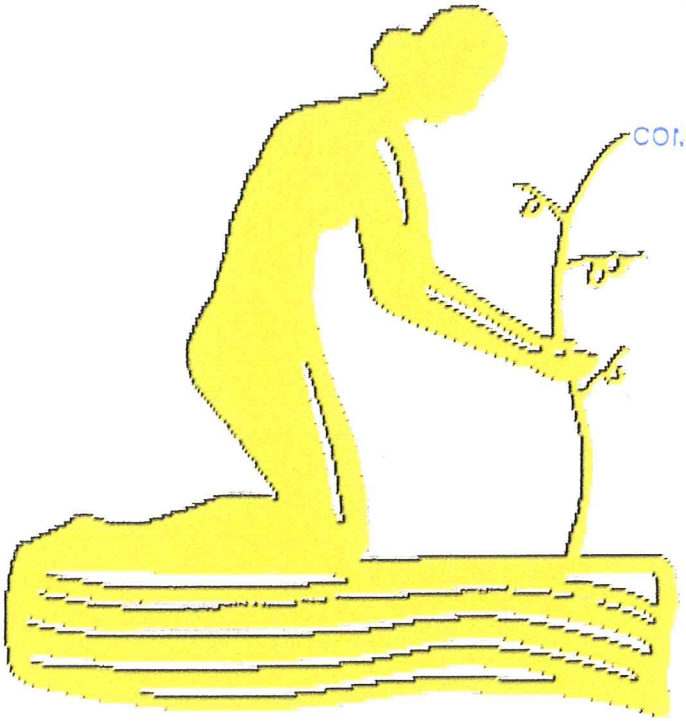
PAINTED HILLS PRD

BIOLOGICAL EVALUATION, BUFFER AVERAGING, AND HABITAT MANAGEMENT PLAN

Spokane County Tax Parcels #45336.9191 and 44041.9144

July 20, 2015



Biology

Soil &

Water, Inc.

BIOLOGICAL EVALUATION, BUFFER AVERAGING, AND HABITAT MANAGEMENT PLAN

for the

PAINTED HILLS PRD

Spokane County Tax Parcels #45336.9191 and 44041.9144
July 20, 2015

Retained by

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1.0: Introduction

Biology Soil & Water, Inc. (BSW) was retained by Black Realty to complete a Biological Evaluation (BE) and Habitat Management Plan (HMP) for the proposed Painted Hills Planned Residential Development (PRD) located in the City of Spokane Valley, WA. South Dishman Mica Road defines the west boundary of the site, E. Thorpe Road defines the south boundary of the property, S. Madison Road defines the East boundary, and developed private property defines the north property boundary (Figures 1-3).

The Painted Hills Golf Course formerly occupied this location. The former club house is being renovated to expand the existing restaurant and the remainder of the site will become residential development and open space. The subject property is comprised of seven separate tax parcels including a 91.25 acre parcel where 580 residential units are proposed, and an 8.25 acre parcel on the south end of the site that will be designated as a wildlife travel corridor. The Action Area was defined as a half mile radius of the 93+ acre Project Area so the site investigation would characterize adjacent areas where listed species could inhabit or be impacted by the project. This assessment addresses all Critical Areas and listed Priority Habitat and Species including Threatened, Endangered, Proposed, and Candidate Species in the Project Area.

The USFWS and NMFS species lists were accessed on their websites on 4/21/2015. No NMFS species are listed for the vicinity. The USF&W list indicated the potential presence of the species and critical habitat(s) shown in Table 1 (and in Appendix 1).

Table 1. USFWS listed species and critical habitats potentially present in the vicinity of

Species	ESU/DPS	Federal Status	Designated Critical Habitat
Bull trout *Salvelinus confluentus*	Columbia River DPS	*Threatened*	*Yes*
Water howellia, *Howellia aquatilis*		*Threatened*	*No*
Spalding's silene, *Silene spaldingii*		*Threatened*	*No*
Canada Lynx, *Lynx canadensis*		*Threatened*	*No*
Yellow-billed cuckoo, Coccyzus americanus,		*Threatened*	*No*

The undersigned investigated the Project and Action Areas on March 1, March 29, and April 19, 2015. The conclusions of this plan are based on an evaluation of habitat and species data for Spokane County compiled by State and Federal jurisdictions, an evaluation of construction plans and specifications for the project, a literature review, and field investigations by the author of this report. The project will have no effect on Bull Trout or proposed Bull Trout Critical Habitat. The project will not result in the destruction or adverse modification of potential, designated or proposed Critical Habitat or Essential Fish Habitat for any fish species. The project will have no effect on the threatened species Water howellia, Spalding's silene, Canada lynx, or the Yellow-billed cuckoo. There will be no significant adverse effect on any listed Species of Concern. The site plan includes an 8+ acre wildlife travel corridor for deer and elk and over 30 acres of open space.

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TN

MN (15.6°E)

0 18 36 54 72 90 mi
0 30 60 90 120 150 km

Data Zoom 6-0

Figure 1: Site Location

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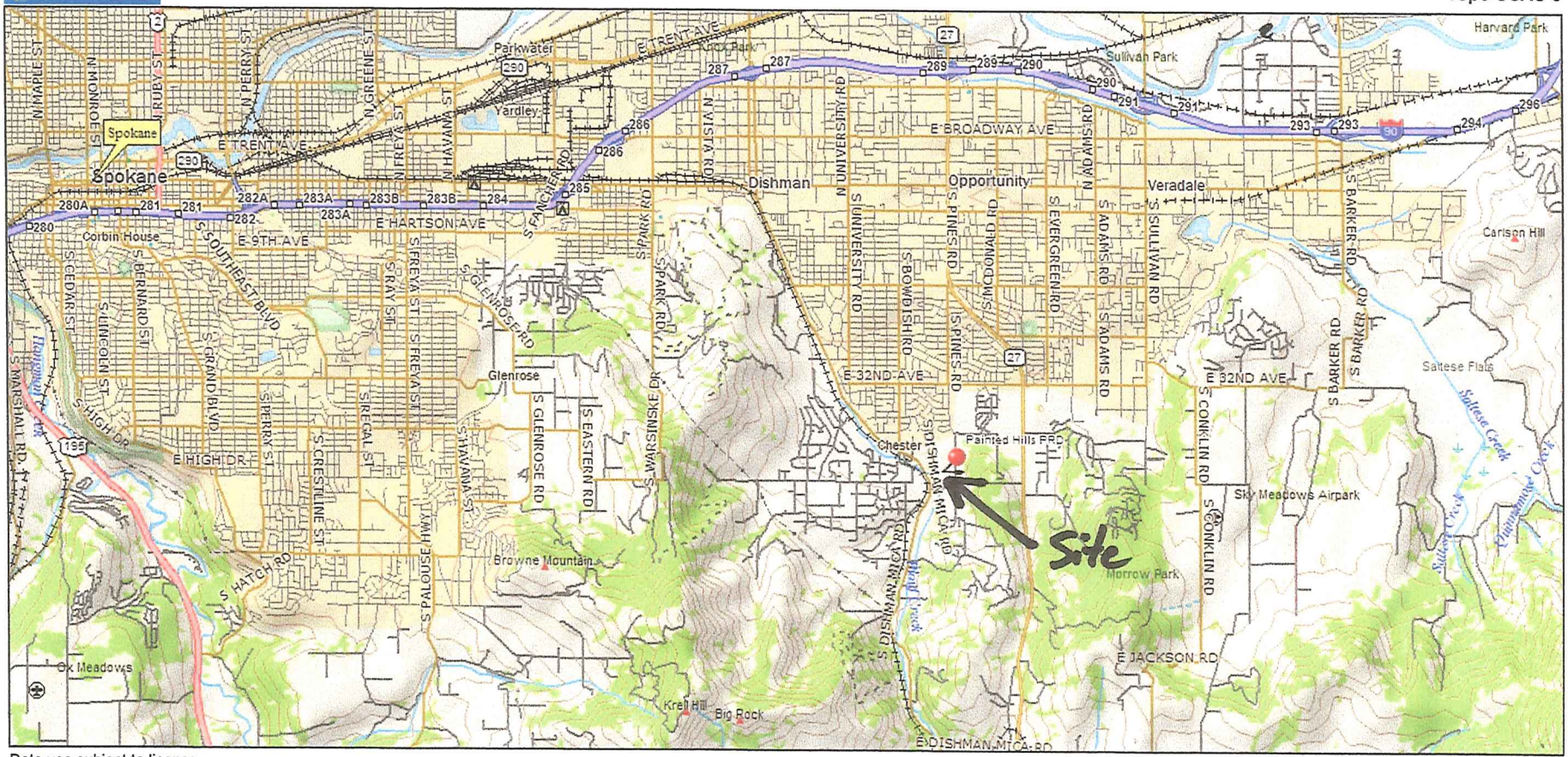

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TN

MN (14.7°E)

