaborate with regional agencies and stakeholders (NMFS, US Fish and Wildlife Service, Bonneville Power Administration, Idaho Fish and Game, Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, US Department of Energy, Nez Perce Tribe, Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, Columbia River Inter-Tribal Fish Commission) on proposed research reviews and habitat restoration opportunities through the District Planning Branch.

US Army Corps of Engineers, Walla Walla District, Fishery Biologist (0482), September 2011 to November 2015 (GS 11-12)

LSU Agriculture Center, Faculty Fisheries Research Associate, January – August 2011 *Position equivalent to Federal GS 09-11*

USDA Forest Service, Biological Science Technician (Fisheries), May – October 2009, 2010 (*GS 03*)

James Madison University's Edith J. Carrier Arboretum, December 2007 – April 2009, Certified Arborist Position equivalent to Federal GS 05

• Performed tree care, forest management, and invasive species control.

Connecticut Department of Environmental Protection, Fisheries Technician, April – **December 2007** *Position equivalent to Federal GS 07*

• Supervise and conduct field data collection to include electrofishing, seining, phytoplankton sampling, and creel surveys, and laboratory analysis of sediment samples, fish scale aging, and phytoplankton counts and identification.

Virginia Department of Game and Inland Fisheries, Natural Resource Specialist, November 2001 – August 2004 *Position equivalent to Federal GS 07*

• Assist District Fish and Wildlife Biologists with fishery and habitat management, biggame check stations, black bear data collection, and fire-fighting.

Virginia Department of Game and Inland Fisheries, Fisheries Technician, September 1999 – November 2001 *Position equivalent to Federal GS 05*

• Assist District Fish and Wildlife Biologists with fishery and habitat management, biggame check stations, black bear data collection, and fire-fighting.

AWARDS and CERTIFICATONS

- US Army Corps of Engineers, On-The-Spot Award, March 2018. Presented by Jason Achziger on behalf of the Clarkston NRM team for support of their wildlife habitat management contract.
- US Army Corps of Engineers, On-The-Spot Award, August 2018. Presented by Supervisor Mike Erickson for above and beyond effort on the Walla Walla District Aquatic Pest Management Program and Dreissenid Rapid Response Plan ESA consultations.
- US Army Corps of Engineers Special Act Award, March 2014. Presented by McNary Dam for extraordinary effort in coordination and implementing a complex adult steelhead survival study.
- US Army Corps of Engineers Performance Awards: January 2013, March 2014, January 2015, December 2015, January 2017 (Quality Step Increase).
- American Fisheries Society, Certified Fisheries Professional #3503, March 2015.
- Marty Seldon Graduate Student Scholarship, Wild Trout X, West Yellowstone, 2010. Presented in recognition of an outstanding student in the field of fisheries science.
- Virginia Chapter of the American Fisheries Society best graduate student paper, 2010.
- New England Outdoor Writer's Association scholarship, Spring 2007.
- Klinck Committee Fellowship Award, Department of Natural Resources Management and Engineering, University of Connecticut, to assist with the travel cost for presenting at the 136th Annual American Fisheries Society Conference, September, 2006.
- Student Travel Award from the Estuaries Section of the American Fisheries Society to support the presentation of research at the 136th Annual American Fisheries Society Conference, September 2006.
- Special Professional Service Award as an employee with the Virginia Department of Game and Inland Fisheries, 2004, for outstanding teamwork and leadership in supporting the aquatic environment of the Shenandoah Valley, Virginia; Presented by the Friends of the Shenandoah River.

• Honorary Chapter FFA Degree, Turner Ashby High School, Bridgewater, Virginia, 2004, for being a dedicated mentor.

REFERENCES

Michael Erickson: Supervisory Wildlife Biologist, US Army Corps of Engineers, Walla Walla District (509-527-7288), <u>Michael.Erickson@usace.army.mil</u>

Jason Achziger: NRM Manager, US Army Corps of Engineers, Walla Walla District, Clarkston Office (509-751-0251), <u>Jason.K.Achziger@usace.army.mil</u>

Damian Walter: Wildlife Biologist, US Army Corps of Engineers, Walla Walla District (509-527-7036), <u>Damian.Walter@usace.army.mil</u>

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Appendix B

U.S. Fish and Wildlife Service

List of Endangered Species Act Listed Species, Critical Habitats, and Other Resources of Concern IPaC

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Walla Walla County, Washington



Local office

Washington Fish And Wildlife Office

<a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><a><

510 Desmond Drive Se, Suite 102 Lacey, WA 98503-1263

http://www.fws.gov/wafwo/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

- 1. Draw the project location and click CONTINUE.
- 2. Click DEFINE PROJECT.
- 3. Log in (if directed to do so).
- 4. Provide a name and description for your project.
- 5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the <u>Ecological Services Program</u> of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact <u>NOAA Fisheries</u> for <u>species under their jurisdiction</u>.