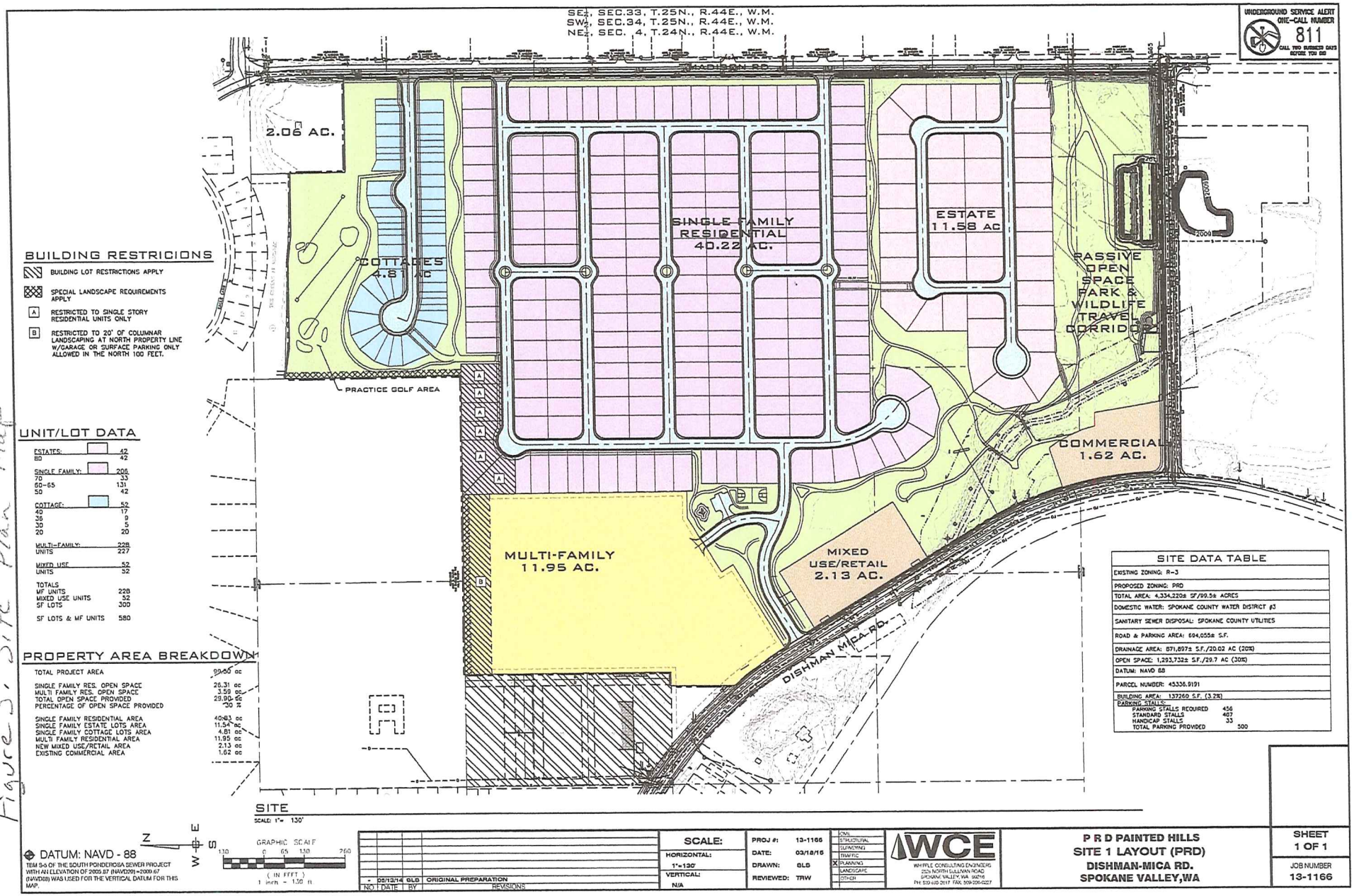
0 1 2 3 mi

0 1 2 3 4 km

Data Zoom 11-0

Figure 2

Figure 3: Site Plan Map



BUILDING RESTRICIONS

- BUILDING LOT RESTRICTIONS APPLY
- SPECIAL LANDSCAPE REQUIREMENTS APPLY
- [A] RESTRICTED TO SINGLE STORY RESIDENTIAL UNITS ONLY
- [B] RESTRICTED TO 20' OF COLUMNAR LANDSCAPING AT NORTH PROPERTY LINE W/GARAGE OR SURFACE PARKING ONLY ALLOWED IN THE NORTH 100 FEET.

UNIT/LOT DATA

ESTATES:		42
80		42
SINGLE FAMILY:		206
70		33
60-65		131
50		42
COTTAGE:		52
40		17
36		9
30		5
20		20
MULTI-FAMILY:		228
UNITS		227
MIXED USE		52
UNITS		52
TOTALS		
MF UNITS		228
MIXED USE UNITS		52
SF LOTS		300
SF LOTS & MF UNITS		580

PROPERTY AREA BREAKDOWN

TOTAL PROJECT AREA	99.00 ac
SINGLE FAMILY RES. OPEN SPACE	26.31 ac
MULTI FAMILY RES. OPEN SPACE	3.59 ac
TOTAL OPEN SPACE PROVIDED	29.90 ac
PERCENTAGE OF OPEN SPACE PROVIDED	30 %
SINGLE FAMILY RESIDENTIAL AREA	40.83 ac
SINGLE FAMILY ESTATE LOTS AREA	11.54 ac
SINGLE FAMILY COTTAGE LOTS AREA	4.81 ac
MULTI FAMILY RESIDENTIAL AREA	11.95 ac
NEW MIXED USE/RETAIL AREA	2.13 ac
EXISTING COMMERCIAL AREA	1.62 ac

SITE DATA TABLE

EXISTING ZONING: R-3	
PROPOSED ZONING: PRD	
TOTAL AREA: 4,334,220± SF/99.5± ACRES	
DOMESTIC WATER: SPOKANE COUNTY WATER DISTRICT #3	
SANITARY SEWER DISPOSAL: SPOKANE COUNTY UTILITIES	
ROAD & PARKING AREA: 694,055± S.F.	
DRAINAGE AREA: 871,897± S.F./20.02 AC (20%)	
OPEN SPACE: 1,293,732± S.F./29.7 AC (30%)	
DATUM: NAVD 88	
PARCEL NUMBER: 45336.9191	
BUILDING AREA: 137260 S.F. (3.2%)	
PARKING STALLS:	
PARKING STALLS REQUIRED	456
STANDARD STALLS	407
HANDICAP STALLS	33
TOTAL PARKING PROVIDED	500

SITE
SCALE: 1"= 130'

DATUM: NAVD - 88
TBM 9-9 OF THE SOUTH PONDEROSA SEWER PROJECT WITH AN ELEVATION OF 2005.57 (NAVD29) =2009.67 (NAVD88) WAS USED FOR THE VERTICAL DATUM FOR THIS MAP.

GRAPHIC SCALE
130 0 65 130 260
(IN FEET)
1 inch = 130 ft

NO	DATE	BY	REVISIONS
-	05/13/14	GLS	ORIGINAL PREPARATION

SCALE:	
HORIZONTAL:	1"=130'
VERTICAL:	N/A

PROJ #:	13-1166
DATE:	03/18/16
DRAWN:	GLS
REVIEWED:	TRW

	CIVIL
	STRUCTURAL
	SURVEYING
	TRAFFIC
X	PLANNING
	LANDSCAPE
	OTHER

WCE
WHITLE CONSULTING ENGINEERS
2524 NORTH SULLIVAN ROAD
SPOKANE VALLEY, WA 99216
PH: 509.600.2017 FAX: 509-200-0227

P R D PAINTED HILLS
SITE 1 LAYOUT (PRD)
DISHMAN-MICA RD.
SPOKANE VALLEY, WA

SHEET
1 OF 1

JOB NUMBER
13-1166

The Project Area does not meet any of the Department of Natural Resources (DNR) criteria for High Quality Terrestrial Habitat. Washington Department of Fish and Wildlife (WDF&W) maps (Appendix 2: Critical Areas Maps) indicate the subject property falls within an Elk polygon (WDF&W Priority Habitat). An 8+ acre wildlife travel corridor is proposed along the entire south end of the project and the corridor will be enhanced with vegetative plantings to accommodate animals traveling through the area.

Chester Creek and its associated 100-foot buffer bisects the SW corner of the property. Buffer Width Averaging is proposed to compensate for the encroachment of two lots and foot paths in the riparian buffer. The impact mitigation also includes riparian buffer enhancement. The existing buffer is almost totally devoid of woody vegetation because it was previously a driving range and/or maintained golf course fairway. An evaluation of streams and wetlands is included in this report.

2.0: Methods of Investigation

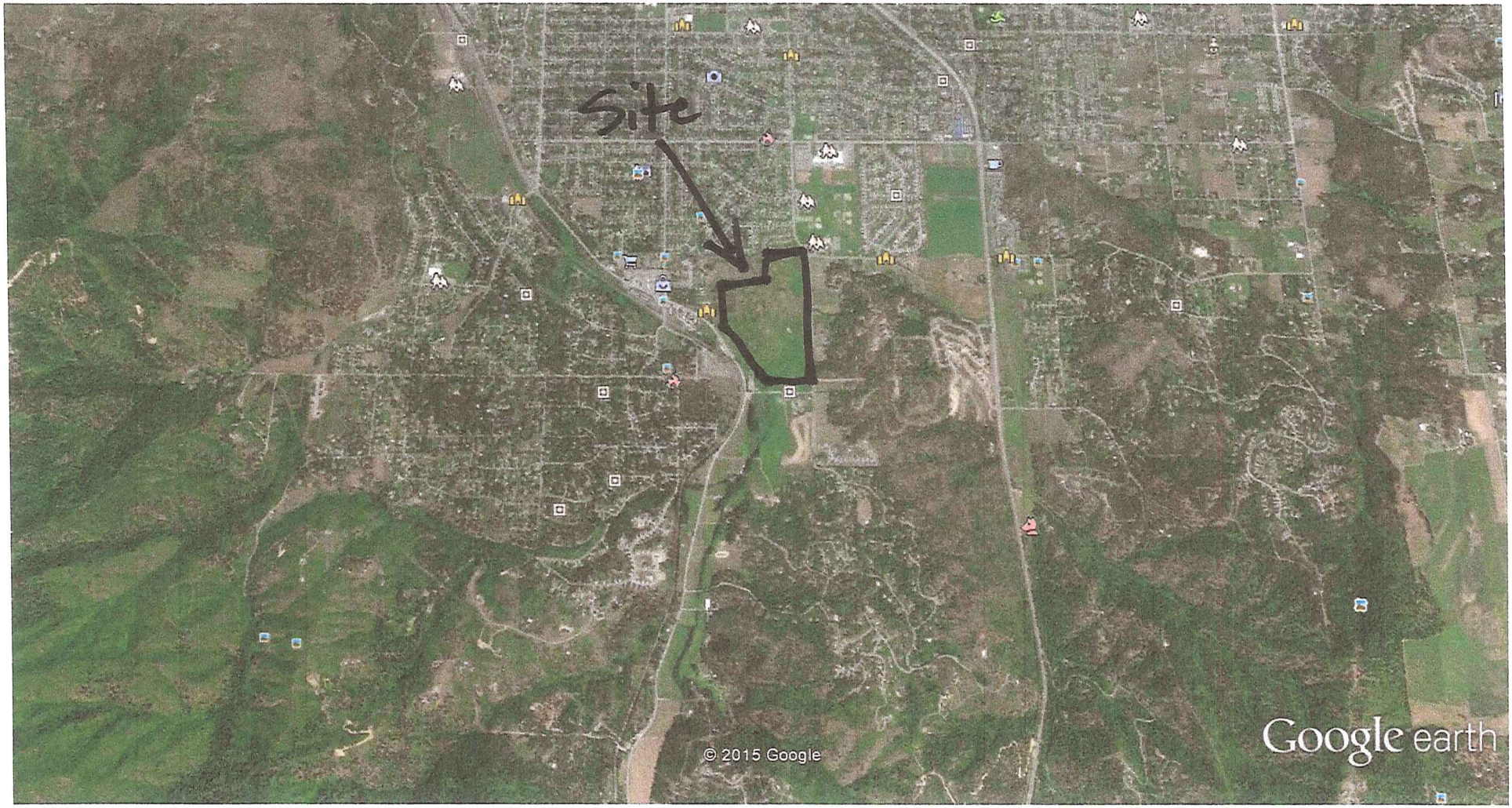
The north parcel of the Project Area is located in Sec. 33, T25N, R44E and the south parcel is located in Sec. 4, T24N, R44E of Spokane County, WA (Figures 1-3). Biology Soil & Water, Inc. (BSW) investigated the property on March 1 and 29, and April 19, 2015 for wetlands, riparian habitat, and species protected under the Federal, State, and local regulations. The undersigned is familiar with the soils, vegetation, and hydrologic characteristics of this property from previous investigations of adjacent properties in the immediate vicinity and throughout the drainage basin.

3.0: Description of the Action and Project Areas

Spokane is located in a valley at the westmost extent of the Rocky Mountains. From the north side of the Spokane River valley, the Selkirk Mountains extend north into Canada. On the south side of the Spokane River valley, a forested finger of the Bitterroot Mountains extends east from Lake Coeur d'Alene to Dishman Hills. The subject property is located in the Chester Creek valley with forested foothills on the east and west sides of the valley. The Painted Hills PRD is surrounded primarily by residential development with varying degrees of housing density, a few small undeveloped tracts of agricultural land in the Chester Creek valley, and forested land with varying densities of residential development (Figure 4).

3.1: Description of the Action Area

For purposes of describing habitat in the surrounding area, the Action Area is defined as a half mile radius of the project area. Habitat types in the Action Area would be described as a mosaic of urban developed, fragments of conifer forest, and small tract agriculture. From the north property line, dense residential development extends north into the City. A church and residential development border the painted Hills PRD at the NW corner. Horizon Middle School is located NE of the site. From the east property line (S. Madison Rd) hay fields and pasture extend 250-500 feet toward the toe of the surrounding forested slopes. Sparse residential extends east up the forested hillsides. Commercial and single family residential development extends south from Thorpe Road except for the Chester Creek drainage and associated flood plain that is mainly forested and small tract agriculture. Undeveloped forested hillsides extend about 1200 feet east to the densely developed Ponderosa neighborhood. A mixture of commercial and residential land uses extend NW along Dishman-Mica Road.



Google earth

miles 3
km 5

Figure 4

Land uses in the Action Area are a mosaic of dense residential development on former agricultural land, remaining undeveloped small tracts of agricultural land, and forested land with varying densities of residential development. Large mammals that are willing to cross highways and residential developments interspersed with open farm land will find connectivity to a few hundred acres of wooded and sparsely populated foothills extending south and west from the Painted Hills PRD site to Dishman Hills.

3.2: Description of the Project Area

The 93+ acre Painted Hills PRD property was formerly a golf course. Black Realty Inc. bought the property in a trustees auction in the fall of 2013 after the owners filed for bankruptcy in 2012. Except for cart paths, sand traps, and man-made water hazards, the entire property was planted in non-native turf grasses with sparse conifer and deciduous trees lining some of the fairways. The turf grass was maintained by treatment with herbicides and regular mowing of the greens, fairways and rough. These practices virtually eliminated the native herbaceous plant community.

Honey willows were planted inside the OHWM of Chester Creek whose channel was dredged and maintained for flood control. The banks of the channel are covered with Reed canarygrass. Outside the OHWM of the stream channel where the vegetation was not mowed or maintained, the vegetative community is dominated with Canarygrass. Teasel, tansy, thistle, wormwood, and lettuce are also well represented.

4.0: Project Risk Assessment and Impacts

Listed threatened and endangered species identified by jurisdictions for potential occurrence in Spokane County include the Yellow-billed Cuckoo (*Coccyzus americanus*), Canada Lynx (*Lynx canadensis*), Bull trout (Salvelinus confluentus), Water howellia (*Howellia aquatilis*) and Spalding's silene (*Silene spaldingii*). A BSW field investigation determined that the project would have NO EFFECT on any of the above listed species.

4.1: Yellow-billed Cuckoo (*Coccyzus americanus*), Federal Status: Threatened

The yellow-billed cuckoo was formerly a very rare summer visitor to western Washington, especially in the Puget Sound area (Roberson 1980). Jewitt et al. (1953) described the former breeding range in Washington as ranging north to Bellingham, east to Ellensburg, south to Vancouver, and west to Grays Harbor. There are only two published records of yellow-billed cuckoo in eastern Washington. Yellowbilled cuckoos were detected on July 21, 1956, 20 miles north of Grand Coulee Dam in Okanogan County (Weber and Larrison 1977) and in June 1978 at George, Grant County (Roberson 1980).

The March and April investigations occurred before the Yellow-billed cuckoo would have migrated into the Spokane County area if it seasonally utilized the area for breeding or nesting. The investigation for the Yellow-billed cuckoo focused on specific habitat requirements of that species. Cuckoos prefer to nest in areas with at least 10 hectares (ha) (25 acres) of contiguous (riparian) woodland (Laymon 1998). The typical patch size is 20 ha (50 acres) or greater, and the likelihood of occupancy increases dramatically with increasing patch size, but they have been found breeding in patch sizes as small as 4 ha (10 acres) along the Colorado River in southern California (Johnson, Matthew J., 2007). Yellow-billed cuckoo's nest in undisturbed stands of cottonwood/willow galleries greater than 10 acres in total area and greater than 100 meters wide along waterways.

The project area does not contain, and is not in close proximity to, adequate habitat patches for that species. The largest habitat patch consisting of species utilized by the yellow-billed cuckoo is less than one tenth of the minimum patch size utilized by this reclusive species. The yellow-billed cuckoo is known not to utilize any habitat with characteristics of those found along Chester Creek adjacent to this project. This project will not impact yellow-billed cuckoo populations or habitat components. There is no suitable habitat for the yellow billed cuckoo in the vicinity of this project.

4.2: Bull Trout (*Salvelinus confluentus*) Threatened

The U.S. Fish and Wildlife Service (USF&WS) lists the Columbia River population of bull trout as threatened. Small pockets of bull trout are present in isolated habitat fragments in the main stem and tributaries of the Columbia River. One isolated fragment of the Columbia River segment includes Coeur d'Alene Lake, its tributaries in the drainage basin, and the Spokane River. Bull trout populations have been identified in Coeur d'Alene Lake and three tributaries in its sub-basin, but no bull trout populations are known to occur presently, or have been noted historically, in the Spokane River downstream from the Post Falls Hydroelectric Dam (PBTTAT, 1998).

The Post Falls dam stops the migration of fish out of the Coeur d'Alene basin downstream into the Spokane River. Waterfalls and dams prevents the upstream and downstream migration of bull trout into the segment of the Spokane River and its tributaries in the vicinity of the project area. No dam on the Spokane River has a fish passage facility and all dams create fish barriers for upstream and downstream migration. EPA fact sheets for 1999 NPDES permits for wastewater treatment plants discharging to the Spokane River state that bull trout cannot get past the Post Falls Dam (EPA 2008). There is no known population of bull trout in the Spokane River downstream of the Post Falls dam (FERC 2006). The USFWS does not include the Spokane River and its tributaries located downstream from the Post Falls dam in bull trout recovery planning efforts (Federal Register / Vol. 75, No. 200 / Monday, October 18, 2010). The project will have No Effect on Bull Trout.

Bull Trout Critical Habitat

Activities that may adversely modify critical habitat include those that alter the primary constituent elements to an extent that the value of critical habitat for both the survival and recovery of the bull trout is appreciably reduced. The proposed project will not destroy or adversely modify critical habitat by altering primary constituent elements. The value of critical habitat for both the survival and recovery of the bull trout will not be reduced as a result of this project. The project will not alter the minimum flow or natural flow regime of the subject stream, alter any segment of the stream, riparian vegetation, or any chemical parameters so as to reduce water quality, alter channel morphology or create instream barriers to bull trout movement. No decrease in water quantity will occur because of the project. **The project will cause no significant and detrimental alterations to water quality and will have NO EFFECT on proposed Bull Trout Critical Habitat.**

4.3: Spalding's catchfly (*Silene spaldingii*), Federal Status: Threatened

The range of Spalding's silene (*Silene spaldingii*) includes eastern Washington, northeast Oregon, Idaho, and western Montana. Spalding's silene occurs primarily in open grasslands with minor shrub and/or (occasionally) scattered conifer components. Spalding's silene is found most

commonly in Idaho fescue/snowberry associations at elevations of 1900-3050 feet. These sites are typically dominated by Idaho fescue and have sparse cover of snowberry where the total vegetative cover is greater than 100%. Some of these sites occur in a mosaic of grassland and ponderosa pine forest. Spalding's silene populations have been found on all aspects, although there seems to be a preference for slopes that face north. On drier sites, the species can be found on the bluebunch wheatgrass/Idaho fescue association.

Spalding's silene can occupy habitats that vary from sagebrush plains to mountain ridges. Spalding's silene generally occurs in native grasslands that are in reasonably good ecological condition, although populations have persisted in areas that have had moderate grazing pressure. Populations tend to be quite small and are currently quite fragmented, raising questions about their long-term viability. Fire may have historically played a role in maintaining habitat particularly in sites that are interspersed with ponderosa pine forest. Much of the historically suitable habitat has been lost through conversion or degradation.

The timing of the site investigation did not coincide with the flowering of listed plant species. The project biologist is a qualified botanist and wetland professional that routinely completes site investigations during all seasons when snow does not cover vegetation. Site investigations often occur when salient plant flowering parts are senescent or may not be sufficiently preserved to allow taxonomic identification beyond genus to the species level. Twenty years of experience in plant identification during all life history and seasonal growth habits has equipped the project biologist to conduct accurate plant identifications and wetland investigations in accordance with best available science and consistent with the accepted professional practices for the conditions at the time the work was performed.

Individual plants exhibit essential identification characteristics unique to their genera, but display sufficient variation so it is possible to categorize and differentiate each species within a genus using taxonomic keys. During plant senescence, individual characteristics often become blurred making it difficult or impossible for a botanist to differentiate among species within the genus. The sepals of the genus *Silene* form a bulbous calyx that is easily recognized and sufficient to identify the plant to genus. The Threatened species *Silene spaldingii* overlaps in range and is somewhat similar in appearance with some other species in the genus.

The field biologist is familiar with the species and has observed it at other locations. During the field investigation, the *Silene* genus was not identified in the Action or Project Areas. Previous years of cultivation, followed by the planting of turf grasses, years of mowing, and herbicide applications is sufficient grounds for discounting effects on Spalding's silene when considered alone. No populations of Spalding's silene were identified in the Project Area during the field investigation. **The project will have NO EFFECT on Spalding's Silene and will not result in the destruction or adverse modification of potential, designated or proposed Spalding's silene Critical Habitat.**

4.4: Water howellia (Howellia aquatilis)

Howellia is found in seasonal wetlands, ponds and lakes because its seeds do not germinate under water. Since seeds germinate in the fall and over-winter as seedlings Howellia requires a dry autumn followed by a wet spring in order to establish for the year. In addition to seasonally fluctuating ponds, Howellia requires fertile, highly organic soils, which are generally maintained by deciduous trees surrounding the ponds. Research indicates that Howellia does not form a persistent seed bank, making this annual especially dependent on year to year reproductive success in order to persist.

No Howellia was observed in the Project Area. Howellia is found in seasonal wetlands, ponds and lakes. No Howellia habitat occurs in the Project Area. **The project will have NO EFFECT on the Howellia aquatilis species and will not result in the destruction or adverse modification of potential, designated or proposed Howellia Critical Habitat.**

4.5: Canada lynx (Lynx canadensis) Federal Status: Threatened

Lynx prefer dense coniferous forest with sapling/pole thickets, rock outcrops, and wetlands at elevations of around 4000' to 4500'. The elevation of the Action Area is around 2010-2015 feet. Denning usually occurs in mature old growth stands with lots of deadfall. These forested stands do not occur in the Action Area. Lynx prefer snowshoe hare habitat, as they are dependent on snowshoe hare as a staple food item. Snowshoe hare prefers dense lodgepole stands that do not occur in the Project or Action Areas. BSW did not find any evidence of Canada lynx in the low elevations associated with the Project Area. **The project will have NO EFFECT on the Canada lynx or Canada lynx habitat.**

4.6: Species of Concern

The site was also investigated for the presence of species from the Species of Concern list for Spokane County published by the U.S. Fish and Wildlife Service. Most of these species are also included in the WDF&W list of priority species that was adopted by the City of Spokane Valley. Each species is listed below, followed by an evaluation of available habitat, observed habitat utilization, and potential project effects.