- 1. Species listed under the <u>Endangered Species Act</u> are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the <u>listing status page</u> for more information.
- 2. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:



Threatened

Yellow-billed Cuckoo Coccyzus americanus There is proposed critical habitat for this species. Your location is outside the critical habitat. <u>https://ecos.fws.gov/ecp/species/3911</u>

Fishes

NAME

STATUS

Threatened

Bull Trout Salvelinus confluentus There is final critical habitat for this species. Your location is outside the critical habitat. <u>https://ecos.fws.gov/ecp/species/8212</u>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

NSU

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act^{1} and the Bald and Golden Eagle Protection Act^{2} .

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described <u>below</u>.

1. The <u>Migratory Birds Treaty Act</u> of 1918.

2. The <u>Bald and Golden Eagle Protection Act</u> of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <u>http://www.fws.gov/birds/management/managed-species/</u> <u>birds-of-conservation-concern.php</u>
- Measures for avoiding and minimizing impacts to birds <u>http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/</u> <u>conservation-measures.php</u>
- Nationwide conservation measures for birds <u>http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf</u>

The birds listed below are birds of particular concern either because they occur on the <u>USFWS Birds</u> <u>of Conservation Concern</u> (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ

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IPaC: Explore Location

<u>below</u>. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the <u>E-bird data mapping tool</u> (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found <u>below</u>.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Breeds May 15 to Aug 10

CONS	
Brewer's Sparrow Spizella breweri	
This is a Bird of Conservation Concern (BCC) only in particular Bird	
Conservation Regions (BCRs) in the continental USA	
https://ecos.fws.gov/ecp/species/9291	

Golden Eagle Aquila chrysaetos This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <u>https://ecos.fws.gov/ecp/species/1680</u>	Breeds Dec 1 to Aug 31
Lewis's Woodpecker Melanerpes lewis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9408</u>	Breeds Apr 20 to Sep 30

Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/3914</u> Breeds May 20 to Aug 31

Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/3910</u>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
- 3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (=)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (--)

A week is marked as having no data if there were no survey events for that week. https://ecos.fws.gov/ipac/location/5STMVD4RXBHJDIDRIWDRPMVEZE/resources

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

				🗖 proba	bility of	presence	e <mark>b</mark> re	eding se	eason	survey e	effort –	- no data
SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Brewer's Sparrow BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)	+++	-+	++++	I + I +	1 - + -	++ - +		++	++++	++++	++++	++++
Golden Eagle BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)	+ • • -		+++	++++	+-+-	++-+		++	~	-+-I	, C	+ <mark>++</mark>
Lewis's Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	+++-		*+++	** <mark>**</mark>	····		S	NN	+	++++	***	++++
Olive-sided Flycatcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	+	-0	***	++++	*- <mark>*</mark> *	++ - +	+ +	++	• +++	++++	++++	++++
Tricolored Blackbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	+++	+	++++	++1+	+ - + -	++-+		++	++++	++++	++++	++++

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

<u>Nationwide Conservation Measures</u> describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. <u>Additional measures</u> and/or <u>permits</u> may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS <u>Birds of Conservation Concern (BCC)</u> and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the <u>Avian Knowledge Network</u> (<u>AKN</u>). The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the <u>E-bird Explore Data Tool</u>.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the <u>Avian Knowledge Network (AKN)</u>. This data is derived from a growing collection of <u>survey, banding, and citizen</u> <u>science datasets</u>.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: <u>The Cornell Lab of Ornithology All About Birds Bird Guide</u>, or (if you are unsuccessful in locating the bird of interest there), the <u>Cornell Lab of Ornithology Neotropical Birds</u> <u>guide</u>. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

- 1. "BCC Rangewide" birds are <u>Birds of Conservation Concern</u> (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
- 2. "BCC BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
- 3. "Non-BCC Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the <u>Eagle Act</u> requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

IPaC: Explore Location

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the <u>Northeast Ocean Data Portal</u>. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the <u>NOAA NCCOS</u> <u>Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf</u> project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the <u>Diving Bird Study</u> and the <u>nanotag studies</u> or contact <u>Caleb Spiegel</u> or <u>Pam</u> <u>Loring</u>.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to <u>obtain a permit</u> to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local <u>U.S. Army Corps of</u> <u>Engineers District</u>.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND
PEM1C

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal,

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state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOTFORCONSULTATION

https://ecos.fws.gov/ipac/location/5STMVD4RXBHJDIDRIWDRPMVEZE/resources