Bald eagle *(Haliaeetus leucocephalus)*

The Bald eagle is listed as a State Sensitive species. Eagles do not nest near the Project Area. Human activity associated with major roads and urban development are limiting factors for Bald eagles in the Action Area. At any location in Spokane County road kill can provide food for transient opportunist eagles. However, no existing food resources capable of supporting summer or winter eagle foraging are found near the proposed development. Bald eagles do not routinely forage in the Action Area and no nest sites were observed by BSW within one-half mile of the Project Area. BSW concludes that noise and human activity during construction will not impact eagle nesting as no nests were identified in the Action Area. Perching and foraging opportunities occur on the stream bank and eagles could utilize the stream corridor. **The project will have NO EFFECT on the Bald eagle.**

Western Burrowing Owl *(Athene cunicularia)* No historical observation in the vicinity. No individuals, nests, or sign observed during the site survey. **No Effect from project.**

California floater *(Anodonta californiensis)* freshwater mussel. **No Effect from project.**

Ferruginous hawk *(Buteo regalis)* nests on rocky ledge or high ground vantage on prairie. **No Effect from project.**

Giant Columbia spire snail *(Fluminicola columbiana)* cold, unpolluted, medium to large streams. **No Effect from project.**

Loggerhead shrike *(Lanius ludovicianus)* A robin sized gray, black, and white bird of open areas. Community types not dominated by shrubs, such as grasslands and riparian areas, are not used. Loggerhead Shrikes prefer nesting in big sagebrush and antelope bitterbrush, and avoid spiny hopsage, rabbitbrush, and green rabbitbrush (*Chrysothamnus viscidiflorus*). Nest shrubs are taller, closer to an edge, and contain denser cover and fewer main stems than unoccupied

shrubs. Roost shrubs are large, dense live shrubs, whereas tall, dead shrubs that provide good visibility are used for perching. **No Effect from project.**

Longeared myotis ***(Myotis evotis)*** Roosts are sometimes found in crevices in small basalt rock formations. Compared to random plots, roosts are in more open, rocky habitats, closer to edge of forest stands, and relatively distant from sources of permanent water. Often roost in Ponderosa pine trees >30 cm in diameter and >12 m high. Less use of grasslands and closed pine than expected. **No significant effect if present in vicinity.**

Northern goshawk ***(Accipiter gentilis)*** goshawks select relatively closed-canopy conifferous/boreal forest habitat for nesting - **No significant effect.**

Olivesided flycatcher ***(Contopus cooperi)*** found in boreal and western coniferous forests - **No Effect**

Pallid Townsend's bigeared bat (Corynorhinus townsendii pallescens) Eastside mixed conifer forest, shrub-steppe, and riparian-wetlands. In Washington, old buildings, silos, concrete bunkers, barns, caves, and mines are common roost structures. **No effect on roosting or hibernicula**

Peregrine falcon (Falco peregrinus) Two subspecies of peregrine falcons (Falco peregrinus) occur in Washington state at present, (F. p. pealei and F. p. anatum). Peale's peregrine falcon is a coastal subspecies so our concern in Spokane County is with F. p. anatum (Continental peregrine falcon). DDT exposure totally eliminated this subspecies from former breeding sites in eastern Washington. Following a ban on the use of DDT, captive-reared young birds have been released at several sites in Spokane County in an attempt to augment natural reintroductions by wild birds. There is no potential for degradation or loss of critical habitat for peregrine falcons in the project area. Peregrine falcons nest on cliffs or even man-made structures such as buildings or bridges that do not occur in the project area so no action is required to protect nest sites from human disturbance. The primary method used to reintroduce falcons to the wild is called "hacking". WDF&W does not currently use any hack sites in the vicinity. **No significant effect**

Redband trout (Oncorhynchus mykiss) No Effect from project.

Sagebrush lizard ***(Sceloporus graciosus)*** **No Effect from project.**

Westslope cutthroat trout ***(Oncorhynchus clarki lewisi)*** **No Effect from project.**

Palouse goldenweed ***(Haplopappus liatriformis)*** palouse, not in our area **No Effect**

4.7: WDF&W Priority Species Deer and Elk

Impacts to the WDF&W Priority Species White-tailed deer and Elk will be minimized by protecting a travel corridor through the site. The project will reduce existing habitat for deer that will be pushed to the fringes of the development. Elk moving through the general area between Mica Peak and Dishman Hills could potentially cross the subject property on east/west treks. The developer will protect and enhance an east/west 8+ acre elk travel corridor across the property. Deer will continue to use the area set aside as a travel corridor.

4.8: Wetlands

Wetland Inventory Maps of the site show two wetlands on the property (Appendix 2). Both of the wetlands are shown to occur on the west side of Chester Creek. BSW investigated the mapped wetlands on March 1, 2015 and in each mapped wetland, dug a test hole on top of the creek bank in close proximity to the Chester Creek OHWM. On March 1, neither of the test holes had saturated soils in the top 16 inches of the soil profile. In Test Hole #1 the water table was at 21 inches and saturation occurred at 16 inches. In Test Hole 2, there was no saturation in

the top 24 inches of the soil profile. The test holes were inspected again on March 29th and the water level in test holes was lower than on March 1st. This result was expected due to the landscape position of the mapped wetlands. The year to date precipitation for Spokane was hovering slightly above normal for the year to slightly below normal for the year to date so wetland hydrology should have been present in what was a normal year at the time of the investigation if the subject areas were wetlands. The argument that Spokane was below normal for the hydrologic year is not valid for this drainage basin because it has a low elevation and runoff comes earlier in the year than many other drainages as will be explained in detail below.

The wetland hydrologic criteria was not met in either test hole at the start of the growing season when the water table should have been at its annual high. Stream high water conditions consistent with a high water table does not typically occur during the growing season on Chester Creek. Seasonal high water occurs in the winter during rain on snow and frozen ground conditions. During the growing season, wetland conditions do not occur outside of the stream OHWM where the National Wetland Inventory Map indicates the wetlands occur.

4.8.1: Chester Creek Flood Frequency

A hydrologic and hydraulic analysis for Chester Creek was completed by Michael Baker Jr., Inc. and approved by Spokane County in a letter to the Federal Emergency Management Agency dated August 6, 1990. There are no long-term gage records for Chester Creek. The limited gage measurements on Chester Creek were collected near the Dishman-Mica Road crossing of Chester Creek from December 1994 through March 1995 and November 1995 through February 1996 when no flood events occurred. In February 2006, the hydraulic analysis for Chester Creek was revised by West Consultants, Inc. under a FEMA contract. The analysis established flood magnitude-frequency estimates for the watercourse. A steady flow model has been developed for Chester Creek.

The reports conclude that spring floods in the upper Spokane River basin are due to snowmelt runoff from high elevation watersheds. Such floods are of less significance on Chester Creek because the lower elevation of the watershed limits the size of the snowpack so spring runoff occurs about a month earlier and at more gradual rates than on the Spokane River. Nearly all maximum annual flood peaks on Chester Creek occur during the winter. Warm winds and rain can melt the snow rapidly. The May 1948 flood on Hangman Creek was a non-typical flood caused by a heavy snowpack, a late, cold spring, and heavy rains during the critical snow melting period. All other maximum annual flood peaks on Hangman Creek occurred during the winter. When winter rain causes snowmelt on frozen soil conditions, short-duration, intense runoff generates a flood peak during winter storms. During the more extreme events, Chester Creek runs over its banks filling depressions in the flood zone.

The duration of flooding is generally between 100 hours and 1000 hours, or between four days and forty days with smaller events occurring with greater frequency than large events. Hydric soils form under saturated soil conditions. Wetlands have to exhibit saturated soils during the growing season, but those conditions seldom occur outside of the stream channel on Chester Creek because flooding usually happens in the winter. Floods are typically of a small magnitude so when over bank flow fills depressions outside of the channel, the water has usually infiltrated before the growing season begins. The subject areas may have been exposed to more frequent flooding in the past, but good planning and flood control measures designed to minimize flooding have moderated those historical flood events to some degree. Chester Creek does not follow the same hydrograph as snowmelt dominated systems.

4.8.2: Flood Protection Measures

Channel geometry for Chester Creek were developed from surveys conducted in March 2003. Overbank geometry were developed from topography developed by TerraPoint (2003). Flood plain boundaries for Chester Creek and Unnamed Tributary to Chester Creek were delineated using 2 foot contour interval maps developed by TerraPoint from LiDAR data.

Previously, a watershed plan for Chester Creek was designed with management recommendations for drainage, flooding, water quality, and riparian habitat. As a result, flood control improvements have been implemented along Chester Creek. The improvement area began at the Painted Hills Golf Course. In 1998, a project to install new culverts and extensive dredging of the channel between Thorpe Road and Schaffer Road was implemented. Two large volume borrow pits were constructed downstream. Each pit was designed for the retention and infiltration of Chester Creek floodwaters up to a 25 year event. One borrow pit was constructed just north of E. 40th Avenue and the other just south of 28th Avenue.

The Chester Creek channel has been historically maintained as has been reported in the literature and supported by direct evidence of spoil piles on the channel banks. Dredging makes the channel deeper and the dredging spoil piles make the channel banks higher. As a result of channel dredging, the surrounding areas are dewatered faster and the water table falls a corresponding distance deeper below the soil surface. Soils in the areas mapped as wetland exhibit some relic hydric characteristics from infrequent historical flooding, but with the exception of rare flood events, the water table is too far below the soil surface at the start of the growing season to meet the wetland hydrologic criteria.

The two mapped wetlands do not meet the hydrologic criteria so they are not wetlands. They are low lying areas adjacent to Chester Creek that have been historically flooded, but flooding is far too infrequent for the subject areas to meet the wetland hydrologic criteria. Even if they were wetlands, they are on the opposite side of the creek from where development is proposed so the riparian buffer would be more restrictive and extend further east into the development than a wetland buffer.

The undersigned filled out the current Wetland Rating Form and determined that if the mapped wetlands were actually wetlands, they would be Category 2 with a total point score of 19 points. The City Code assigns buffer widths based on points scored on the previous rating form. Using the previous rating form, the wetland scores 18 points for habitat functions so the buffer width would be 100 feet. The 100-foot buffer applied from the "(non)wetlands" located on the west side of the creek would only extend about 70 feet east of the creek so the 100-foot riparian buffer would be more restrictive to development and extend further east, even if wetlands did occur on the site as mapped. There are no wetlands on the subject property.

Additional flood control measures are being incorporated into the project design (see the Painted Hills Flood Control Plan). At the south end of the property in the proposed wildlife travel corridor, shallow ponds and subsurface gravel galleries are proposed. Shallow ponds will be installed above the gravel galleries. These grass lined ponds will function as sediment basins fitted with manholes and bee hive grates that will allow stormwater to overflow into the underlying gravel galleries for temporary storage and infiltration. These features will provide another measure of stormwater and flood control on Chester Creek.

Other flood control measures will be required by FEMA as part of the levy certification process. To my knowledge, the channel was last dredged and maintained in 1998. Since that time honey willows were planted in the Chester Creek channel. Roots of the honey willow will compromise the integrity of the levy and their removal will be required by FEMA and COE as

part of the levy certification process. Those riparian zone impacts cannot be mitigated in the stream channel or on the stream banks so the mitigation (replacement plantings) will occur in the riparian buffer and in the wildlife travel corridor. Replacement plantings of trees and shrubs will be installed as detailed later in this report.

4.9: Riparian Areas

The DNR Water Type Map (Figure 5) defines Chester Creek as a Type F Water. Chapter 21.40 of the City of Spokane Valley Municipal Code, titled Critical Areas, bases stream buffer widths on the DNR Riparian Management Zones. Chester Creek is greater than 15 feet in width (bankfull) so the appropriate buffer width can be found in Table 21.40-10 of the City Code. The DNR guidance states that in Eastern Washington, if there is no site index information, as in this case, assume Site Class III unless site specific information indicates otherwise. The table indicates that a Type F Natural Water not classified as a Shoreline of the State, having a Site Class 3 designation, has a total buffer width of 100 feet. BSW delineated the Chester Creek OHWM in the field on March 31, 2015. The OHWM flags were surveyed and plotted on the site plan map along with the 100-foot riparian buffer by Whipple Consulting Engineers.

5.0: Riparian Buffer Impacts, Buffer Averaging, and Impact Mitigation

Chester Creek and its associated 100-foot buffer bisects the SW corner of the property. Buffer Width Averaging and buffer enhancement are proposed as mitigation for proposed riparian buffer impacts. The existing buffer is almost totally devoid of woody vegetation because the site was previously utilized and maintained as a golf course and driving range. Buffer impacts are proposed in six areas (Figure 6) with a total buffer impact of 22,057 sq. ft. (0.506 acres). The impacts will be mitigated in several ways. Buffer Averaging will be employed to insure no net loss of buffer occurs. The existing buffer will be enhanced by the planting of tree and shrub patches. The buffer replacement area will be enhanced by the planting of tree and shrub patches. The proposed 8+ acre wildlife habitat/travel corridor will be enhanced by the planting of tree and shrub patches.

5.1: Buffer Impacts in the Two Commercial Triangles

One small area of buffer impact could occur where Chester Creek flows under Dishman-Mica Road. The northmost extent of the buffer extends onto an 1134.16 sq. ft. triangle of a commercially zoned lot. The triangle may never be impacted, but the buffer function is so low that calling it an impact and relocating the buffer to the proposed buffer replacement and enhancement area would provide greater benefit than leaving it in place in its current condition along the road where it has no habitat value. The same is true for a commercially zoned 5921.97 ft2 triangle of buffer located east of the restaurant parking lot (west side of the creek). An existing building in that general area may be torn down and the parking lot could be expanded at some future date. The subject area was historically mowed and manicured adjacent to the parking lot and provided no habitat. The adjacent vegetative community is dominated by canarygrass with lettuce, tansy, knapweed, and wormwood also represented. The commercially zoned triangle has no habitat function so it will be included in the buffer impact area. The area between the potential future impact and the stream will be enhanced as part of the mitigation plan. The buffer will be smaller in that area, but the resulting vegetative enhancement represents an improvement over the existing condition.

Figure 5: **FOREST PRACTICE WATER TYPE MAP**

TOWNSHIP 0 NORTH HALF undefined, RANGE 0 (W.M.) HALF undefined, SECTION 0

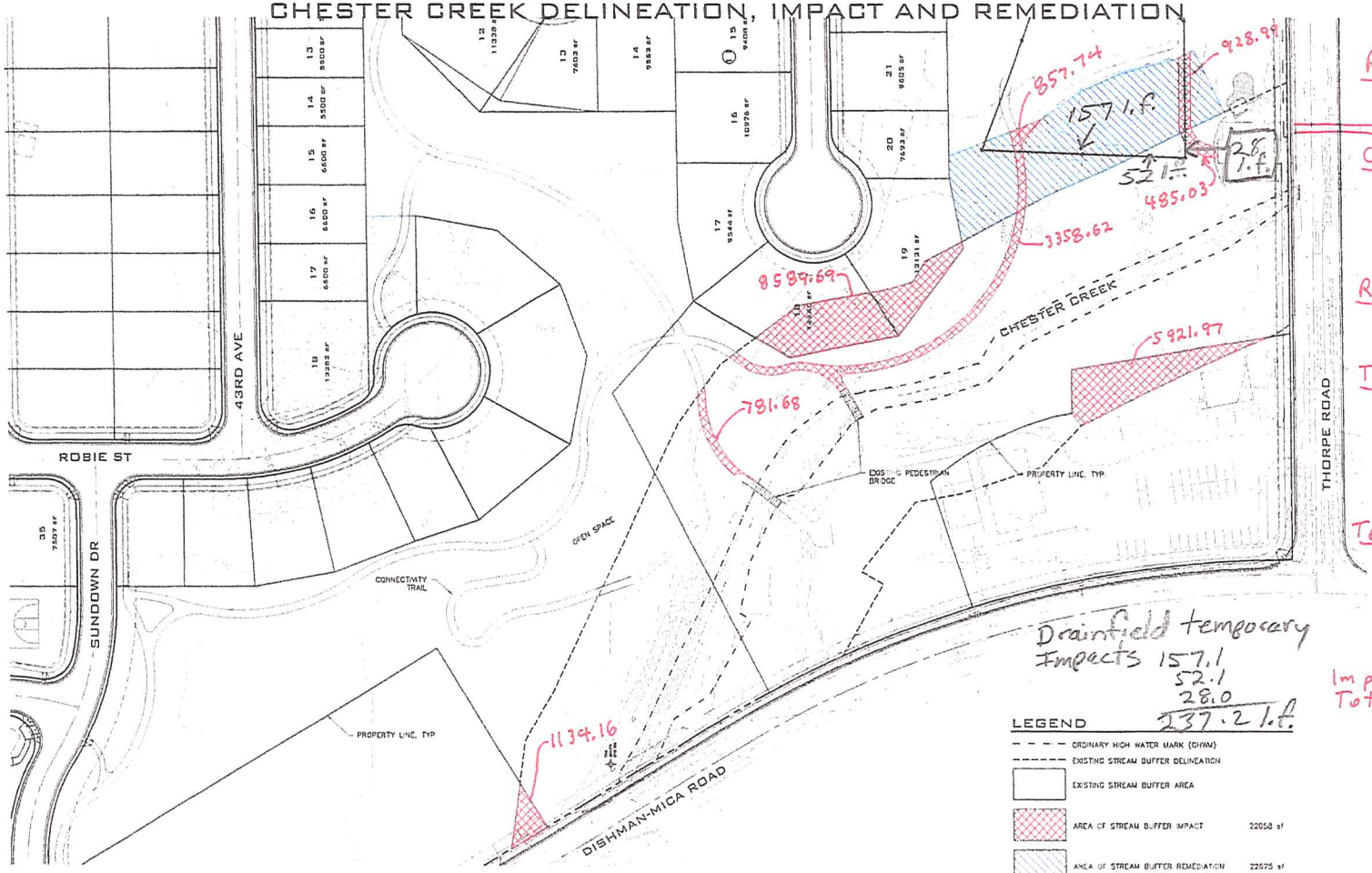
Application #:_____

4/1/2015 9:23:14 AM
NAD 83
Contour Interval: 40 Feet

SE¼, SEC.33, T.25N., R.44E., W.M.
SW¼, SEC.34, T.25N., R.44E., W.M.
NE¼, SEC. 4, T.24N., R.44E., W.M.

CHESTER CREEK DELINEATION, IMPACT AND REMEDIATION

UNDERGROUND SERVICE ALERT
ONE-CALL NUMBER
811
CALL TWO BUSINESS DAYS BEFORE YOU DIG



STREAM BUFFER REMEDIATION EXHIBIT
SCALE: 1"=50'

Remediation
22675.15

Commercial
5921.97
1134.16
7056.13

Residential
8589.69

Trail-Stream
3358.62
781.68
485.03
4625.33

Trail-Remediation
857.74
928.99
1786.73

Impact Total 22057.88

DATUM: NAVD - 88
TIE-IN IS OF THE SOUTH INDUSTRIAL SEWER PROJECT WITH AN ELEVATION OF 2091.87 (VANCOUVER - 2009.62) NAVD88 WAS USED FOR THE VERTICAL DATUM FOR THIS MAP.

NO.	DATE	BY	REVISIONS
-	05/13/14	GLG	ORIGINAL PREPARATION

SCALE:
HORIZONTAL: 1"=50'
VERTICAL: N/A

PROJ #: 13-1166
DATE: 03/18/15
DRAWN: GLG
REVIEWED: TTW

CIVIL
STRUCTURAL
SURVEYING
TRAFFIC
X PLANNING
LANDSCAPE
DATA

WCE
WHITE CRUTCHFIELD ENGINEERS
2208 NORTH LIVGREN ROAD
SPOKANE VALLEY, WA 99216
PH 509.921.2237 FAX 509.926.0227

P R D PAINTED HILLS
STREAM BUFFER EXHIBIT
DISHMAN-MICA RD.
SPOKANE VALLEY, WA

SHEET
1 OF 1

JOB NUMBER
13-1166

5-11-15

Figure 6

5.2: Buffer Impacts from Two Homes

Part of the buffer impact (8589.69 ft2) results from two lots located in close proximity to the southmost bridge across Chester Creek. The subject area experienced the highest intensity human activity on the property during the years of golf course operation. Foot and golf cart traffic from the club house was directed by cart paths over two bridges to the fairways, driving range, and practice areas across the creek where the buffer impact from two lots is proposed. The only remaining woody vegetation is inside the Chester Creek channel where honey willows were planted in the channel thirty years ago. The willows must be removed to protect the integrity of the levy so there will be no remaining woody vegetation in the subject area.

The existing bridges will be utilized and the cart paths will be extended to form a trail system that connects the housing development on the east side of the creek to the proposed bar and restaurant located in the former golf course clubhouse on the west side of the creek. This part of the riparian buffer will continue to experience high intensity human activity. This part of the buffer historically experienced the highest degree of degradation and will continue to experience the greatest intensity of human activity. Of all the disturbed riparian buffer on the site, this area will benefit the least from protection due to the existing bridges and trails that will continue to funnel human activity through this area.

The Critical Areas Ordinance states that buffer areas may be modified by the director if "the riparian area contains variations in sensitivity due to existing physical characteristics which justify the averaging." The variation in habitat characteristics and the continuing pattern of human activity defines what areas are conducive to enhancement and which areas are not. The area around the two bridges will not benefit from habitat enhancement due to continued high intensity human activity in this existing disturbed footprint. Some vegetative plantings will be installed between the proposed buffer encroachment and the creek, but there will be little wildlife activity in this area. In reality, these plantings will function mainly as human esthetic improvements and have only a small benefit to birds. As a result, the vast majority of the vegetative plantings prescribed as mitigation for the buffer reduction will be installed where there is less human activity and the vegetation will actually enhance wildlife habitat. In the proposed buffer replacement area there is currently little woody vegetation so native trees and shrubs will be planted densely in the open space to improve habitat quality. Habitat enhancement will also occur in the designated wildlife travel corridor and other buffer areas with less human activity where wildlife will benefit from the enhancement.

5.3: Buffer Impacts from the Trails

Three separate buffer impacts will occur from trails. Two of the impacts will result when the existing trails are extended from the bridges into the development and connected to a proposed trail through the 8+ acre wildlife travel corridor. A third impact will occur when an existing parking lot at the south end of the property is connected to the trail system. The three buffer impacts result in as additional 4625.33 sq. ft. of riparian buffer impact. The buffer impact areas will be replaced in the blue hatched area shown in Figure 5. Trails through the blue hatched buffer replacement area impact another 1786.73 sq. ft. of buffer. The total riparian buffer impact area of 22057.88 sq. ft. will be replaced with 22675 sq. ft. of new buffer.

5.4: Temporary Impacts from the Stormwater System

Section 4.8.2 of this report (titled Flood Protection Measures) refers the reader to the Painted Hills Flood Control Plan for details of flood control measures being incorporated into the

project design. At the south end of the property, in the proposed wildlife travel corridor, shallow ponds and subsurface gravel galleries are proposed. Shallow ponds will be installed above the gravel galleries. These grass lined ponds will function as sediment basins fitted with manholes and bee hive grates that will allow stormwater to overflow into the underlying gravel galleries for temporary storage and infiltration. These features will provide another measure of stormwater and flood control on Chester Creek. The subsurface gravel galleries will have a much larger area than the above surface ponds and will radiate outward into a deep, subsurface gravel drainfield.

The temporary impact area for the trench/gravel drainfield could be 20 feet wide after excavation and temporary material stockpiling is finished. The gravel drainfield will be covered with a filter fabric, backfilled, and replanted in native grasses. The drainfield will impact 80 lineal feet of the riparian buffer as shown on Figure 6. The trench will also impact 157 lineal feet of the Buffer Replacement Area. The total 237 lineal feet of temporary impacts from the trench will occur in an area that was previously golf course fairways and planted in turf grass. The final temporary impact could be between 6000 and 8000 sq. ft.. There are a few sparse trees in the area and some could be impacted by the trench, depending on the final layout. The layout should avoid existing trees and shrubs to the fullest extent possible but the layout will ultimately be dictated by engineering and hydrologic considerations. Mitigation of the temporary trench impacts will consist of restoring the original contour, reseeding the disturbed areas in native grasses, and planting trees and shrubs as described in the following sections of this report.

5.5: Mitigation of Willow Removal from the creek Levy

As previously stated in Section 4.8.2 of this report (titled Flood Protection Measures) the creek banks in the project area are defined as a levy and are subject to a certification process. The channel may not have been dredged and maintained since 1998. Since that time, willows were planted in the Chester Creek channel. Willow roots compromise the integrity of the levy and their removal is required by FEMA and COE as part of the levy certification process. The permitting for that process is outside the scope of this report. The replacement plantings cannot be placed in the stream channel or on the levy bank so the replacement planting will occur in the in the riparian buffer and wildlife travel corridor as detailed later in this report.

5.6: Mitigation Area Summary

The proposed buffer mitigation provides adequate compensation for the proposed impacts. Buffer impacts are proposed in six areas with a total buffer impact of 22,058 sq. ft. (0.51 acres). The impacts will be mitigated in several ways. Buffer Averaging will be employed to insure no net loss of buffer occurs. The 22,058 sq. ft. impact area will be replaced with a 22675 sq. ft. area that is contiguous with the existing riparian buffer. This area will be incorporated into the wildlife travel corridor. The remaining buffer between the impact areas and the creek will be enhanced by the planting of tree and shrub patches. The buffer replacement area will be enhanced by the planting of tree and shrub patches. These plantings will also mitigate the additional 237.2 lineal feet of temporary impacts to the buffer and buffer replacement area from installation of the stormwater drainfield. The proposed 8+ acre wildlife habitat/travel corridor will be enhanced by the planting of tree and shrub patches.

The buffer will be reduced in the proposed areas, but the proposed vegetative enhancement of the remaining narrower buffer areas provides adequate mitigation to offset the loss. Additional vegetative enhancement of the buffer replacement area and the wildlife corridor

are significant improvements compared to the existing condition and historical land uses of the last several decades, so buffer averaging results in the necessary biological, chemical, and physical support necessary to protect fish and wildlife.

Monitoring of the vegetative plantings will continue for 5 years or until the City of Spokane Valley is satisfied that the conditions of the mitigation plan have been met. Reinforcement plantings and weed control will be prescribed by the project biologist as determined by annual site monitoring.

The minimum container size shall be one half gallon. Vegetation shall be planted at the landscapers discretion according to conditions on the ground and the location of existing vegetation. Plantings shall be interspersed around existing vegetation and where possible, in patches of 15-25 plants of mixed size and species as indicated in the plan.

5.7: Noxious weed control

The dominant invasive species that were identified on the site include tumble mustard and knapweed. These species are known for their ability to propagate and spread rapidly with catastrophic impacts on native species. As required by Washington State Noxious Weed Control law, RCW 17.10, and the Spokane County Noxious Weed Board, invasive species will be managed through control measures that do not adversely impact native vegetation. Funds will be allocated for noxious weed monitoring and herbicide control as part of the proposed mitigation for this project. Black Realty shall contract their preferred weed control specialist to monitor the site and provide weed control in the enhancement area at the appropriate intervals throughout the growing season to prevent seed set.

5.8: Revegetation with Woody Plants

In addition to noxious weed control, mitigation for buffer impacts will include the planting of native trees and shrubs. The buffer will be re-vegetated with native plants including species from the tree, shrub, and grass vegetative strata. The replication of natural spatial relationships, structural complexity, vertical stratification, and microhabitat diversity will be stressed in the planting design to achieve a mosaic of open areas and dense tree/shrub clusters. Vegetation will not be planted in a uniform manner. Shrubs will be planted in grouped patches and interspersed with other shrub species and height classes. Patch size will be variable with curving edges. The incorporation of these elements will increase landscape diversity and promote habitat elements that are often scarce or absent at sites that have been disturbed. Native species and endemic plant materials will be selected for site revegetation to help maintain ecotypes that are adapted to local climatic and soil conditions and preserve local genotypes.

5.9: Objectives for the Restored Riparian Buffer

Restoration will be achieved by planting native trees, shrubs and grasses primarily to provide food and cover for wildlife. The Vegetation Plan will incorporate as many design features as possible for each function in order to increase the value for that function.

Objective a: Re-establish species diversity and structural diversity in the buffer by replanting native tree and shrub species from each vegetative class.

Objective b: Re-establish vegetative species and structural diversity to re-establish bird and mammal habitat values in the enhanced buffer areas.

Objective c: Re-establish vegetative density in the riparian buffer area.

5.10 Planting Strategy

Woody plant materials will be installed at the industry standard density of 360 stems per acre. The buffer replacement area is 0.47 acres X 360 stems/acre = 170 containers. The Buffer Replacement Area shall have 170 containers planted within that polygon. An additional 125 containers will be planted in the existing buffer and buffer reduction areas on the west side of the creek and 125 containers will be planted on the east side of the creek. An addition 400 containers shall be planted in patches of 20 containers throughout the designated wildlife travel corridor. The replication of structural complexity, vertical stratification, and microhabitat diversity will be emphasized in the planting design. Shrubs will be planted in the buffer with the goal of providing wildlife habitat and enhancing the functions and values of the buffer. The vegetation will be planted in patches, have curving edges, and will not be planted in a uniform manner.

5.11: Rationale

Structural complexity refers to the arrangement and degree of interspersion of plant community types throughout the system. Complex structural patterns (such as variable patch size, curving edges, and high degree of interspersion between species) increase the value of a system for wildlife. Good wildlife habitat consists of open areas interspersed with clusters of vegetation, several horizontal layers, and a variable structural pattern. **Vertical stratification** describes a community with good structural diversity and several horizontal layers (logs, woody debris, forbs, shrubs, and trees). Woody debris provides travel routes, perch sites, cover, and thermal refuge for a variety of small mammals and ground nesting birds. **Microhabitat diversity** refers to variety in microhabitat types. Examples of microhabitat types include herbaceous cover and shrubs that provide food, habitat, and substrate for a variety of plants and animals.

6.0: Mitigation Planting Plan

6.1: Materials Specification

Clusters of vegetation will be planted according to the guidelines prescribed above. The specified number of containers will be planted within each zone as shown in Figure 7.

Zone 1 - Riparian Buffer on West Side of Chester Creek

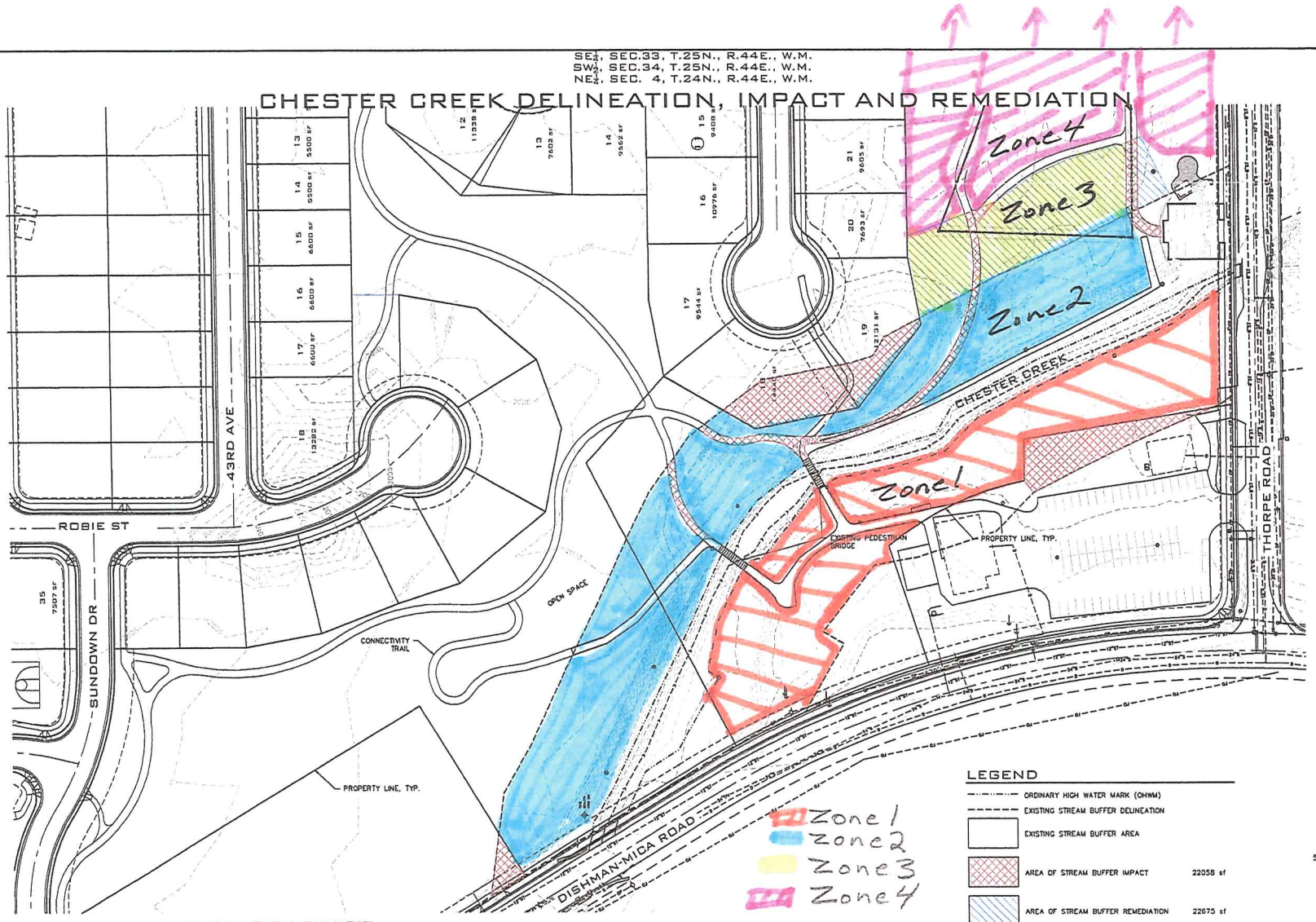
125 containers planted in 8-10 patches

	Common Name	Scientific Name	# Planted
Trees	Ponderosa pine	*Pinus ponderosa*	10
Large shrubs	serviceberry	*Amelanchier alnifoloia*	30
	mock orange	*Philadelphus lewisii*	20
Small shrubs	Wood's rose	*Rosa woodsii*	20
	common snowberry	*Symphoricarpos albus*	25
	Phlox sp.	*Phlox speciosa or longifolia*	20
Total			125

SE¼, SEC.33, T.25N., R.44E., W.M.
SW¼, SEC.34, T.25N., R.44E., W.M.
NE¼, SEC. 4, T.24N., R.44E., W.M.

CHESTER CREEK DELINEATION, IMPACT AND REMEDIATION

UNDERGROUND SERVICE ALERT
ONE-CALL NUMBER
811
CALL TWO BUSINESS DAYS BEFORE YOU DIG



STREAM BUFFER REMEDIATION EXHIBIT

SCALE: 1"=50'

Figure 7: Planting Zones

DATUM: NAVD - 88
TBM 5-5 OF THE SOUTH PONDEROSA SEWER PROJECT WITH AN ELEVATION OF 2005.87 (NAVD29)=2009.67 (NAVD88) WAS USED FOR THE VERTICAL DATUM FOR THIS MAP.

NO	DATE	BY	REVISIONS
-	05/13/14	GLG	ORIGINAL PREPARATION

SCALE:	
HORIZONTAL:	1"=50'
VERTICAL:	N/A
PROJ #:	13-1166
DATE:	03/16/15
DRAWN:	GLG
REVIEWED:	TRW

CIVIL
STRUCTURAL
SURVEYING
TRAFFIC
X PLANNING
LANDSCAPE
OTHER

WCE
WHIPPLE CONSULTING ENGINEERS
2903 NORTH SULLIVAN ROAD
SPOKANE VALLEY WA 99216
PH: 509-893-2617 FAX: 509-926-0227

P R D PAINTED HILLS
STREAM BUFFER EXHIBIT
DISHMAN-MICA RD.
SPOKANE VALLEY,WA

SHEET
1 OF 1

JOB NUMBER
13-1166

Zone 2 - Riparian Buffer on East Side of Chester Creek

125 plants in 8-10 patches

	Common Name	Scientific Name	# Planted
Trees	Ponderosa pine	*Pinus ponderosa*	10
Large shrubs	serviceberry	*Amelanchier alnifoloia*	30
	mock orange	*Philadelphus lewisii*	20
Small shrubs	Wood's rose	*Rosa woodsii*	20
	common snowberry	*Symphoricarpos albus*	25
	Phlox sp.	*Phlox speciosa or longifolia*	20
Total			125

Zone 3 - Buffer Replacement Area on East Side of Chester Creek

170 plants in 10 patches

	Common Name	Scientific Name	# Planted
Trees	Ponderosa pine	*Pinus ponderosa*	22
Large shrubs	serviceberry	*Amelanchier alnifoloia*	33
	Rocky mountain juniper	*Juniperous scopulorum*	10
	chokecherry	*Prunus virginiana*	20
	mock orange	*Philadelphus lewisii*	20
Small shrubs	Wood's rose	*Rosa woodsii*	20
	common snowberry	*Symphoricarpos albus*	25
	Phlox sp.	*Phlox speciosa or longifolia*	20
Total			170

Zone 4 - Wildlife Travel Corridor on East Side of Chester Creek

400 plants in 20 patches

	Common Name	Scientific Name	# Planted
Trees	Ponderosa pine	*Pinus ponderosa*	50
Large shrubs	serviceberry	*Amelanchier alnifoloia*	60
	Rocky mountain juniper	*Juniperous scopulorum*	30
	chokecherry	*Prunus virginiana*	50
	mock orange	*Philadelphus lewisii*	60
Small shrubs	Wood's rose	*Rosa woodsii*	70
	common snowberry	*Symphoricarpos albus*	80
Total			400

Shrubs shall be planted in the approximate prescribed quantities depending on plant availability. Large shrubs should be planted on 10-foot centers. Small upland shrubs should be clustered on 3-foot centers around large shrubs.

Depending on availability, the mixture of grass species listed below should be drill seeded or hydroseeded at a density of 22 pounds PLS per acre. Grasses should be planted during the growing season when precipitation and temperature levels will insure germination and survival. Grasses should be planted early in the fall so that the crop is well established by October 15. If germination, growth, and root development are substantial before the end of the growing season, some degree of erosion control will be provided during the winter and spring months that follow. **It may be necessary to irrigate the soil surface to keep it in a moist**

condition for the first two weeks after seeding. Irrigation should supplement rainfall as required to achieve a total from combined sources of 2 inches per week and no more than 0.25 inches per hour. Seed can also be installed to lie dormant over the winter and germinate in the spring.

Grasses

Common Name	Scientific Name	Bunch or Sod	PLS (lb/acre)
bluebunch wheatgrass	*Agropyron spicatum*	B	8.0
Idaho fescue	*Festuca idahoensis*	B	6.0
prairie junegrass	*Koeleria cristata*	B	8.0
Total			22.0

A list of suppliers who will prepare the grass seed mixture and supply nursery stock specified in the vegetation plan follows.

Grass seed: Grassland West 1-800-582-2070
PO Box 489
908 Port Drive
Clarkston, WA 99403

Trees, & Shrubs: Plants of the Wild
PO Box 866
Tekoa, WA 99033
509-284-2848

Wildlife Habitat Institute
1025 East Hatter Creek Road
Princeton, ID 83857
208-875-8704

6.2: Ponderosa Pine Planting

ALWAYS plant after December 15 and before March 31. Plant ONLY conservation grade seedlings 20-24 feet from fast growing deciduous trees. Plant seedlings **on 30 foot centers** with no shrubs inter-planted close to the trees to prevent shading and competition that greatly reduces survival. A mulch of Ponderosa pine needles applied in a 3-6 foot radius around the tree trunk at planting will greatly reduce competition and increase tree survival.

Ponderosa pine out-planting survival following *Rhizopogon rubescens* inoculation is 2-3 times higher compared to non-inoculated. Numerous studies have shown that ectomycorrhizal fungi can profoundly affect conifer performance by facilitating nutrient and water uptake, maintaining soil structure, and protecting roots from pathogens and environmental extremes. A specific ectomycorrhizal fungus, *Rhizopogon rubescens*, inoculated onto the root systems of Ponderosa pine seedlings greatly increase survival. Irrigation options are being explored at this mitigation site, but the landscaper should buy plants that have been inoculated or dust the planting holes with this fungi if it is available.

6.3: Additional Planting Guidelines

Depending on availability, the mixture of grass species listed above should be seeded at a density of 25 pounds PLS per acre. Grasses should be planted during the growing season when precipitation and temperature levels will insure germination and survival. Grasses should be planted in early April so that the crop is well established before dry weather, in the fall so that the crop is well established before October 15, or dormant seeded late in the fall so the seed will not germinate until spring. Site preparation and planting should occur in the fall and winter.

Seeding rates of live, germinable seed or Live Pure Seed (LPS) are a product of seed lot purity and germination percentage. LPS calculations are based on the number of seeds per pound and the number of seeds per square foot at one pound per acre. A nursery will prepare a custom seed mix with the prescribed LPS for each species.

Trees and shrubs should be planted after the end of the growing season when the plants are dormant. The best time to plant is late winter when sub-zero temperatures are over but plants are still dormant. Plants may be planted any time during the growing season when the daytime high temperatures are 70F or cooler if irrigation is available from the time of planting through the rest of the growing season. Each tree or shrub planted should be clearly identified with an easy to identify tag that identifies the species. Without such identification it is impossible for the monitoring biologist to tell which plants are enhancement plantings and which are native to the site.

6.4: Additional Site Protection Measures

Many people drive, park and passively enjoy recreation in the area so the enhancement areas must be protected from human traffic after planting. Riparian Buffer Enhancement Area or No Trespassing signs should be posted every 100 feet to explain the sensitivity of the newly planted areas and discourage foot traffic in newly seeded areas.

6.5: Timeline for Construction

Due to the appeals process, it is very difficult to predict when construction will be permitted. It is very unlikely that construction will begin in 2015, more likely that construction will begin in 2016, but possible it will not begin until 2017. Regardless of which year construction begins, it is known that the first construction phase will include the stormwater features and drain fields. When those features have been constructed, the disturbed areas will be reclaimed and planted in accordance with the terms of this mitigation plan. BSW will monitor site impacts and mitigation work to insure the work is completed as specified in this plan. The five year monitoring requirement for each phase will be implemented as described below.

6.6: FEMA Mitigation Requirements

As stated previously, all work on the levee and embankment is beyond the scope of this document. All associated work shall be completed in strict compliance with FEMA requirements using the US Army Corps of Engineers manual titled Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures (ETL 1110-2-583 dated 30 April 2014). The manual states that all vegetation not in compliance with the ETL shall be removed. The removal of noncompliant vegetation includes trunk, stump, root ball, and roots greater than 1/2 inch diameter in the levee, or within 15 feet of the flood damage reduction structure.

The only acceptable ground cover in the COE mandated vegetation free zone is perennial grasses to prevent erosion. Noxious weeds are not tolerable. The grass species must not exceed 12 inches in height and be tolerant of mowing to a height of 3 inches to allow levy inspection at least once per year. It will be necessary to mow, burn, or graze to inspect for and control pests, weeds, and burrowing animals, repair damage to the embankment, and maintain the grass cover crop. Woody vegetative plantings prescribed for mitigation in this report shall not be placed in the levee, or within 15 feet of the flood damage reduction structure.

6.7: ESA and FEMA Compliance

The purpose of this report is to confirm that the project is in compliance with Sections 9 and 10 of the Endangered Species Act. The proposed flood control and floodplain changes will have no effect on any listed species. For the Chester Creek Main Channel (golf course overflow reach) most of the 1% annual-chance floodplain within the project site is effectively being intercepted by the infiltration facilities, rather than entering the existing golf course and infiltrating. For the Chester Creek Unnamed Tributary, the floodway and 1% annual chance floodplain are being intercepted by the gravel pit infiltration facility just north of 40th, and are being removed from the FEMA mapping. These actions are simply enhancement of the existing facility and the proposed changes will have no effect on any listed habitat or species.

7.0 THE MONITORING PLAN

All monitoring plans require that a mitigation site be monitored annually to determine whether the goals and performance standards have been met. Monitoring typically lasts for 5 years or until the City of Spokane Valley is satisfied that the conditions of the mitigation plan have been met. The site should be monitored in the spring to evaluate the success of weed control from the previous year and prescribe weed control for the current year. The monitoring will also evaluate plant survival to insure that performance standards for percent ground cover of native vegetation are met. Planting of the original grass seed mixture will be repeated to fill in problem areas if they occur.

The City of Spokane Valley will be notified immediately after diagnosis of failing functions, hydrologic systems, or biological vitality and integrity of the plantings as determined through annual monitoring. The vegetation will be managed to insure 80% areal cover with native grasses after five years (year 1=20%, year 2-30%, year 3=50%, year 4=70%, year 5=80%). Tree and shrub stock will be monitored to insure 80% survival after 5 years. Reinforcement plantings will be performed annually as necessary to insure performance standards are met at the end of five years.

8.0 LIMITATIONS

Within the limitations of scope, schedule, and budget, BSW services have been executed in accordance with best available science and generally accepted professional practices for the conditions at the time the work was performed. This report is not intended to represent a legal opinion. Specifically, there is no positive or negative recommendation towards the purchase, sale, lease, or construction on the subject property. No warrant, expressed or implied, is made.

Larry Dawes 7-20-2015

Larry Dawes Date

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BIBLIOGRAPHY AND SUGGESTED REFERENCES

Berglund, Erwin R.. 1976. Seeding to Control Erosion Along Forest Roads. Extension Circular 885. Oregon State University Extension Service. 6-8p.

City of Spokane Valley Municipal Code

Carroll, Carlos; Noss, Reed F.; Paquet, Paul C. 2001. Carnivores as focal species for conservation planning in the Rocky Mountain region. Ecological Applications. 11(4): 961-980.

Cooper, Stephen V., Kenneth E. Neiman, and David W. Roberts. 1991. Forest habitat Types of Northern Idaho: A second Approximation. USDA: Forest Service; Intermountain research Station. General Technical Report INT-236. 143 p.

Dale, B. C. 1983. Habitat relationships of seven species of passerine birds at Last Mountain Lake, Saskatchewan. M.S. thesis. University of Regina, Regina, Saskatchewan. 119 pages.

Daubenmire, R. 1969. Structure and ecology of coniferous forests of the northern Rocky Mountains. Pages 25-41 in R. D. Taber, ed. Coniferous forests of the Northern Rocky Mountains. Univ. Mont., Missoula. 395pp

Davis, S. K. 2004. Area sensitivity in grassland passerines: effects of patch size, patch shape, and vegetation structure on bird abundance and occurrence in southern Saskatchewan. *The Auk* 121: 1130-1145.

Delaney, Kevin. 1994. Wildlife Notebook Series. Alaska Department of Fish and Game, http:/www.hitime.com.sdscptn.htm.

FERC. 2006. *Draft Environmental Impact Statement. Spokane River and Post Falls Hydroelectric Projects.* Federal Energy Regulatory Commission. Office of Energy Projects. December 2006.

Forman, R. T. and M. Gordon. 1986. Landscape Ecology. John Wiley and Sons, New York. 619 p.

Frissell, C.A. 1992. Cumulative effects of land use on salmonid habitat on southwest Oregon streams. Oregon State University, Corvalis, OR.

Grubb, P. J. 1977. The maintenance of species richness in plant communities: The importance of regeneration niche. Biological Review 52: 107-145.

Hitchcock, C. Leo, and Arthur Cronquist. 1994. Flora of the Pacific Northwest. University of Washington Press, Seattle, WA. 730p.

Hitchcock, C. L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1964. Vascular Plants of the Pacific Northwest, Part 2: Salicaceae to Saxifragaceae. University of Washington Press, Seattle. 597 pp.

Koehler, Gary M. 1990. Population and habitat characteristics of lynx and snowshoe hares in north central Washington. Canadian Journal of Zoology. 68: 845-851.

Koehler, Gary M.; Aubry, Keith B. 1994. Lynx. In: Ruggiero, Leonard F.; Aubry, Keith B.; Buskirk, Steven W.; Lyon, L. Jack; Zielinski, William J., tech. eds. The scientific basis for conserving carnivores: American marten, fisher, lynx, and wolverine in the western United States. Gen. Tech. Rep. RM-254. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station: 74-98.

Koehler, Gary M.; Brittell, J. David. 1990. Managing spruce-fir habitat for lynx and snowshoe hares. Journal of Forestry. 88(10): 10-14.

Koehler, Gary M.; Hornocker, Maurice G.; Hash, Howard S. 1979. Lynx movements and habitat use in Montana. The Canadian Field-Naturalist. 93(4): 441-442.

Maher, W. J. 1973. Matador Project: Birds I. Population dynamics. Canadian Committee for the International Biological Programme, Matador Project, Technical Report 34. University of Saskatchewan, Saskatoon, Saskatchewan. 56 pages.

Mancuso, Michael, December 2000. Field Investigation for Spiranthes Diluvialis (Ute Ladies-tresses) on BLM Lands Managed by the Shoshone Field Office, South- Central Idaho. Conservation Data Center

Martin, A. C., H. I. Zim, and A. L. Nelson. 1951. American Wildlife and Plants. Diver Publications, Inc., New York. 484 p.

McCaffery, K. R., and W. A. Creed. 1969. Significance of forest openings for deer in northern Wisconsin. Technical Bulletin 44. Madison:Wisconsin Department of Natural Resources. 104 p.

Moseley, R.K. 1998. Ute ladies tresses *Spiranthes diluvialis* in Idaho: 1997 status report. Report prepared by the Idaho Conservation Data Center, Boise, ID.

Murray, Dennis L.; Boutin, Stan; O'Donoghue, Mark. 1994. Winter habitat selection by lynx and coyotes in relation to snowshoe hare abundance. Canadian Journal of Zoology. 72(8): 1444-1451.

NatureServe. 2010. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia.

(PBTTAT) Panhandle Bull Trout Technical Advisory Team. 1998. Coeur d'Alene Lake Basin bull trout problem assessment. Draft. Prepared for the State of Idaho. December 1998.

Sauer, J. R., J. E. Hines, and J. Fallon. 2005. The North American Breeding Bird Survey, Results and Analysis 1966 - 2004. Version 2005.2. USGS Patuxent Wildlife Research Center, Laurel, MD

Simpson, J.C., and R.L. Wallace 1982. Fishes of Idaho. Department of Biological Sciences, University of Idaho, Moscow.

Singer, F. J. 1979. Habitat partitioning and wildlife relationships of cervids in Glacier National Park, Montana. Journal of Wildlife Management. 43(2):437-444.

Spokane County Public Works Department: Building and Planning Division. 1996. Critical Areas Ordinance for the Protection of Wetlands, Fish and Wildlife Habitats and Geo-hazard Areas. Spokane County, WA. 69p.

Stephens D. A. and S.H. Sturts. 1997. Idaho bird distribution. Idaho Museum of Natural History, Pocatello and Idaho Department of Fish and Game. Boise, ID.

USDI Fish and Wildlife Service. 2001. Endangered and threatened wildlife and plants: final rule to list *silene spaldingii* (Spalding's catchfly) as threatened. Federal Register. 66 (196) 51598-51606.

Washington Department of Fish and Wildlife and the Upper Columbia Basin Working Group of Timber, Fish and Wildlife (TFW). 1996.

Washington Department of Fish and Wildlife. 1996. Priority Habitats and Species List: Habitat Program. Olympia, Washington. 28p.

Washington Fish and Wildlife Commission. 1997. Policy of the Washington Department of Fish and Wildlife and Western Washington Treaty Tribes on Wild Salmonids. Washington Fish and Game Commission, Olympia, WA. 68p.

Washington State Department of Fish and Wildlife, 1997. Integrated Streambank Protection, Bank Erosion Assessment and Technique Selection Guidance, Section III, Biological Considerations.

Water Quality Standards For Ground Waters of the State of Washington. Chapter 173-200, WAC.

Wolff, Jerry O. 1980. The role of habitat patchiness in the population dynamics of snowshoe hares. Ecological Monographs. 50(1): 111-130.

Zim, H. S., A. C. Martin, and A. L. Nelson. 1961. American Wildlife & Plants: A Guide to Wildlife Food Habits. Dover Publications, Inc. New York, NY.

Appendix 1
U.S. Fish & Wildlife Service
SPOKANE COUNTY
Updated 5/1/2015

LISTED

Threatened
Salvelinus confluentus) (Bull trout) – Columbia River distinct population segment
Howellia aquatilis (Water howellia), plant
Silene spaldingii (Spalding's silene), plant
Spiranthes diluvialis (Ute ladies'-tresses), plant
Lynx canadensis (Canada lynx)
Coccyzus americanus (Yellow-billed cuckoo)

SPECIES OF CONCERN
Bald eagle *(Haliaeetus leucocephalus)* (delisted, monitor status)
Burrowing owl *(Athene cunicularia)*
California floater *(Anodonta californiensis)*, mussel
Ferruginous hawk *(Buteo regalis)*
Giant Columbia spire snail *(Fluminicola columbiana)*
Loggerhead shrike *(Lanius ludovicianus)*
Long-eared myotis (*Myotis evotis*)
Northern goshawk *(Accipiter gentilis)*
Olive-sided flycatcher *(Contopus cooperi)*
Pallid Townsend's big-eared bat *(Corynorhinus townsendii pallescens)*
Peregrine falcon (*Falco peregrinus*) (Delisted, monitor status)
Redband trout *(Oncorhynchus mykiss)*
Sagebrush lizard *(Sceloporus graciosus)*
Westslope cutthroat trout *(Oncorhynchus clarki lewisi)*

Vascular Plants
Haplopappus liatriformis (Palouse goldenweed)

Appendix 2
Critical Areas Maps

U.S. Fish and Wildlife Service

Trust Resources List

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of **5** threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Birds	Status		Has Critical Habitat	Contact
Yellow-Billed Cuckoo (*Coccyzus americanus*) Population: Western U.S. DPS	Threatened	species info	Proposed critical habitat	Washington Fish And Wildlife Office
Fishes				
Bull Trout (*Salvelinus confluentus*) Population: U.S.A., conterminous, lower 48 states	Threatened	species info	Final designated critical habitat	Washington Fish And Wildlife Office
Flowering Plants				
Spalding's Catchfly (*Silene spaldingii*)	Threatened	species info		Washington Fish And Wildlife Office
Water howellia (*Howellia aquatilis*)	Threatened	species info		Washington Fish And Wildlife Office
Mammals				
Canada Lynx (*Lynx canadensis*) Population: (Contiguous U.S. DPS)	Threatened	species info	Final designated critical habitat	Washington Fish And Wildlife Office

Critical habitats within your project area:

There are no critical habitats within your project area.

Soil Map—Spokane County, Washington

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Spokane County, Washington
Survey Area Data: Version 5, Sep 4, 2014

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

Date(s) aerial images were photographed: Jun 4, 2011—Jul 5, 2011

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

Map Unit Legend

Spokane County, Washington (WA063)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1040	Hardesty ashy silt loam, 0 to 3 percent slopes	14.4	2.3%
1080	Narcisse silt loam, 0 to 3 percent slopes	108.4	17.7%
1200	Endoaquolls and Fluvaquents, 0 to 3 percent slopes	61.9	10.1%
3022	Bong ashy sandy loam, moist, 0 to 8 percent slopes	14.3	2.3%
3054	Clayton ashy fine sandy loam, 0 to 8 percent slopes	7.2	1.2%
3130	Phoebe ashy sandy loam, 0 to 3 percent slopes	29.2	4.8%
5040	Spokane-Swakane complex, 3 to 15 percent slopes	7.9	1.3%
5041	Spokane-Swakane complex, 15 to 30 percent slopes	43.1	7.0%
5073	Lenz-Rock outcrop complex, 15 to 30 percent slopes	37.6	6.1%
7101	Pits-Dumps complex	12.0	2.0%
7110	Urban land-Opportunity, disturbed complex, 0 to 3 percent slopes	11.4	1.9%
7122	Urban land-Marble, disturbed complex, 8 to 15 percent slopes	0.1	0.0%
7170	Urban land-Springdale, disturbed complex, 0 to 3 percent slopes	153.0	24.9%
7181	Urban land-Phoebe, disturbed complex, 3 to 8 percent slopes	112.9	18.4%
Totals for Area of Interest		**613.5**	**100.0%**

U.S. Fish and Wildlife Service
National Wetlands Inventory

May 14, 2015

Wetlands

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

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

User Remarks:

No wetland hydrology at either location. NOT a wetland.

Elk habitat polygon